Department of Geography

Banasthali Vidyapith, Banasthali

Minutes of the meeting of Board of Studies held on 30 September 2010 at 10.00 AM in Conference Room No 209 of Aim & Act Banasthali University.

Following members were invited to the third meeting of Board of Studies in Geography on 30.09.2010.

1.	Prof. Sadhana Kothari	Udaipur University
2.	Prof. R. N. Mishra	University of Rajasthan
3.	Dr. Rashmi Sharma	Internal Member
4.	Dr. Ashutosh	Internal Member
5.	Dr. Vipin Kaushik	Internal Member
6.	Dr. Khundra Kapam Moiranglima	Internal Member
7.	Dr. Salahuddin Mohd.	Internal Member
8.	Prof. Brij. Bhushan	Convener

All invited members were present. The meeting began with hearty welcome to the members by convener. As scheduled, the meeting took place in Room No. 209 of Apaji Institute at 10:00 am. After exchange of a few words of greetings, the BOS members, particularly new members, were apprised of the aim and proceedings of the BOS. The members then took up the first agenda item of the given Agenda (Enclosure 0) for the meeting.

Agenda Item 1 **:** As an action on this agenda item members were to confirm the minutes of second meeting of BOS held in January, 2010. After a few clarifications and a brief discussion the minutes were confirmed (Enclosure 1)

Agenda Item 2 **:** As an action on this second agenda, BOS members were to reconsider the existing list of Examiners (Theory and Practicals) for any revision. Considering the state and convenience of some of the senior Geographers in

attending the examination work, some younger examiners were adopted in place of very senior members as per recommendation of the BOS. The revised list of examiners is placed as Enclosure 2.

Agenda Item 3 **:** This agenda was on acceptance of continuation of existing syllabus for Under Graduate and also for acceptance of existing scheme of examination for B. A. examination in Geography. BOS members were of the view that the existing syllabi may be continued, together with existing scheme of examination, as it was revised very recently in September 2009. Existing scheme of examination is placed as Enclosure 3.

The fresh syllabi for M.A. / M.Sc. Geography prepared by faculty members of Geography Dept. was discussed from various points of view i.e. volume of new course, its commensuration with course is of other universities of repute, semester – wise distribution of course etc.

Scheme of examination was also drawn. Detailed outlines of accepted syllabi for M.A. / M. Sc. (Geography) and the scheme of examination are given in Enclosures 4 & 5 respectively. Syllabi was planned so as to be covered in four semesters as per scheme of examination.

Course for M. Tech (Remote Sensing), Enclosure 6, prepared by Geography Department was perused by BOS members. While appreciating the enthusiasm of dept. and quality of syllabus, BOS members came to decision that such a Technical Post Graduate course be taught by a Department of Banasthali University Office other than Geography Department so that students of Geography after finishing course a as high as MA / M.Sc. may feel a sense of completeness rather than of unsatisfaction. Therefore, syllabi for M Tech (Remote Sensing) was not further commented and was given up for consideration by concerned department's BOS.

Agenda Item 4 : Examiners' report of past examinations of undergraduates were to be evaluated. All the available reports were submitted before BOS members. Members observed high opinions given by examiners and expressed their satisfaction on the reports showing hard work by students.

Agenda Item 5 : Standard of B. A. examinations' question papers was to be evaluated through available Question papers of past examinations. All members expressed satisfaction on continuous improvement of standard of Question

Papers of periodicals and annual examinations. The standard was observed to be as high as of any long standing Geography Department of a leading University in India. However BOS members

recommended revision of format of question papers of future annual examination so that these are in conformity with the format of many a competitions.

BOS suggested following format: -

(1) *Every question paper in geography may have first Question as compulsory in ten sub – parts. This constituted section – A.*

(2) *Under Section – B, there would be five questions each one with a choice. One question (together with choice question) will be selected from each of the five units of syllabus. The examinees will be asked to answer all five questions (availing choice) each one within 100-150 words.*

(3) *Section – C : It may contain four Questions, one from any four units of syllabi five units. Students will be required to answer any two, each with maximum of 400 – 500 words.*

BOS members had completed action on all the agenda items by 1415 Hrs, the meeting was closed at 14.30 hrs. Convener thanked the members for their co-operation and suggesting valuable changes given above.

Enclosure 4

EXISTING AND PROPOSED EXAMINATION SCHEME FOR M.A./M.Sc. (2012-13)

M.A./M.Sc. Semester – I, Dec. 2011

EXISTING SCHEME

Course Code	Subject/Paper Nomenclature	Contact Hours/Week	Exam Duration (Hrs.)	Max. Marks	Cont. Assessment	Sem. Assessment	Min. Pass marks
1.1	Geographical Thought	5	3	75	25	50	27
1.2	Advance Geomorphology	5	3	75	25	50	27
1.3	Economic and Resource Geography	5	3	75	25	50	27
1.4	Social Science Perspective (Inter Disciplinary)	5	3	75	25	50	27
1.5	Practical (Cartographic Techniques)	5 (10)	3	75	25	50	30
Total		25		375	125	250	150

PROPOSED SCHEME

Course Code	Subject/Paper Nomenclature	Contact Hours/ Week	Exam Duration (Hrs.)	Max. Marks	Cont. Assess-ment	Sem. Assessment	Min. Pass marks
1.1	Geographical Thought	5	3	75	25	50	27
1.2	Advance Geomorphology	5	3	75	25	50	27
1.3	Economic and Resource Geography	5	3	75	25	50	27
1.4	***Introduction to Geography***	5	3	75	25	50	27
1.5	Practical (Cartographic Techniques)	5 (10)	3	75	25	50	30
Total		25		375	125	250	150

M.A./M.Sc. Semester – II April/May, 2012

EXISTING SCHEME

Course Code	Subject/Paper Nomenclature	Contact Hours/Week	Exam Duration (Hrs.)	Max. Marks	Cont. Assessment	Sem. Assessment	Min. Pass marks
2.1	Regional Development and Planning	5	3	75	25	50	27
2.2	Climatology and Oceanography	5	3	75	25	50	27
2.3	Geography of India	5	3	75	25	50	27
2.4	Computer Applications (Inter Disciplinary)	5	3	75	25 Th. 10 Pr. 15	50 Th. 20 Pr. 30	27
2.5	Practical (Morphometric Analysis)	5 (10)	3	75	25	50	30
Total		25		375	125	250	150

PROPOSED SCHEME

Course Code	Subject/Paper Nomenclature	Contact Hours /Week	Exam Duration (Hrs.)	Max. Marks	Cont. Assessment	Sem. Assessment	Min. Pass marks
2.1	Regional Development and Planning	5	3	75	25	50	27
2.2	***Climatology***	5	3	75	25	50	27
2.3	Geography of India	5	3	75	25	50	27
2.4	***Oceanography***	5	3	75	25	50	27
2.5	Practical (Morphometric Analysis)	5 (10)	3	75	25	50	30
Total		25		375	125	250	150

M.A./M.Sc. Semester – III Dec, 2012

EXISTING SCHEME								PROPOSED SCHEME							
Course Code	Subject/Paper Nomenclature	Contact Hours/Week	Exam Duration (Hrs.)	Max. Marks	Cont. Assessment	Sem. Assessment	Min. Pass marks	Course Code	Subject/Paper Nomenclature	Contact Hours/Week	Exam Duration (Hrs.)	Max. Marks	Cont. Assessment	Sem. Assessment	Min. Pass marks
3.1	Quantitative Techniques & Research Methodology	5	3	75	25	50	27	3.1	Quantitative Techniques & Research Methodology	5	3	75	25	50	27
3.2	Political Geography	5	3	75	25	50	27	3.2	Political Geography	5	3	75	25	50	27
3.3	Systematic Agriculture Geography	5	3	75	25	50	27	3.3	Systematic Agriculture Geography	5	3	75	25	50	27
3.4	Research Techniques in Social Science (Inter Disciplinary)	5	3	75	25	50	27	3.4 (a) Or 3.4 (b)	***Population Geography (Optional)/ Social Geography (Optional)***	5	3	75	25	50	27
3.5	Practical (Surveying)	5 (10)	3	75	25	50	30	3.5	Practical (Surveying)	5 (10)	3	75	25	50	30
Total		25		375	125	250	150	Total		25		375	125	250	150

M.A./M.Sc. Semester – IV April/May, 2013

EXISTING SCHEME								PROPOSED SCHEME							
Course Code	Subject/Paper Nomenclature	Contact Hours/ Week	Exam Duration (Hrs.)	Max. Marks	Cont. Assessment	Sem. Assessment	Min. Pass marks	Course Code	Subject/Paper Nomenclature	Contact Hours/Week	Exam Duration (Hrs.)	Max. Marks	Cont. Assessment	Sem. Assessment	Min. Pass marks
4.1	Remote Sensing and GIS	5	3	75	25	50	27	4.1	Remote Sensing and GIS	5	3	75	25	50	27
4.2 (A) Or 4.2 (B)	Urban Geography/ Population Geography	5	3	75	25	50	27	4.2	***Bio & Environmental Geography***	5	3	75	25	50	27
4.3 (A) Or 4.3 (B)	Industrial and Transport Geography/ Bio & Environmental Geography	5	3	75	25	50	27	4.3 (a) Or 4.3 (b)	***Tourism Geography (Optional)/ Geography of Rural Settlement (Optional)***	5	3	75	25	50	27
4.4	Women Studies (Inter Disciplinary)	5	3	75	25	50	27	4.4(a) Or 4.4(b)	***Urban Geography (Optional)/ Medical Geography (Optional)***	5	3	75	25	50	27
4.5	Practical (Remote Sensing and GIS)	5 (10)	3	75	25	50	30	4.5	Practical (Remote Sensing and GIS)	5 (10)	3	75	25	50	30
Total		25		375	125	250	150	Total		25		375	125	250	150
Grand Total		100		1500	500	1000		Grand Total		100		1500	500	1000	

Enclosure 5

M.A./M.Sc. 2012-13

EXISTING SCHEME	PROPOSED SCHEME	REMARKS
1.1 Geographical Thought **Section – A : Geography and Concept in Geography** ***a) The field of geography - its place in the classification of sciences.*** b) Selected concepts in the philosophy of geography : ***i) Location and Situation,*** ii) Areal differentiation and, iii) Region. c) Concept of dualisms in geography i) Physical and Human geography, ii) Systematic and Regional geography, ***iii) Determinism and Possibilism.*** d) Man Environment Relationship- Environmental determinism, Possibilism and neo-determinism. **Section – B : Development of Geographical Thought** a) Emergence of scientific geography and its foundations; Contributions of B. ***Varenius,***	**1.1 Geographical Thought** **Section – A : Development of Geographical Thought** ***a) Ancient period : Indian,Greek and Roman contribution with special reference of Aryabhatta, Eratosthenes and Ptolemy.*** b) ***Medieval period: contribution of Arab scholars with special reference of Al-Masudi, Al-Biruni.*** c) Modern period: Contribution of German (Humboldt, Ritter, Ratzel) French (Blache, Brunhes) British (Mackinder) American (Semple,Sauer) ***Soviet (Lomonosov)*** Scholars **Section – B Concepts in Geography** a) Selected concepts in the philosophy of geography : ***i. Landscape*** ii. Areal differentiation and, iii. Region. b) Concept of dualisms in geography	***To make more consistant** *** To add relevant topics** ***To avoid repitation**

Alexender Von Humboldt, Karl Ritter. b) A general survey of developments in Geography upto world War-II in German and Contributions of Ratzal, ***Richthofen, Hettner.*** c) Development of Geographical thought upto world war II in France, USA and UK, and contribution of Blache, Mckinder, ***Davis*** , K. Sample. **Section – C : Development of Geographical Approaches** a) Quantitative revolution in Geography, Behavioural and Humanistic Geography. ***b)*** Contemporary movement in Geography; Positivism and Radicalism, Welfare Geography and ***Gender Issue.*** c) Post Modernism in Geography. **Books Recommended:** 1. Abler, Ronald: Adams, JohnS Gould, Peter (1971), **Spatial Organization: The Geographer's View of the world**, Prentice Hall, New Jercy. 2. Agnew, John et. Al (ed) (1996), **Human Geography**, Blackwell Publishers London. 3. Daniels, P., Bradshaw, M., Shaw, D. and Sidaway, J. (2000): **An Introduction to Human Geography. Issues for the 21st**	i. Physical *vs.* Human geography, ii. Systematic *vs.* Regional geography, ***iii. Theoretical vs. Applied geography*** c) Man Environment Relationship- Environmental determinism, Possibilism and neo- determinism. **Section – C : Contemporary Development** a) Quantitative Revolution in Geography. b) Behavioural, Humanistic & Welfare Geography. c) Recent Trends in Geography: Positivism, Pragmatism, Radicalism, Postmodernism, ***Feminism.*** **Books Recommended:** 1. Abler, Ronald: Adams, JohnS Gould, Peter (1971),**Spatial Organization: The Geographer's View of the world**, Prentice Hall, New Jercy. 2. Agnew, John et. Al (ed) (1996), **Human Geography**, Blackwell Publishers London. 3. Daniels, P., Bradshaw, M., Shaw, D. and Sidaway, J. (2000): **An Introduction to Human Geography. Issues for the 21st Century**. Prentice Hall, London.	

Century. Prentice Hall, London.
4. Dear, M. J. and Flusty, S. (2002): **The Spaces of Postmodernity: Readings in Human Geography**. Blackwell Publishers, Oxford.
5. Dikshit, R. D. (2004):**The art and science of Geography Intergated Readings** Prentice-Hall of India, New Delhi. (in English and Hindi).
6. Dikshit, R. D. (2004): **Geographical Thought. A Critical History of Ideas.** Prentice-Hall of India, New Delhi. (in English and Hindi).
7. Dikshit, R. D. (1999 & 2001): **Geographical Thought. A Contextual History of Ideas.** Prentice-Hall of India, New Delhi. (in English and Hindi).
8. Hartshorne, R. (1959), **Perspective on Nature of Geography**, Rand Mc Nally & Co.
9. Harvey, D. (1969): **Explanation in Geography**. Arnold, London.
10. Harvey, M. E. and Holly, P.B. (2002): **Themes in Geographic Thought**. Rawat Publications., Jaipur and New Delhi.
11. Johnston, R, Gregory D, Pratt G, Watts M. and Whatmore S. (2003): **The Dictionary of Human Geography**. Blackwell Publishers, Oxford. 5th edition.
12. Johnston, R.J. (1985): **The Future of Geography**, Metheun and Company Ltd., New York. (2003 edition published).
13. Johnston, R.J. and Sidaway, J.D. (2004):

4. Dear, M. J. and Flusty, S. (2002): **The Spaces of Postmodernity: Readings in Human Geography**. Blackwell Publishers, Oxford.
5. Dikshit, R. D. (2004):**The art and science of Geography Intergated Readings** Prentice-Hall of India, New Delhi. (in English and Hindi).
6. Dikshit, R. D. (2004): **Geographical Thought. A Critical History of Ideas.** Prentice-Hall of India, New Delhi. (in English and Hindi).
7. Dikshit, R. D. (1999 & 2001): **Geographical Thought. A Contextual History of Ideas.** Prentice-Hall of India, New Delhi. (in English and Hindi).
8. Hartshorne, R. (1959), **Perspective on Nature of Geography**, Rand Mc Nally & Co.
9. Harvey, D. (1969): **Explanation in Geography**. Arnold, London.
10. Harvey, M. E. and Holly, P.B. (2002): **Themes in Geographic Thought**. Rawat Publications., Jaipur and New Delhi.
11. Johnston, R, Gregory D, Pratt G, Watts M. and Whatmore S. (2003): **The Dictionary of Human Geography**. Blackwell Publishers, Oxford. 5th edition.
12. Johnston, R.J. (1985): **The Future of Geography**, Metheun and Company Ltd., New York. (2003 edition published).
13. Johnston, R.J. and Sidaway, J.D. (2004):

New York. (2003 edition published).
13. Johnston, R.J. and Sidaway, J.D. (2004): **Geography and Geographers**. 6th edition, Edward Arnold, London. 3.
14. Kapur, A. (ed.) (2001): **Indian Geography – Voice of Concern**. Concept Publishing. Company, New Delhi.
15. Martin, G. (2005): **All Possible Worlds. A History of Geographical Ideas**. 4th edition, Oxford University Press, New York.
16. Martin, 20. Peet, R. (1998): **Modern Geographical Thought**. Blackwell Publishers Inc, Massachusetts.
17. Soja, E (1989): **Post-modern Geographies**. Verso Press, London, Reprented 1997: Rawat Publications, Jaipur and New Delhi.
18. Taylor, G. (ed.) (1953): **Geography in the Twentieth Century**. Methuen and Company Ltd. and Company, London.
19. Tuan, Yi-Fu (1977): **Space and Place**. The Perspective of Experience. Edward Arnold, London.

२०. जैन एस. एम.: भौगोलिक चिन्तन का विकास (साहित्य भवन, आगरा)

२१. कौशिक, एस. डी. : भौगोलिक विचारधारा एवं विधि तंत्र (रस्तोगी प्रकाशन, मेरठ)

२२. माथुर एवं जोशी : भौगोलिक विचारधाराओ का इतिहास (आर. बी. एस. पब्लिशर्स, जयपूर)

२३. सिंह जे. : भौगोलिक चिन्तन के मूलाधर (वसुन्धरा प्रकाशन, नई दिल्ली)

२४. सिंह यू : भौगोलिक चिन्तन का विकास (कल्याणी पब्लिशर्स, नई दिल्ली)

Geography and Geographers. 6th edition, Edward Arnold, London. 3.
14. Kapur, A. (ed.) (2001): **Indian Geography – Voice of Concern**. Concept Publishing. Company, New Delhi.
15. Martin, G. (2005): **All Possible Worlds. A History of Geographical Ideas**. 4th edition, Oxford University Press, New York.
16. Martin, 20. Peet, R. (1998): **Modern Geographical Thought**. Blackwell Publishers Inc, Massachusetts.
17. Soja, E (1989): **Post-modern Geographies**. Verso Press, London, Reprented 1997: Rawat Publications, Jaipur and New Delhi.
18. Taylor, G. (ed.) (1953): **Geography in the Twentieth Century**. Methuen and Company Ltd. and Company, London.
19. Tuan, Yi-Fu (1977): **Space and Place**. The Perspective of Experience. Edward Arnold, London.
20. Rana Lalit, A Systematic Record of Evolution, Concept Publication Company, New Delhi.

२१. जैन एस. एम.: भौगोलिक चिन्तन का विकास (साहित्य भवन, आगरा)

२२. कौशिक, एस. डी. : भौगोलिक विचारधारा एवं विधि तंत्र (रस्तोगी प्रकाशन, मेरठ)

२३. माथुर एवं जोशी : भौगोलिक विचारधाराओ का इतिहास (आर. बी. एस. पब्लिशर्स, जयपूर)

२४. सिंह जे. : भौगोलिक चिन्तन के मूलाधर (वसुन्धरा प्रकाशन, नई दिल्ली)
सिंह यू : भौगोलिक चिन्तन का विकास (कल्याणी पब्लिशर्स, नई दिल्ली)

२५. डॉ. गोविन्द प्रसाद : भौगोलिक संकल्पनाएँ, डिसकवरी पब्लिकेशन, नई दिल्ली।

२६. मौर्य एस. डी. : भौगोलिक चिन्तन का इतिहास, प्रयाग पुस्तक भवन, इलाहाबाद।

२७. हुसैन माजिद : भौगोलिक चिन्तन का इतिहास, रावत पब्लिकेशन, जयपुर, दिल्ली।

	२८. प्रो. जगदीश सिंह : भौगोलिक चिन्तन का क्रम विकास। २९. त्रिपाठी एवं विरले : भौगोलिक चिन्तन का विकास एवं विधि तन्त्र, किताबघर, कानपुर।	

EXISTING SCHEME	PROPOSED SCHEME	REMARKS
1.2 Advance Geomorphology **Section – A : Geomorphology and Theories in Geomorphology** a) Geomorphology - Nature and Scope. ***b) Development of geomorphic ideas (Catastrophism and Uniformitarianism).*** c) The Earth's interior - structure and constitution, Recent Views. d) Theories in Geomorphology : - i. Theory of Isostasy- the concept of Sir George Airy and Pratt . ***ii. Concept of Geosynclines (Hall and Dana and E. Haug).*** iii. Theories of Orogenesis- Geosynclines orogen theory of Kober and ***Thermal contraction theory of Jeffereys.*** iv. Continental Drift theory of A.G. Wegner. **Section – B : Endogenetic Process** a) Plate tectonics- concept; plate margins and boundaries. b) ***Plate motion; Tectonic activities along the boundaries and*** Distribution of plates. c) Endogenetic processes - Faulting,	**1.2 Advance Geomorphology** **Section – A : Geomorphology and Theories in Geomorphology** a) Geomorphology - Nature and Scope. b) ***Development of geomorphological thought.*** c) The Earth's interior - structure and constitution, Recent Views. d) Theories in Geomorphology : - i. Theory of Isostasy- the concept of Sir George Airy and Pratt . ii. Theories of Orogenesis- Geosynclines orogen theory of Kober. iii.Continental Drift theory of A.G. Wegner. **Section – B : Endogenetic Process** a) Plate tectonics- concept; plate margins and boundaries and distribution of plates. b) Endogenetic processes - Faulting, Folding and their geomorphic expressions. c) Earthquake- concept, causes, classification, intensity and magnitude, geographical distribution. d) Volcanism- concept, mechanisms and causes; Volcanoes- classification, volcanic materials, Topography associated with volcanicity and geographical distribution of Volcanoes.	**'To make more consistant** *** To add relevant topics**

Folding and their geomorphic expressions.

d) Earthquake- concept, causes, classification, intensity and magnitude, Geographical distribution.

e) Volcanism- concept, mechanisms and causes; Volcanoes- classification, volcanic materials, Topography associated with volcanicity and geographical distribution.

Section – C : Exogenetic Process and Regional Geomorphology

a) Exogenetic process- Weathering, Mass wasting and Erosion – meaning, type and controlling factors .

b) Geomorphic processes and resulting landforms :
Fluvial, Arid, Glacial, Karst and Coastal.

c) Application of geomorphology to human activities :
Landuse, Mining, Agriculture.

Books Recommended:

1. Ahmed, E. (1985): **Geomorphology**.

e) Rocks and types of rocks.

Section – C : Exogenetic Process and Regional Geomorphology

a) Exogenetic process- Weathering, Mass wasting and Erosion – meaning, type and controlling factors.

b) Geomorphic processes and resulting landforms : Fluvial, Arid, Glacial, Karst and Coastal.

c) Application of geomorphology to human activities : Landuse, Mining, Agriculture.

Books Recommended:

1. Ahmed, E. (1985): **Geomorphology**. Kalyani Publishers, New Delhi.
2. Bloom.A. L. (1998/ 2001): **Geomorphology.** 3rd edition. Prentice Hall of India, New Delhi.
3. Chorley, R.J., Schumm S A and Sugden D E. (1984). **Geomorphology**. Methuen and Company Ltd., London.
4. Dayal, P. (1994): **A Text Book of Geomorphology**. Kalyani Publishers, New Delhi.
5. Fairbridge, R.W. (ed.) (1968): **Encyclopedia of Geomorphology**, Reinhold Book Corporation., New York.
6. Gregory, K.J. and Walling, D.E. (1973): **Drainage Basin Form and Process.** Edward

Kalyani Publishers, New Delhi.
2. Bloom.A. L. (1998/ 2001): **Geomorphology.**
3. 3rd edition. Prentice Hall **Geomorphology**. Methuen and Company Ltd., London.
4. Dayal, P. (1994): **A Text Book of Geomophology**. Kalyani Publishers, New Delhi.
5. Fairbridge, R.W. (ed.) (1968): **Encyclopedia of Geomorphology**, Reinhold Book Corporation., New York.
6. Gregory, K.J. and Walling, D.E. (1973): **Drainage Basin Form and Process.** Edward Arnold, London.
7. Jog, S. R. (ed.) (1995): **Indian Geomorphology** (2 vols.). Rawat Publications, Jaipur.
8. Kale, V. and Gupta, A. (2001): **Introduction to Geomorphology**. Orient Longman, Hyderabad.
9. King, C.A.M. (1966): **Techniques in Geomorphology**. Edward Arnold, London.
10. Husain Majid (2002), **Fundamentals of Physical Geography**, 2nd Ed. Rawat Pub. Jaipur and New Delhi.
11. Pethick, J. (1984/2000), **An Introduction to Coastal Geomorphology**. Arnold, London, Indian reprint 2000.
12. Sharma, P. R. (ed.), (1993): **Applied**

Arnold, London.
7. Jog, S. R. (ed.) (1995): **Indian Geomorphology** (2 vols.). Rawat Publications, Jaipur.
8. Kale, V. and Gupta, A. (2001): **Introduction to Geomorphology**. Orient Longman, Hyderabad.
9. King, C.A.M. (1966): **Techniques in Geomorphology**. Edward Arnold, London.
10. Husain Majid (2002), **Fundamentals of Physical Geography**, 2nd Ed. Rawat Pub. Jaipur and New Delhi.
11. Pethick, J. (1984/2000), **An Introduction to Coastal Geomorphology**. Arnold, London, Indian reprint 2000.
12. Sharma, P. R. (ed.), (1993): **Applied Geomorphology in Tropics**. Rishi Publications, Varanasi.
13. Singh, S. (2004): **Geomorphology**. Prayag Pustak Bhawan, Allahabad.
14. Singh, S. [1993]: **Physical Geography**. Prayag Pustak Bhawan, Allahabad.
15. Sparks, B.W. (1986): **Geomorphology**. Longmans, London.
16. Strahler, A.N. and Strahler, A.H.(1996), **Introducing Physical Geography**. John Willey and Sons, New York.
17. Strahler, A.N. (1988) **Earth Science**, Harper and Row Publishers, New Delhi (India reprient).
18. Thornbury, W.D. (2005): **Principles of Geomorphology**. John Wiley and Sons,

Geomorphology in Tropics. Rishi Publications, Varanasi.

13. Singh, S. (2004): **Geomorphology**. Prayag Pustak Bhawan, Allahabad.
14. Singh, S. [1993]: **Physical Geography**. Prayag Pustak Bhawan, Allahabad.
15. Sparks, B.W. (1986): **Geomorphology**. Longmans, London.
16. Strahler, A.N. and Strahler, A.H.(1996), **Introducing Physical Geography**. John Willey and Sons, New York.
17. Strahler, A.N. (1988) **Earth Science**, Harper and Row Publishers, New Delhi (India reprient).
18. Thornbury, W.D. (2005): **Principles of Geomorphology**. John Wiley and Sons, New Delhi (India Reprient).

१९ Wooldridge, S.W. and Morgan, R.S. (1959): **The Physical Basis of Geography: An Outline of Geomorphology.** Longman, London.

२१. पी. दयाल : भूआकृतिविज्ञान, शुक्ला बुक डिपो।

२२. सविन्द्र सिंह : भूआकृतिविज्ञान, प्रयाग पुस्तक भवन, इलाहबाद।

२३. सविन्द्र सिंह : भौतिक भूगोल, वसुन्धरा प्रकाशन, गोरखपुर १९९७।

२४. शर्मा एच. एस. : " भौतिक भूगोल " पंचशील प्रकाशन जयपुर।

२५. चतुर्भुज मामोरिया एवं जैन : भौतिक भूगोल एवं जीव मण्डल, सहित्य भवन, आगरा १९९६।

२६. वीरेन्द्र सिंह चौहान : भौतिक भूगोल, रस्तोगी पबिलकेशन्स, मेरठ १९९६।

New Delhi (India Reprient).

19. Wooldridge, S.W. and Morgan, R.S. (1959): **The Physical Basis of Geography: An Outline of Geomorphology.** Longman, London.

२०. पी. दयाल : भूआकृतिविज्ञान, शुक्ला बुक डिपो।

२१. सविन्द्र सिंह : भूआकृतिविज्ञान, प्रयाग पुस्तक भवन, इलाहबाद।

२२. सविन्द्र सिंह : भौतिक भूगोल, वसुन्धरा प्रकाशन, गोरखपुर १९९७।

२३. शर्मा एच. एस. : " भौतिक भूगोल " पंचशील प्रकाशन जयपुर।

२४. चतुर्भुज मामोरिया एवं जैन : भौतिक भूगोल एवं जीव मण्डल, सहित्य भवन, आगरा १९९६।

२५. वीरेन्द्र सिंह चौहान : भौतिक भूगोल, रस्तोगी पबिलकेशन्स, मेरठ १९९६।

२६. उपाध्याय एल. एन. : भौतिक भूगोल राजस्थान हिन्दी ग्रन्थ अकादमी, जयपुर।

२७. तिक्खा, रामनाथ : भौतिक भूगोल, केदारनाथ रामनाथ, मेरठ।

२७. उपाध्याय एल. एन. : भौतिक भूगोल राजस्थान हिन्दी ग्रन्थ अकादमी, जयपुर। २८. तिक्खा, रामनाथ : भौतिक भूगोल, केदारनाथ रामनाथ, मेरठ।		

EXISTING SCHEME	PROPOSED SCHEME	REMARKS
Paper 1.3 Economic & Resource Geography **Section – A : Economic Geography : An Introduction** a) Definition and scope of economic geography. b) Approaches to the study of economic geography. ***c) The environmental relations of the economy: Economic geography Vs Economics, economic geography Vs commercial geography.*** d) Economic activities : Factors affecting the location of economic activities. e) Trade : Evolution of international trade, ***type of international trade***,	**1.3 Economic & Resource Geography** **Section – A: Economic Geography: An Introduction** a) Definition and scope of economic geography. ***b)*** Approaches to the study of economic geography: ***Systematic, Regional, System Analysis, Behavioural, Welfare and Environmental.*** c) ***Sectors of Economy: Primary, Secondary, Tertiary and Quaternary***; Factors affecting the location of economic activities. ***d)*** Trade: Evolution of international trade, ***Factors affecting International trade, World Trading Blocs: NAFTA, EUROPEAN UNION, OPEC, SAARC.***	***To add relevant topics.**

Types of international trade, world trade pattern. **Section – B : Concept of Resource Geography and Resource Classification** i. ***Concept and scope of Resource Geography.*** ii. Meaning and concept of resource. iii. Classification of resources on the basis of availability of resource, distribution & frequency of occurrence, use of resources. iv. Classification of resource : ***Zimmerman & Owen***. **Section – C : World Resource & Its Conservation** *a)* ***Soil Resources: Composition of soil, factors affecting soil formation, classification of soil, soil erosion and its conservation.*** *b)* ***Water Resources : Distribution, water pollution and its conservation.*** *c)* ***Forest Resources: Classification of forest, Significance of forest, causes and effect of deforestation, conservation of forest.*** *d)* ***Mineral Resources: Type of minerals, distribution, production and international trade of*** iron ore,	**Section – B : Resource** a) Meaning and concept of resource. b) Classification of resources - on the basis of availability, distribution & frequency of occurrence and use of resources. c) Production and distribution of mineral resources : Iron ore and copper d) Energy Resources : I Conventional (i) Coal: Uses of coal, Principal coalfields of the world, Production of coal in the world; Decline of coal in world fuel supplies. (ii) Petroleum: Origin and uses of oil, Distribution of oilfields in the world, Production and Trade of Oil in the world, Petroleum Reserves and the ***future of the oil industry.*** ***II Non – Conventional : Solar, Wind.*** **Section – C:** ***Industries And Its Theories*** ***a) History of Industrial Development; classification of industries*** ***b) Location Theories: Weber and Losch*** ***c) Iron and Steel Industry; Changing location of the Iron and Steel Industry*** ***d) Cotton Textile Industry: Production, Distribution and Trade in the world*** ***Note - Stencils are to be permitted in the examination**	

copper, ***conservation of mineral resources.***

e) Energy Resources: Classification of energy, distribution and production of coal & petroleum; Sources of non-convectional energy.

***Note – Stencils are to be permitted in the examination**

Books Recommended:

1. Adams, W. M. (1990): **Green Development: Environment and Sustainability in the Third World.** Routledge and Chapman Hall, London.
2. Alam, S. Manzoor and Kidwai, Atiya Habeeb (eds.) (1987): **Regional Imperatives in Utilization and Management of Resources : India and the U.S.S.R.** Concept Publishing. Company, New Delhi.
3. Bruce, Mitchell (1989) **Geography and Resource Analysis,** John Wiley and Son, New York.
4. Burton, I and Kates, R.W (1978): **Readings in Resource Management and Conservation**. McGraw Hills, New York.
5. Clark, G. L., Feldman, M.P. and Gertler, M.S. (eds.) (2000): **The Oxford Handbook of Economic Geography.** Oxford University Press, Oxford and New York.
6. Conking, E. C. and Yeates, M. (1996) "Man's Economic Environment" McGraw – Hill Book Company.

Books Recommended:

1. Adams, W. M. (1990): **Green Development: Environment and Sustainability in the Third World.** Routledge and Chapman Hall, London.
2. Alam, S. Manzoor and Kidwai, Atiya Habeeb (eds.) (1987): **Regional Imperatives in Utilization and Management of Resources : India and the U.S.S.R.** Concept Publishing. Company, New Delhi.
3. Bruce, Mitchell (1989) **Geography and Resource Analysis,** John Wiley and Son, New York.
4. Burton, I and Kates, R.W (1978): **Readings in Resource Management and Conservation**. McGraw Hills, New York.
5. Clark, G. L., Feldman, M.P. and Gertler, M.S. (eds.) (2000): **The Oxford Handbook of Economic Geography.** Oxford University Press, Oxford and New York.
6. Conking, E. C. and Yeates, M. (1996) "Man's Economic Environment" McGraw – Hill Book Company.
7. Freeman, T. W. (1972): **Geography and Planning**. Freeman and Company , New York.

7. Freeman, T. W. (1972): **Geography and Planning**. Freeman and Company , New York.
8. Friedman, J. and Alonso, W. (1964) Regional Development and Planning : A Reader, The M. I. T.
9. Gore, C. (1984) 'Regional in Question : Space, Development Theory and Regional Policy' , Methuen.
10. Guha, J.L. and P.R.Chatturaj (1994) **Economic geography- A Study of Resources,** The World Press Pvt. Ltd. Calcutta
11. Gupta, P and Sadasyuk, G. (1968): **Economic Regionalization of India: Problems and Prospects**. Census of India, New Delhi
12. Hartshorn, T. A. and Alexander, J. W. (1988) 'Economic Geography', Prentice Hall, New Delhi.
13. Holechek, J. L., Cole, R., Fisher, J., and Valdez, R. (2000): **Natural Resources: Ecology, Economics and Policy**. Prentice-Hall, New Jersey.
14. Hurst, E. M. (1972) 'The Geography of Economic Behaviour : An Introduction', Duxbury Press, California.
15. Levag & Goh Cherry (1982), Human & Economic Geography, Oxford University, Press Oxford London.
16. Martin, R.H. and F.L. Warren. (1959) **Natural Resources.** McGraw Hill Book Co. London.
17. Martino, R.L. (1969) **Resource Management**. Mc Graw Hill Book Co.,

8. Friedman, J. and Alonso, W. (1964) Regional Development and Planning : A Reader, The M. I. T.
9. Gore, C. (1984) 'Regional in Question : Space, Development Theory and RegionalPolicy' Methuen.
10. Guha, J.L. and P.R.Chatturaj (1994) **Economic geography- A Study of Resources,** The World Press Pvt. Ltd. Calcutta
11. Gupta, P and Sadasyuk, G. (1968): **Economic Regionalization of India: Problems and Prospects**. Census of India, New Delhi
12. Hartshorn, T. A. and Alexander, J. W. (1988) 'Economic Geography', Prentice Hall, New Delhi.
13. Holechek, J. L., Cole, R., Fisher, J., and Valdez, R. (2000): **Natural Resources: Ecology, Economics and Policy**. Prentice-Hall, New Jersey.
14. Hurst, E. M. (1972) 'The Geography of Economic Behaviour : An Introduction', Duxbury Press, California.
15. Levag & Goh Cherry (1982), Human & Economic Geography, Oxford University, Press Oxford London.
16. Martin, R.H. and F.L. Warren. (1959) **Natural Resources.** McGraw Hill Book Co. London.

Co. London.
17. Martino, R.L. (1969) **Resource Management**. Mc Graw Hill Book Co., London.
18. Mitchell, B. (1979): **Geography and Resource Analysis.** Longman, London.
19. Mitchell, B. (1997): **Geography and Environmental Management**. Longman, Harlow and London.
20. Mitra, A. (2000): **Resource Studies**; Shridhar Publishers., Kolkata.
21. Murari Lal, 2008, Economic Geography, New Dehli.
22. Negi, B.S.(2000) **Geography of Resources**, Kedar Nath and Ram Nath,Meerut.
23. Owen, Oliver, S.(1971) **Natural Resource Conservation** : A Ecological Approach, Mc Million New Delhi.
24. Prasad, H. et al.(eds.) (2005): **Sustainable Management of Water Resources**, Tara Book Agency, Varanasi.
25. Raja, M. (1989) **Renewable Resources, Development,** Concept Pub. New Delhi.
26. Ramesh, A. (ed.) (1984): **Resource Geography.** Heritage Publishers, New Delhi.
27. Rao, P. K. (2001): **Sustainable Development: Economics and Policy**. Blackwell Publication, Oxford.
28. Raza, M (ed.) (1989): **Renewable Resources for Regional Development: The Indian and the Soviet Experience**. Concept

London.
18. Mitchell, B. (1979): **Geography and Resource Analysis.** Longman, London.
19. Mitchell, B. (1997): **Geography and Environmental Management**. Longman, Harlow and London.
20. Mitra, A. (2000): **Resource Studies**; Shridhar Publishers., Kolkata.
21. Murari Lal, 2008, Economic Geography, New Dehli.
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23. Owen, Oliver, S.(1971) **Natural Resource Conservation** : A Ecological Approach, Mc Million New Delhi.
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25. Raja, M. (1989) **Renewable Resources, Development,** Concept Pub. New Delhi.
26. Ramesh, A. (ed.) (1984): **Resource Geography.** Heritage Publishers, New Delhi.
27. Siddharth, K. (2006) Economic Geography, Kisalaya Publications, New Delhi.
28. Wheeler J. O. Mullar, O. M. Thrall, G. I. and Timothy, J. F. (1988) "Economic Geography", John Wiley and Sons Inc. New York.
29. Zimmermann, E. W. (1951) **World Resources and Industries,** Harper and Brothers, New Delhi.

Publishing Company, New Delhi.
29. Reid, S. (1995): **Sustainable Development**. Earthscan, London.
30. Reid, S. (2000): **Global Environmental Outlook**. Earthscan, London.
31. Siddharth, K. (2006) Economic Geography, Kisalaya Publications, New Delhi.
32. Singh, A and Raja, M. (1982) **Geography of Resources and conservation** (Hindi Ed.) Pragati Prakashan, Meerut.
33. Singh, M. B. et. al. (eds.) (2005): **Sustainable Management of Natural Resources**. Tara Book Agency, Varanasi.
34. Sundaram, K.V.; Mani, M. and Jha, M.M. (eds.) (2004): **Natural Resource Management and Livelihood Security**. Concept Publishing Company, New Delhi.
35. Thakur, B., (ed.) (2003): **Perspectives in Resource Management in Developing Countries. Vol. I : Resource Management: Theory and Techniques**, Concept Publishing Company, New Delhi.
36. Trivedi, P.R., Singh, U.K., Sudershan, K., Tuteja, T.K. (1994): **International Encyclopedia of Ecology and Environment**. Vol. 5: National Resource Conservation, Indian Institute of Ecology and Environment, New Delhi.
37. Valdiya, K. S. (1987): **Environmental Geology: Indian Context.** Tata McGraw Hill Publishing Company. Ltd., New Delhi.
38. Wheeler J. O. Mullar, O. M. Thrall, G. I. and

30. एस. डी. कौ"ाक एवंम डॉ. अमृता, संसाधन भूगोल, रस्तोगी एण्ड रस्तोगी पब्लिक"ान।
३१. माथुर एवंम नारायण, संसाधन भूगोल, वसुधंरा पब्लिके"ान।
३२. भार्मा, हरिशचंद्र, १९८३, भारत का आर्थिक भूगोल तथा भारतीय अर्थ"ास्त्र, रमे"ा बुक डिपो, जयपुर।
३३. सिंह, का"ीनाथ १९७८ मानव और आर्थिक भूगोल, तारा पब्लिकेशन्स, वाराणसी - १३.
३४. गौंड, कृपा"ांकर १९५६ भारत का प्रादेशिक तथा आर्थिक भूगोल : इन्टरमिडियेट कक्षाओं के लिए, चन्द्र, दिल्ली।
३५. सक्सेना, भांकर सहाय, १९४९, आर्थिक भूगोल, रामनारायण लाल, इलाहाबाद।
३६. सिंह जे. पी. भार्मा, २०००, संसाधन भूगोल, ज्ञानोदय प्रका"ान, गोरखपुर।
३७. सिंह के. एन., और सिंह जे., २००३, आर्थिक भूगोल के मूल तत्व, ज्ञानोदय प्रका"ान, गोरखपुर।
३८. सिंह, का"ीनाथ २००९, आर्थिक भूगोल के मूल तत्व : संसाधन उपयोग, संरक्षण एवं आर्थिक विकास का अध्ययन, ज्ञानोदय प्रकाशन।
३९. श्रीवास्तव, वी. के. २००२, आर्थिक भूगोल, वसुन्धरा प्रका"ान।
४०. मामोरिया, चतुर्भुज, २००८, आर्थिक भूगोल, साहित्य भवन पब्लिक"ान, आगरा।
४१. जाट, बी. सी. २००६, आर्थिक भूगोल, पंच"ाील प्रका"ान, जयपुर।
४२. एस. डी. कौ"ाक एवंम डॉ. अमृता ,संसाधन भूगोल, रस्तोगी एण्ड रस्तोगी पब्लिक"ान।
४३. माथुर एवंम नारायण, संसाधन भूगोल, वसुधंरा पब्लिके"ान।

Timothy, J. F. (1988) "Economic Geography", John Wiley and Sons Inc. New York.

39. Zimmermann, E. W. (1951) **World Resources and Industries,** Harper and Brothers, New Delhi.

४०. एस. डी. कौशिक एवंम डॉ. अमृता, संसाधन भूगोल, रस्तोगी एण्ड रस्तोगी पब्लिकेशन।

४१. माथुर एवंम नारायण, संसाधन भूगोल, वसुधंरा पब्लिकेशन।

४१. शर्मा, हरिशचंद्र, १९८३, भारत का आर्थिक भूगोल तथा भारतीय अर्थशास्त्र, रमेश बुक डिपो, जयपुर।

४२. सिंह, काशीनाथ १९७८ मानव और आर्थिक भूगोल, तारा पब्लिकेशन्स, वाराणसी - १३.

४३. गौंड, कृपाशंकर १९५६ भारत का प्रादेशिक तथा आर्थिक भूगोल : इन्टरमिडियेट कक्षाओं के लिए, चन्द्र, दिल्ली।

४४. सक्सेना, शंकर सहाय, १९४९, आर्थिक भूगोल, रामनारायण लाल, इलाहाबाद।

४५. सिंह जे. पी. 'र्मा, २०००, संसाधन भूगोल, ज्ञानोदय प्रकाशन, गोरखपुर।

४६. सिंह के. एन., और सिंह जे., २००३, आर्थिक भूगोल के मूल तत्व, ज्ञानोदय प्रकाशन, गोरखपुर।

४७. सिंह, काशीनाथ २००९, आर्थिक भूगोल के मूल तत्व : संसाधन उपयोग, संरक्षण एवं आर्थिक विकास का अध्ययन, ज्ञानोदय प्रकाशन।

४८. श्रीवास्तव, वी. के. २००२, आर्थिक भूगोल, वसुन्धरा प्रकाशन।

४९. मामोरिया, चतुर्भुज, २००८, आर्थिक भूगोल, साहित्य भवन पब्लिकेशन, आगरा।

५०. जाट, बी. सी. २००६, आर्थिक भूगोल, पंचशील प्रकाशन, जयपुर।

५१. एस. डी. कौशिक एवंम डॉ. अमृता ,संसाधन भूगोल, रस्तोगी एण्ड रस्तोगी पब्लिकेशन।

५२. माथुर एवंम नारायण, संसाधन भूगोल, वसुधंरा पब्लिकेशन।

EXISTING SCHEME	PROPOSED SCHEME	REMARKS
1.4 Social Sciences Perspectives (Inter Disciplinary) *RATIONALE:* The perspectives in Social Sciences are deeply influenced by values, beliefs and historical concerns. This course introduces the ways in which concepts and theories in social science disciplines are constructed and become instrumental in the understanding of social phenomena. The goal of this course is to acquaint and engage students in discussing different social science disciplines in an integrated manner in terms of perspective, conceptual framework and substantive coverage of relevant social issues. Such a holistic view encompassing different social science disciplines will provide insights to interpret social events at any given point of time. An understanding of the basic ingredients of social science disciplines will help in contextualizing social reality.	***1.4 Introduction to Geography*** **(Inter Disciplinary)** ***Section-A : Geography its nature and development*** ***a) Geography- Nature, Meaning, Scope and branches*** ***b) Place of Geography in the classification of science*** ***c) Main regions of geographical knowledge in Ancient Time with special reference to Indus Valley and Mesopotamia*** ***d) Cosmogony and cosmology in ancient India*** ***e) Geographical knowledge in ancient India (description of physical and human geography)*** ***Section-B : Physical Dimension in Geography*** ***a) Brief introduction of the Universe and solar system*** ***b) Origin of Earth, The Shape of earth- Evidence of the earth sphericity*** ***c) The earth as a Rotating planet and effects of earth rotation (season, day and night)***	***To make familier with basic concepts of geography to non geography students as well as geography students.**

Section – A : Introductory a) What Constitutes Social Sciences: (i) Social Science as a Scientific Pursuit (ii) Difference between Natural and Social Sciences b) Brief History of the Growth of Social Science (using sociology of knowledge framework). c) Key Social Sciences Disciplines and linkages Between Them and Growth of New Specialism with Interdisciplinary Orientation. **Topic Specific Readings :** 1) Mckenzie: A Guide to Social Sciences. (for topic 1). 2) Wallestein: Open the Social Sciences (for topic 2). 3) Nagel, Ernest: The Structure of Science (for topic 2). 4) 'History as a Social Science' : International Social Science Journal, UNESCO (for topic	***d) The Geographic Grid- (Latitude, Longitude, World Time zone, International Date Line)*** ***e) Phase of moon, Solar and Lunar eclipse*** ***Section –C : The Human and Applied Dimension of Geography*** ***a) Evolution of man, human races, classification and distribution according to G. Taylor*** ***b) Human adaptation to the environment with special reference to Eskimos, Bushman and Gujjars*** ***c) Early economic activities of mankind with special reference to gathering, Hunting and shifting cultivation*** ***d) Man Environment interrelation with respect to population size*** ***e) Application of Geography and use of aerial photographs, R.S & GIS, study of Geography in India.*** ***Books Recommended:*** ***1. Dikshit R.D. Geographical Thought- A contextual History of Ideas. Prentice Hall of India Pvt. Ltd. 2000*** ***2. Dohrs. F.E. and Sommers, L.W. (sds.) Introduction to Geography, Thomas Y. Crowell Co. Chicago, 1959*** ***3. Husain, Majid: Evolution of Geographical Thought, Rawat Publications, Jaipur, 1984***	

Section – B : Major Paradigm Shifts in Social Sciences

a) Historical, Descriptive, Normative Approach
b) Structural - Functional Approach
c) Marxist Approach:
(1) Phenomenology
(2) Systems Approach

Topic Specific Readings :

1. Kuhn T.S. : Structure of Scientific Revolution (for all topic), 1970, London, The univernity of Chicago Press.
2. Mukherjee, Ramkrishna : A Sociology of Sociology (for topic 2), 1979, New Delhi, Allied Pub.
3. Turner, Jonathan : The Structure of Sociological Theory, Jaipur, Rawat Pub. 1987.
4. Ritzer : Classical Sociological Theory, Borton, McGraw Hill, 2000.
5. Mckenzie : A Guide to Social Sciences (for topic 1).
6. Abraham Francis : Modern Sociological Theory (for topic 3), 1985, Delhi, OUP.
7. Deutsch, K. : Nerves of Government (for topic 5).
8. Deutsch, K. : Article in International Social Science Journal - (for all topics).

4. ***Dohrs, F. E. and Sommers, L. W. (eds.) Introduction to Geography, Thomas Y. Crowell Co., New York, 1967.***
5. ***Johnston, R. J., Philosophy and Human Geography: An Introduction to Contemporary Approaches, Edward Arnold, London, 1983.***
6. ***Stoddart, D. R. (ed.), Geography, Ideology and Social Concern, Blackwell, Oxford, 1981***
7. ***Lownsburg. J.F. and Aldrich, F.T.: Introduction to Geographical Methods and Techniques, Charles Marrili, Columbus, 1979***
8. ***Matthews J.A. and Herbert D.T.; Geography: A very short introduction, oxford university press, New Yark, 2009.***
9. ***Minshull, R: The changing Nature of Geography. Hutchinson University Library, London, 1970***
10. ***Wooldridge S.W.: The Geographer As Scientist, Thomas Nelson and Sons Ltd. London. 1956.***
11. ***Strahler, A.N. (1988) Earth Science, Harper and Row Publishers, New Delhi (India reprient).***
12. ***Wooldridge, S.W. and Morgan, R.S. (1959): The Physical Basis of Geography: An Outline of Geomorphology. Longman, London***
13. ***Singh, S. [1993]: Physical Geography. Prayag Pustak Bhawan, Allahabad***
14. ***Husain Majid (2002), Fundamentals of Physical Geography, 2nd Ed. Rawat Pub. Jaipur and New Delhi***
15. ***De Blij. B.d. Human Geography. John Wiley***

9. ;ोगेश अटल : समाज शास्त्र : एक विधिवत अध्ययन, १९७०, दिल्ली, कल्याणी प्रकाशन।

Section – C : Emerging Concerns in Social Sciences

a) Emerging Approaches : Post - Modernism, Interdisciplinary.

b) New Research Foci - Environment, Globalization.

c) Growth of Social Sciences in India, Brief History and Emerging concerns.

Books Recommended:

1. Steger : Globalization : A Very Short Introduction, OUP (for topic-2) Oxford 2003.
2. Brundland Committee Report, 'Our Common Future' UNESCO (for topic-2).
3. International Social Science Journal, Special Edition (for topic-1).
4. Atal Yogesh; Social Science : The Indian Scene. (for topic-3), 1976, New Delhi, Abhinav Publication.
5. Dube, S.C. : Social Sciences and Social Realities, IIAS, Shimla, 1976. (for topic-3).
6. Atal Yogesh; Dube, S.C. : On Crisis and Commitment in Social Sciences, 1983, Abhinav Pub. (for topic-3), New

and Son, New York.

16. ***Dreze Jean, Amartya Sen, Economic Development and Social Opportunity, Oxford University press, New Delhi, 1996 .***
17. ***Gregory, D. and UJ. Larry. (eds.) Social relations and Spatial Structures, McMillan, 1985***
18. ***Haq, Mahbubul: Reflection on Human Development. Oxford University Press.New Delhi***
19. ***Singh,L.R. (2008) Fundamentals of Human Geography, Sharda Pustak Bhawan, Allahabad***
20. ***Unwin, Tim (1992): The Place of Geography Longman Scientific & Technical, New York.***
21. ***Campbell, J.B. (1987): Introduction to Remote sensing Guilfor, New York, USA***
22. ***Leong Goh Cheng (2003): Certificate Physical and Human Geography. Oxford University Press.***

Delhi. 7. Gupta Surendra. K. : Emerging Social Science Concerns : 2004, Delhi, Concept Pub. (for topic-3) 8. Joshi, P.C. : Social Science and Development (Quest for Relevance) Haranand Pub., New Delhi, 1995.		

EXISTING SCHEME	PROPOSED SCHEME	REMARKS
Paper 1.5 Practical (Cartographic Techniques) a) Cartography – Techniques and Tools of Cartography. b) Topographical map reading – A brief history of Topographical maps, calculate nearest neighbour analysis. c) Profiles – The method of drawing a profile, Types of profiles (serial, superimposed, projected, composite). d) Mathematical Construction of Map Projections:- a. Conical Projections: i) Simple conical projection with one standard parallel. ii.Conical projection with two standard parallel. iii.Bonne's Projection iv.Polyconic Projection	**1.5 Practical (Cartographic Techniques)** a) Cartography – Techniques and Tools of Cartography. b) Topographical map reading – A brief history of Topographical maps, calculate nearest neighbour analysis. c) Profiles – The method of drawing a profile, Types of profiles (serial, superimposed, projected, composite). d) Mathematical Construction of Map Projections:- *i) Conical Projections:* - Simple conical projection with one standard Parallel - Conical projection with two standard parallel. - Bonne's Projection - Polyconic Projection *ii) Cylindrical Projections:* - Cylindrical equidistant projection - Mercator's projection	***To add significant topics.**

b. Cylindrical Projections: i. Cylindrical equidistant projection ii. Mercator's projection c. Zenithal Projections: i. Polar zenithal equal area projection ii. Orthographic polar Zenithal projection d. Conventional Projection: – Mollweide's Projection ***Note – Non – scientific calculators are allowed in the examination.** **<u>Books Recommended</u>**: 1. Ahmed, K. S. : Simple map projections, Friends Book House, Aligarh. 2. Lawrence, G. R. P. : methods, London, 1971. 3. Mishra, R. P. and A. Ramesh : Fundamentals of Cartography, Concept Publishers, New Delhi. 4. Singh, R. L. and Dutt, P. K. : Elements of Practical Geography, Students Friends, Allahbad. 5. Singh, R. L. : Elements of Practical Geography, Kalyani Publishers.	*iii) Zenithal Projections:* - Polar zenithal equal area projection - Orthographic polar Zenithal projection Conventional Projection: - Mollweide's Projection ***e) Representation of statistical data: - One dimensional, Two dimensional and Three dimensional diagrams (2 Diagrams from each).*** ***f) Geological Maps: Determination of Dip and Strike.*** ***Note – Non – scientific calculators are allowed in the examination.** **<u>Books Recommended</u>**: 1. Ahmed, K. S. : Simple map projections, Friends Book House, Aligarh. 2. Lawrence, G. R. P. : methods, London, 1971. 3. Mishra, R. P. and A. Ramesh : Fundamentals of Cartography, Concept Publishers, New Delhi. 4. Singh, R. L. and Dutt, P. K. : Elements of Practical Geography, Students Friends, Allahbad. 5. Singh, R. L. : Elements of Practical Geography, Kalyani Publishers.	

EXISTING SCHEME	PROPOSED SCHEME	REMARKS
Paper 2.1 Regional Development And Planning **Section - A : Concept of Planning and Region** a) Concept of Planning. b) Types and Levels of Planning. c) Need for Planning. d) Concept of region and its types. e) Delineation of Regions. **Section - B : Planning Regions and Theoretical Framework** a) Concept of Planning Regions: Characteristics of Planning Regions. b) Hierarchy of Planning regions. c) The need for planning regions and demarcation of planning regions. d) Theoretical framework of regional planning : Central Place Theory, Growth Pole Theory. **Section - C : Development and Regional Disparities** a) Concept of Development: Indicators and Measurement of Human Development. b) Planning in India: Historical Development and Current Status.	**2.1 Regional Development And Planning** **Section - A : Concept of Planning and Region** a) Concept of Planning. b) Types and Levels of Planning. c) Need for Planning. d) Concept of region and its types. e) Delineation of Regions. **Section - B : Planning Regions and Theoretical Framework** a) Concept of Planning Regions: Characteristics of Planning Regions. b) Hierarchy of Planning regions. c) The need for planning regions and demarcation of planning regions. d) Theoretical framework of regional planning : Central Place Theory, Growth Pole Theory. **Section - C : Development and Regional Disparities** a) Concept of Development: Indicators and Measurement of Human Development. b) Planning in India: Historical Development and Current Status. c) Five Year Plans in India – goal and	***No change**

c) Five Year Plans in India – goal and objectives. d) Regional Disparities in India: Concept of imbalances and inequalities in India. **Books Recommended:** 1. Bhat, L.S., 1973, Regional Planning in India, Statistical Publishing Society, Calcutta. 2. Chand, M. Puri, & V.K., 1983, Regional Planning in India, Allied Publishers, New Delhi. 3. Chandana, R.C., 2000, Regional Planning, Kalyani Publishers, Ludhiana. 4. Friedman, J., Alonso, W., 1967, Regional Development and Planning – A Reader, MIP Press, Cambridge, Hars. 5. Glasson, 1980, Regional Planning, Hutchinson, London. 6. Glikson, A., 1955, Regional Planning and Development, Netherlands, Universities Foundation of International Co-operation, London. 7. Mishra, R.P., 1969, Regional Planning, Concepts, Techniques and Policies, University of Mysore, Mysore. 8. Mishra, R.P., et. al., 1974, Regional Development in India, Institute of Development Studies Mysore. 9. Mitra, A., 1965, Levels of Regional	objectives. d) Regional Disparities in India: Concept of imbalances and inequalities in India. **Books Recommended:** 1. Bhat, L.S., 1973, Regional Planning in India, Statistical Publishing Society, Calcutta. 2. Chand, M. Puri, & V.K., 1983, Regional Planning in India, Allied Publishers, New Delhi. 3. Chandana, R.C., 2000, Regional Planning, 4. Kalyani Publishers, Ludhiana. 5. Friedman, J., Alonso, W., 1967, Regional Development and Planning – A Reader, MIP Press, Cambridge, Hars. 6. Glasson, 1980, Regional Planning, Hutchinson, London. 7. Glikson, A., 1955, Regional Planning and Development, Netherlands, Universities Foundation of International Co-operation, London. 8. Mishra, R.P., 1969, Regional Planning, Concepts, Techniques and Policies, University of Mysore, Mysore. 9. Mishra, R.P., et. al., 1974, Regional Development in India, Institute of Development Studies Mysore. 10. Mitra, A., 1965, Levels of Regional Development, Census of India, Vol. 1,	

Development, Census of India, Vol. 1, Part I (A) and (B). 10. Ray Chaudhary, J., 2001, An Introduction to Development and Regional Planning, Orient Longman, Hyderabad. 11. V. Nath, 2009, Regional Development and Planning in India, Concept Publishers, New Delhi.	Part I (A) and (B). 11. Ray Chaudhary, J., 2001, An Introduction to Development and Regional Planning, Orient Longman, Hyderabad. 12. V. Nath, 2009, Regional Development and Planning in India, Concept Publishers, New Delhi.	

EXISTING SCHEME	PROPOSED SCHEME	REMARKS
Paper 2.2 Climatology & Oceanography **Section - A : Nature of Climatology and Structure of Atmosphere** a) Definition & scope of climatology. b) Structure and composition of Atmosphere, Insolation and heat budget of the earth. c) Distribution of Global Temperature: Vertical and Horizontal, Temperature inversion. d) Distribution of atmospheric pressure: pressure belts and winds. e) Jet streams and monsoon winds. **Section - B : Special Weather Phenomenon** a) Ocean atmospheric interaction: EL Nino, Southern oscillation (ENSO) and La-Nina. b) Atmospheric moisture: Humidity, evaporation and condensation, Precipitation: Types and world pattern of Precipitation. c) Concepts of Air masses: Types and distribution. d) Fronts: Origin, growth and classification of fronts. Frontogenesis and Frontolysis. e) Cyclones: Tropical and Temperate; Anticyclones.	**Paper 2.2 Climatology** **Section - A : Climatology and Structure of Atmosphere** a) Definition & scope of climatology. b) Structure and composition of Atmosphere, Insolation and heat budget of the earth. c) Distribution of Global Temperature: Vertical and Horizontal, Temperature inversion. d) Atmospheric Equilibrium: Stability and Instability e) Distribution of atmospheric pressure: pressure belts and winds. **Section - B : Special Weather Phenomenon** a) Jet streams and monsoon winds. b) Ocean atmospheric interaction: EL Nino, Southern oscillation (ENSO) and La-Nina. c) Atmospheric moisture: Humidity, evaporation and condensation, Precipitation: Types and world pattern of Precipitation. d) Concepts of Air masses: Types and distribution. e) Fronts: Origin, growth and classification of fronts. Frontogenesis and Frontolysis.	***To study climatology in detail as a separate paper** ***To make more consistant.**

Section - C : Introduction to Oceanography a) Oceanography – Meaning, Scope and Development. b) Salinity and Density of Ocean water. c) Currents of Atlantic and Pacific Ocean. d) Tides producing forces, Types, Importance & Origin of Tides, Equilibrium Theory, Progressive wave theory of Tide origin. e) Coral reefs: Types and formation condition of Growth, Origin of Coral reefs subsidence theory of Darwin and Dana; Non- Subsidence theory of Murray, Glacial Control theory of Daly. **Books Recommended:** 1. Barry, R.G. and Chorley P.J.(1998) : Atmosphere, Weather and Climate, Routledge, London and New York. 2. Critchifield, J.H.(2009) : General Climatology. Prentice Hall, India, New Delhi. 3. Lydolph, P.E.(1985) : The Climate of the Earth. Rowman. 4. Lal, D.S.(2006) : Climatology. Sharda Pustak Bhawan, Allahabad. 5. Rohli V. Robert & Vega J. Anthony (2007): Climatology, Jons And Bartlett Pub. 6. Miller A. Austin (2006) : Climatology, Shubhi Publication. 7. Mehtani S. & Sinha A. (2010) : Climatology Commonwealth Publishers.	***Section – C : Disturbances and Applied Climatology*** ***a) Cyclones: Tropical and Extra Tropical.*** ***b) Anticyclones: Types of anticyclones, blocking highs.*** ***c) Climate Types and their distribution.*** ***d) Theories of Climatic changes: Astronomical or Orbital Theories, Theories Involving Change in the Composition of Atmosphere, Theories Involving Change in Solar Radiation.*** ***e) Applied Climatology: Climate and Natural vegetation, Climate and Agriculture, climate and Housing, Climate and diseases, Climate and Urban planning*** **Books Recommended**: 1. Barry, R.G. and Chorley P.J.(1998) : Atmosphere, Weather and Climate, Routledge, London and New York. 2. Critchifield, J.H.(2009) : General Climatology. Prentice Hall, India, New Delhi. 3. Lydolph, P.E.(1985) : The Climate of the Earth. Rowman. 4. Lal, D.S.(2006) : Climatology. Sharda Pustak Bhawan, Allahabad. 5. Rohli V. Robert & Vega J. Anthony (2007): Climatology, Jons And Bartlett Pub. 6. Miller A. Austin (2006) : Climatology, Shubhi Publication.	

8. Hussain majid (2003) : Climatology, Anmol Publications. 9. Malhotra Ravi (2010) : Climatology, Global Vision Publishing House. 10. Davis, R.J.A. 1986, Oceanography- An introduction of the marine Environment, Win C. Brown, Iowa. 11. King, C.A., Oceanography for Geographers, Edward Arnold Pub. 12. Murray, S.J., 1913, Ocean, A General account of the Science of the sea, Thorton Butter Worth, London. 13. Siddhartha, K. 1999, oceanography, A Brief Introduction, Kisalaya Pub. Pvt. Ltd., New Delhi. 14. Singh, S. 2002, Physical Geography, Prayag Pub., Allahabad. 15. Stahler, A.N. Stahler A.M., 1997, Geography and man's environment, John Wiley and sons, New York. 16. Thurnman, H.V., 1978, Introduction to oceanography, Charles E. Merrill Pub. Co., London. 17. Weyl, P.K. 1970, Oceanography and Introduction of the Marine Environment, John Wiley and Sons Ltd., London.	7. Mehtani S. & Sinha A. (2010) : Climatology Commonwealth Publishers. 8. Hussain majid (2003) : Climatology, Anmol Publications. 9. Malhotra Ravi (2010) : Climatology, Global Vision Publishing House. 10. Singh, S. 2002, Physical Geography, Prayag Pub., Allahabad. 11. Stahler, A.N. Stahler A.M., 1997, Geography and man's environment, John Wiley and sons, New York.	

EXISTING SCHEME	PROPOSED SCHEME	REMARKS
2.3 Geography of India **Section – A : Physical Features of India** a) Physiographic divisions of India: Evolution, Division and Significance of each division. b) Major Rivers Systems of India - Himalayan and the Peninsular river systems. c) Seasons of India (detail study of Monsoon). d) Climatic regions of India: Koeppen's climatic regions. e) Problems of Indian Soils: Soil erosion, ***Salinity and alkalinity***, methods of soil conservation. **Section – B : Economic & Human Aspects of India** ***a)*** Major mineral resources: ferrous – iron ore and manganese; and non-ferrous – ***bauxite and copper.*** b) Power resources: conventional – thermal; and non-conventional – solar, wind and ***hydro***. c) Major industries: ***cement***, iron-steel and cotton textile industries and Industrial regions of India. ***d)*** Population: distribution and growth; ***tribal population: distribution pattern and***	**2.3 Geography of India** **Section – A : Physical Features of India** a) Physiographic divisions of India: Evolution, Division and Significance of each division. b) Major river systems of India: Himalayan and the Peninsular river systems. c) Seasons of India: detail study of Monsoon. d) Climatic regions of India: Koeppen's climatic regions. e) ***Soils of India***, major problems and methods of conservation. **Section – B : Economic & Human Aspects of India** a) Major mineral resources: Iron ore, manganese, ***mica***. b) Energy resources: conventional (coal) and non-conventional (solar, wind). c) Major industries: Iron-steel, cotton textile inustries and Industrial regions of India and their ***problems.*** ***d)*** Population: Growth, distribution, ***density, sex composition*** e) Transportation: Road and Rail. **Section – C : Geography of Rajasthan** a) Physiographic Divisions of Rajasthan.	***To make more consistant**

belts.

e) Transportation: rail, road and ***air.***

Section – C : Geography of Rajasthan

a) Physiographic Divisions of Rajasthan.
b) Drainage Pattern of Rajasthan.
c) Irrigation Projects: Indira Gandhi Canal, Chambal Valley and Mahi Project.
d) Dairy development in Rajasthan.
e) Problem of Desertification.

*** Note – Stencils are to be permitted in the examination.**

Books Recommended:

1. Bhalla, L. R.: Geography of Rajasthan, Kuldeep Publications.
2. Chauhan, T. S.: Geography of Rajasthan, Jaipur.
3. Das, P. K., the Monsoon, New Delhi.
4. Govt. of Rajasthan: Tecno-Economic Survey of Rajasthan, Govt. of Rajasthan Publication.
5. Khullar D.R., A Comprehensive Geography.
6. Krishnan, M.S., Geology of India and Burma.
7. Mishra, V.C.: Geography of Rajasthan.
8. Puri, G. S., Indian forest Ecology, New Delhi.
9. Ray Chaudhary. S.P. Land and soil, New

b) Drainage system of Rajasthan.
c) Irrigation Projects: Indira Gandhi Canal, Chambal Valley and Mahi Project.
d) Dairy development in Rajasthan.
e) Problem of Desertification.

*** Note – Stencils are to be permitted in the examination.**

Books Recommended :

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2. Chauhan, T. S.: Geography of Rajasthan, Jaipur.
3. Das, P. K., the Monsoon, New Delhi.
4. Govt. of Rajasthan: Tecno-Economic Survey of Rajasthan, Govt. of Rajasthan Publication.
5. Khullar D.R., A Comprehensive Geography.
6. Krishnan, M.S., Geology of India and Burma.
7. Mishra, V.C.: Geography of Rajasthan.
8. Puri, G. S., Indian forest Ecology, New Delhi.
9. Ray Chaudhary. S.P. Land and soil, New Delhi.
10. Sharma, B. L.: Agricultural Typology of Rajasthan.
11. Singh Gopal, Geography of India.
12. Spate, O. H. K., & Learrmonth, A.T.A., India & Pakistan, London.
13. The Gazetter of India Vol 1, 1.
14. Wadia, D. N., Geology of India, London.

Delhi. 10. Sharma, B. L.: Agricultural Typology of Rajasthan. 11. Singh Gopal, Geography of India. 12. Spate, O. H. K., & Learrmonth, A.T.A., India & Pakistan, London. 13. The Gazetter of India Vol 1, 1. 14. Wadia, D. N., Geology of India, London.		

EXISTING SCHEME	PROPOSED SCHEME	REMARKS
2.4 Computer Applications (Inter Disciplinary) RATIONALE : Day by day, the use of computer is increasing in the society : Computer application is included in the syllabus to harness its use in social science research, But since, the students of social science may have a faint idea of computers, basic concept is included. This will help student to generate interest computer. Thereafter, software packages which are used to in analysis of Social Research is included, so that it prepares students in their research. Knowledge about internet is also provided to enable students in search of knowledge. Some field / Lab work is	***2.4 Oceanography*** ***Section – A : Introduction to Oceanography*** ***a) Oceanography: Definition and Scope.*** ***b) The morphology of the Ocean Bottom: Hypsometric Curve; Bottom Reliefs of Pacific, Atlantic and Indian Oceans.*** ***c) Temperature of the Ocean: Sources of Heat, Factors affecting the Horizontal distribution of surface Temperature of the oceans, Vertical distribution of Temperature.*** ***d) Annual and Diurnal Range of Temperature.***	***To study Oceanography in detail as a seprate paper** ***To make more consistant.**

included to help students translate their acquired knowledge into practice. **Section – A** **<u>Introduction to Computer</u> :** Elements of a Computer System, Block Diagram of Computer System and Function of its Components, Evolution of Computers and Classification, Concept of Hardware and Software. Introduction to Operating System (DOS, Windows and UNIX). **Section – B** **(a) Pc Software :** Word Processing : Creating and Saving Document, Formatting, Inserting Table and Pictures, and Mail Marge. Spread Sheet : Creating Worksheet, Use of Function and Creating Charts. Introduction to Presentation Packages, Graphics and Animation Packages. **(b) Introduction to Computing :** Programming Language, System and Application Software, Compiler and Interpreters, Concept of a Program,	***e) The Vertical Temperature distribution in adjacent seas.*** ***Section - B : Oceanic Salinity And Density*** ***a) Salinity of Ocean Water: Various Sources of Oceanic salinity, Factors causing variation in Salinity.*** ***b) Horizontal and Vertical distribution of Salinity.*** ***c) Salinity of Partially Enclosed Seas.*** ***d) Density of Ocean Water: Factors controlling the Density of Ocean Water.*** ***e) Horizontal and Vertical distribution of Density.*** ***Section – C : Circulation Of Oceanic Water And Coral Reefs*** ***a) Ocean Currents: Definition, Types of ocean Currents. Generating and Modifying factors of Ocean Currents*** ***b) The Currents of the Pacific, Atlantic and Indian Ocean.*** ***c) Tides: Tide producing Forces, Types of Tides, Theories of Ocean Tides: Equilibrium Theory, Progressive Wave Theory and Stationary Wave Theory.*** ***d) Coral Reefs: Required Conditions of Coral Growth, Types of Coral Reefs; Theories of Coral Reef Formation: Darwin's Subsidence***	

Program Design & Development, Algorithms and Flowchart Development.

Section – C

v. **Internet & Web :**

Introduction to Popular Packages on Concept of Computer Communication, Compute Network (LAN, WAN, MAN), Internet, Internet Services – www, Email etc.

vi. **Introduction to Computer Application in Social Science :-**

Data Base Management System, Statistical Packages, Expert System, Multilingual Applications.

Lab Work :

a) Working with Windows.

b) Working with MS Office Packages (MS – Word, Excel, Power Point).

c) Working with Corel Draw.

d) Using Internet Service.

e) Using Subject Specific Application Package.

Theory, The Non- Subsidence - Theory of Murry.

e) Man and Marine Resources, Marine Pollution, Ocean as Modifier of Greenhouse Effect.

Books Recommended:

1. Davis, R.J.A. 1986, Oceanography- An introduction of the marine Environment, Win C. Brown, Iowa.
2. King, C.A., Oceanography for Geographers, Edward Arnold Pub.
3. Murray, S.J., 1913, Ocean, A General account of the Science of the sea, Thorton Butter Worth, London.
4. Siddhartha, K. 1999, oceanography, A Brief Introduction, Kisalaya Pub. Pvt. Ltd., New Delhi.
5. Thurnman, H.V., 1978, Introduction to oceanography, Charles E. Merrill Pub. Co., London.
6. Weyl, P.K. 1970, Oceanography and Introduction of the Marine Environment, John Wiley and Sons Ltd., London.

EXISTING SCHEME	PROPOSED SCHEME	REMARKS
2.5 Practical (Morphometric Analysis) **Morphometric Analysis of Drainage Basin :** Linear Aspects: Stream ordering based on Horton and Strahler, Bifurcation ratio; Areal Aspects: Geometry of basin shape, Basin Parameter, Length and Area, Stream frequency and Drainage density. Relief Aspects: Hypsometric analysis- Hypsometric curve and Integral Hypsometric curve, Altimetric analysis. Slope Analysis - Average Slope (Wentworth's method), Relative relief (Smith's method). ***Note – Non – scientific calculators are allowed in the examination.** **<u>Books Recommended</u>**: 1. Monkhouse, F. J. and H.R. Wilkinson (1980), **Maps and Diagrams**, B. I. Publications, Bombay.	**2.5 Practical (Morphometric Analysis)** **Morphometric Analysis of Drainage Basin :** Linear Aspects: Stream ordering based on Horton and Strahler, Bifurcation ratio; Areal Aspects: Geometry of basin shape, Basin Parameter, Length and Area, Stream frequency and Drainage density. Relief Aspects: Hypsometric analysis- Hypsometric curve and Integral Hypsometric curve, Altimetric analysis. Slope Analysis - Average Slope (Wentworth's method), Relative relief (Smith's method). ***Note – Scientific calculators are allowed in the examination.** **<u>Books Recommended</u>**: 1. Monkhouse, F. J. and H.R. Wilkinson (1980), **Maps and Diagrams**, B. I. Publications, Bombay. 2. Singh, R. L. (1979), **Elements of Practical**	***No change**

2. Singh, R. L. (1979), **Elements of Practical Geography**, Kalyani Publishers, New Delhi.

3. Singh, S. (1997), **Geomorphology**, Prayag Pustak Bhawan, Allahabad.

4. Punmia, B. C. (1981), Surveying, Standard Book House, New Delhi.

5. Sharma, J. P. (1996), Prayogik Bhoogol, Restogi Publications, Meerut.

6. Singh, R. L. (1979), Elements of Practical Geography, Kalyani Publishers, New Delhi.

7. Yadav, H.L., (2000), Prayogik Bhoogol Ke Aadhar (Fundamentals of Practical Geography), Radha Publication, New Delhi.

८. सिंह एवं कनोजिया : मानचित्र तथा प्रयोगात्मक भूगोल, सेन्ट्रल बुक डिपो, इलाहाबाद।

९. तिवारी, विश्वनाथ : प्रायोगिक भूगोल, रामप्रसाद एण्ड संस, आगरा।

१०. वर्मा एल. एन. एवं लोढा, आर. एम. : प्रयोगात्मक भूगोल राजस्थान हिन्दी ग्रंथ अकादमी, जयपुर।

११. शर्मा जे. पी. : प्रयोगात्मक भूगोल, रस्तोगी प्रकाशन, मेरठ।

Geography, Kalyani Publishers, New Delhi.

3. Singh, S. (1997), **Geomorphology**, Prayag Pustak Bhawan, Allahabad.

4. Punmia, B. C. (1981), Surveying, Standard Book House, New Delhi.

5. Sharma, J. P. (1996), Prayogik Bhoogol, Restogi Publications, Meerut.

6. Singh, R. L. (1979), Elements of Practical Geography, Kalyani Publishers, New Delhi.

7. Yadav, H.L., (2000), Prayogik Bhoogol Ke Aadhar (Fundamentals of Practical Geography), Radha Publication, New Delhi.

8- सिंह एवं कनोजिया : मानचित्र तथा प्रयोगात्मक भूगोल, सेन्ट्रल बुक डिपो, इलाहाबाद।

९. तिवारी, वि"वनाथ : प्रायोगिक भूगोल, रामप्रसाद एण्ड संस, आगरा।

१०. वर्मा एल. एन. एवं लोढा, आर. एम. : प्रयोगात्मक भूगोल राजस्थान हिन्दी ग्रंथ अकादमी, जयपुर।

११. भार्मा जे. पी. : प्रयोगात्मक भूगोल, रस्तोगी प्रका"ान, मेरठ।

EXISTING SCHEME	PROPOSED SCHEME	REMARKS
3.1 Quantitative Techniques & Research Methodology **Section – A : Measures of Central Tendency** a) Frequency distribution : Histogram and Graphical Representation. b) Measures of Central tendency : mean, median and mode; coefficient of variation. c) Measures of Dispersion: Mean deviation, Standard deviation and quartile deviation. d) Correlation analysis: Karl Pearson's & Spearman's Rank Correlation. e) Sampling and its types. **Section – B : Test of Significance** a) Chi Square test, student 't' test. b) Test for distribution in Space : Nearest Neighbour analysis spacing of Settlement. ***c) Time series – Graphs, growth and decline.*** ***d) Index numbers : Trend lines by least – square method.*** **Section – C : Significance of Research** a) Significance of Research in Geographical Studies. b) Research – Selection of Research	**3.1 Quantitative Techniques & Research Methodology** **Section – A : Measures of Central Tendency** a) Frequency distribution : Histogram and Graphical Representation. b) Measures of Central tendency : mean, median and mode; coefficient of variation. c) Measures of Dispersion: Mean deviation, Standard deviation and quartile deviation. d) Correlation analysis: Karl Pearson's & Spearman's Rank Correlation. e) Sampling and its types. **Section – B : Test of Significance** a) Student 't' test ***b) Mann – Whitney U – Test*** ***c) 'F' test*** d) Chi Square test ***e) Analysis of variance*** **Section – C : Significance of Research** a) Significance of Research in Geographical Studies. b) Research – Selection & Identification of Research Problem c) Research Design-Meaning, characteristics, steps and types. d) Hypothesis-Meaning, characteristics, types	***To make more consistant.** ***To add relavant topics**

Problem : Hypotheses; Research Design – source of data collection, method and techniques, ***organizational frame***; Analysis. ***c) Research Project and Report Writing.*** ***Note – Non – scientific calculators are allowed in the examination.** **<u>Books Recommended</u>**: 1. Chorley R. J. and Haggett, P., 1967, Model in Geography : Physical and information, University paperbacks. Methuen, London. 2. Ebdon, D., 1977, Statistics in Geography, Basil Blackwell. 3. Flowerdew, R. and Martin, D., 1999, Methods in Human Geography : a guide for students doing research project, Longman. 4. Frank, H. and Althoen, S. C., 1994, Statistic : Concepts and Applications, Cambridge University Press. 5. Gregory, S., 1978, Statistical Methods for Geographers, Longman. 6. Hammond, R. and McCullagh, P., 1991, Quantitative Techniques in Geography, Clarendon Press, Oxford. 7. Har Prasad, 1992, Research Method and	and testing ***e)*** Data- sources, collection techniques, Analysis**.** ***Note – Non – scientific calculators are allowed in the examination.** **<u>Books Recommended</u>**: 1. Chorley R. J. and Haggett, P., 1967, Model in Geography : Physical and information, University paperbacks. Methuen, London. 2. Ebdon, D., 1977, Statistics in Geography, Basil Blackwell. 3. Flowerdew, R. and Martin, D., 1999, Methods in Human Geography : a guide for students doing research project, Longman. 4. Frank, H. and Althoen, S. C., 1994, Statistic : Concepts and Applications, Cambridge University Press. 5. Gregory, S., 1978, Statistical Methods for Geographers, Longman. 6. Hammond, R. and McCullagh, P., 1991, Quantitative Techniques in Geography, Clarendon Press, Oxford. 7. Har Prasad, 1992, Research Method and Techniques in Geography, Rawat Publications. 8. Mishra, H. N. and Singh, V. P. (Eds), 1998, Research Methodology : Social, spatial and policy dimensions, Rawat Publications. ७. डॉ. आर. एन. त्रिवेदी एवं डॉ. डी. पी. भुक्ला : रिसर्च मैथ्डो लॉजी, सी. बी. डी.,	

Techniques in Geography, Rawat Publications. 8. Mishra, H. N. and Singh, V. P. (Eds), 1998, Research Methodology : Social, spatial and policy dimensions, Rawat Publications.	जयपुर। ८. हीरालाल यादव (राधा) : भोध - प्रविधि एवं मात्रात्मक भूगोल, नई दिल्ली। ९. श्रीवास्तव एवं प्रसाद : भूगोल की सांख्यिकीय विधियाँ, गोरखपुर। १०. कैला"ा नाथ नागर : सांख्यिकीय के मूल तत्व, मीनाक्षी प्रका"ान, मेरठ।	

EXISTING SCHEME	PROPOSED SCHEME	REMARKS
Paper 3.2 Political Geography **Section – A : Introduction to Political Geograpl and Geopolitics** a) Definition and scope of political geography and its relation with other social sciences. b) Development of Political Geography. c) Approaches to the study of Political Geography – Political-Environmental approach, Power analysis approach and Functional approach. d) Laws of Spatial Growth of states. e) Concept of Geopolitics. **Section – B : Concept of States and Nation** a) States and Nation: A historical perspective. b) The elements of a State and difference between Nation and State. c) Concept and classification of Frontiers and Boundaries. d) Buffer zones. e) Concept of core areas. **Section – C : Global Strategies and International Problems** a) Geo Strategic Hypothesis-Theory of Heartland and Rimland. b) The round world perspective: Global strategies in Air age. c) Concept of Federalism and Politico-	**3.2 Political Geography** **Section – A : Introduction to Political Geography and Geopolitics** a) Definition and scope of political geography and its relation with other social sciences. b) Development of Political Geography. c) Approaches to the study of Political Geography – Political-Environmental approach, Power analysis approach and Functional approach. d) Laws of Spatial Growth of states. e) Concept of Geopolitics. **Section – B : Concept of States and Nation** a) States and Nation: A historical perspective. b) The elements of a State and difference between Nation and State. c) Concept and classification of Frontiers and Boundaries. d) Buffer zones. e) Concept of core areas. **Section – C : Global Strategies and International Problems** a) Geo Strategic Hypothesis-Theory of	***No Change**

Geographic factor in rise of Indian federalism. d) International problems related with boundaries: Sino-India and India-Pakistan border. e) Environmental problems and world politics. **Books Recommended:** 1. Alexander, J. L. M. : World Political Patterns, John Murray and Co., London. 2. Boggs, S.W. : International Boundaries, Columbia University Press, New York. 3. Borman, I. : The New World-Problem in Political Geography, World Co., Yonkers, on Hudson. 4. Dixit, R.D. : Political geography, the Spatiality of Politics, Tata McGraw-Hill Publishing Co. Ltd., New Delhi. 5. Goblet, Y.M. : Political Geography and world Map, Alfred A. Knob, New York. 6. Huntington, E. : World Power and Evolution, Yale University Press, New Haven. 7. Moodie, A. E. : Geography behind Politics, Hutchinson's University Library, London. 8. Sukhwal, B. L. : India-A Political Geography, Allied Publishers, New Delhi.	Heartland and Rimland. b) The round world perspective: Global strategies in Air age. c) Concept of Federalism and Politico-Geographic factor in rise of Indian federalism. d) International problems related with boundaries: Sino-India and India-Pakistan border. e) Environmental problems and world politics. **Books Recommended:** 1. Alexander, J. L. M. : World Political Patterns, John Murray and Co., London. 2. Boggs, S.W. : International Boundaries, Columbia University Press, New York. 3. Borman, I. : The New World-Problem in Political Geography, World Co., Yonkers, on Hudson. 4. Dixit, R.D. : Political geography, the Spatiality of Politics, Tata McGraw-Hill Publishing Co. Ltd., New Delhi. 5. Goblet, Y.M. : Political Geography and world Map, Alfred A. Knob, New York. 6. Huntington, E. : World Power and Evolution, Yale University Press, New Haven. 7. Moodie, A. E. : Geography behind Politics, Hutchinson's University Library, London. 8. Sukhwal, B. L. : India-A Political Geography, Allied Publishers, New Delhi. 9. Fahrer, Chuck, Glassner, Martin Ira (2003):	

9. Fahrer, Chuck, Glassner, Martin Ira (2003): Political Geography, Wiley.
10. Painter, Joe and Jeffrey, Dr. Alex (2009): Political Geography. Sage publications Ltd; 2nd ed.
11. Gallaher, Carolyn., Dahlman, Carl T., Gilmartin, Mary and Mountz, Alison (2009): Key Concept in Political Geography. Sage Publications Ltd.
12. Blacksell, Mark (2005): Political Geography. Routledge.
13. Jones, Rhys., Woods, Michael and Jones, Martin (2009): An Introduction to Political Geography: Space, Place and Politics. Routledge.
14. Flint, Colin., Taylor, Peter James (2007): Political Geography: World-economy, nation-state, and locality (5th ed.). Pearson/Prentice Hall.
15. Agnew, John A., Mitchell, Katharye., Tuathail, GearÓid Ó. (2003): A Companion to Political Geography. Wiley-Blackwell.
16. Chopra, Girish (2006): Political Geography. Commonwealth Publishers.
17. Singh, I. (2006): Political Geography. Alfa Publication.

Political Geography, Wiley.
10. Painter, Joe and Jeffrey, Dr. Alex (2009): Political Geography. Sage publications Ltd; 2nd ed.
11. Gallaher, Carolyn., Dahlman, Carl T., Gilmartin, Mary and Mountz, Alison (2009): Key Concept in Political Geography. Sage Publications Ltd.
12. Blacksell, Mark (2005): Political Geography. Routledge.
13. Jones, Rhys., Woods, Michael and Jones, Martin (2009): An Introduction to Political Geography: Space, Place and Politics. Routledge.
14. Flint, Colin., Taylor, Peter James (2007): Political Geography: World-economy, nation-state, and locality (5th ed.). Pearson/Prentice Hall.
15. Agnew, John A., Mitchell, Katharye., Tuathail, GearÓid Ó. (2003): A Companion to Political Geography. Wiley-Blackwell.
16. Chopra, Girish (2006): Political Geography. Commonwealth Publishers.
17. Singh, I. (2006): Political Geography. Alfa Publication.

EXISTING SCHEME	PROPOSED SCHEME	REMARKS
Paper 3.3 Systematic Agriculture Geography **Section – A : Nature & Scope of Agricultural Geography** a) Nature, scope and significance of Agricultural Geography. b) Approaches to the study of Agricultural Geography – Commodity Approach, Regional Approach and systematic approach. c) Factors influencing patterns and farm techniques. d) Soils – Major soil types, distribution & their characteristics. e) Environmental degradation – Causes and consequences. **Section – B : Agricultural Regions & Typology** a) Whittleseys's classification of Agricultural system. b) Agricultural location theory of Von-thunen and their limitations. c) Concept of Agricultural regions and delimitation. d) Agricultural Typology. e) Methods of Delimitations of crop combination Region – J.C. Weaver's least square and K. Doi's minimum	**3.3 Systematic Agriculture Geography** **Section – A : Nature & Scope of Agricultural Geography** a) Nature, scope and significance of Agricultural Geography. b) Approaches to the study of Agricultural Geography – Commodity Approach, Regional Approach and systematic approach. c) Factors influencing patterns and farm techniques. d) Soils – Major soil types, distribution & their characteristics. e) Environmental degradation – Causes and consequences. **Section – B : Agricultural Regions & Typology** a) Whittleseys's classification of Agricultural system. b) Agricultural location theory of Von-thunen and their limitations. c) Concept of Agricultural regions and delimitation. d) Agricultural Typology. e) Methods of Delimitations of crop combination Region – J.C. Weaver's least square and K. Doi's minimum deviation method.	***No change**

deviation method. **Section – C : Modern Concepts of Agricultural Geography** a) Concepts in Agricultural geography – Sustainable development. Social forestry, Agribusiness, and dryland farming. b) Land classification and land capability. c) Agricultural transformation in India after Independence – Land reforms and land use policy. d) White and Green revolution in India, Regional patterns of productivity. e) Food deficiet and surplus regions in India, Problems of Indian Agriculture, management and planning, National Agriculture Policy. **Books Recommended:** 1. Ali, Mohammad (1981): Situation of Agricultural Geography, Rajesh publication, New Delhi, 2. Ali, Mohammad: Dynamics of Agriculture Development in India, Concept Publication Co. Delhi. 3. Leong, Gon Cheng & Morgan, Gilliam C.: Human and Economic Geography, Oxford University Press. 4. Kostowickie, 2: Agricultural Typology, Polish Academy Warsaw. 5. Singh, R.L. (Ed.): Applied Geography, BHU press, Varanasi.	**Section – C : Modern Concepts of Agricultural Geography** a) Concepts in Agricultural geography – Sustainable development. Social forestry, Agribusiness, and dryland farming. b) Land classification and land capability. c) Agricultural transformation in India after Independence – Land reforms and land use policy. d) Green and White revolution in India, Regional patterns of productivity. e) Food deficiet and surplus regions in India, Problems of Indian Agriculture, management and planning, National Agriculture Policy. **Books Recommended:** 1. Ali, Mohammad (1981): Situation of Agricultural Geography, Rajesh publication, New Delhi, 2. Ali, Mohammad: Dynamics of Agriculture Development in India, Concept Publication Co. Delhi. 3. Leong, Gon Cheng & Morgan, Gilliam C.: Human and Economic Geography, Oxford University Press. 4. Kostowickie, 2: Agricultural Typology, Polish Academy Warsaw.	

6. Rummey A Thomas (2005): The study of Agriculture Geography: A Scholarly guide & Bibliography, The Scarecrow press, Lnc.
7. Singh & Dhillon (2004) : Agriculture Geography(3rd Edition), Tata McGraw – Hill.
8. Hanif M. (2005) : Encyclopedia of Agriculture Geography, Anmol Publications PVT Ltd.
9. Chauhan Dharmendra Singh (2010) Agricultural Geography, : Ritu Publications.
10. Chopra Girish (2006) : Agricultural Geography, Commonwealth Publishers.
11. Shafi Mohammed (2000): Agricultural Geography of South Asia., Macmillan Publishers India.
12. Raina J. L. (2008) : Agriculture Geography , Pointer Publishers.

13- हुसैन, माजिद : कृषि भूगोल, रावत पब्लिकेशन, जयपुर।

१४. कुमार, प्रमीला एवं शर्मा, श्रीकमल : कृषि भूगोल, मध्य प्रदेश हिन्दी ग्रन्थ अकादमी, भोपाल।

5. Singh, R.L. (Ed.): Applied Geography, BHU press, Varanasi.
6. Rummey A Thomas (2005): The study of Agriculture Geography: A Scholarly guide & Bibliography, The Scarecrow press, Lnc.
7. Singh & Dhillon (2004) : Agriculture Geography(3rd Edition), Tata McGraw – Hill.
8. Hanif M. (2005) : Encyclopedia of Agriculture Geography, Anmol Publications PVT Ltd.
9. Chauhan Dharmendra Singh (2010) Agricultural Geography, : Ritu Publications.
10. Chopra Girish (2006) : Agricultural Geography, Commonwealth Publishers.
11. Shafi Mohammed (2000): Agricultural Geography of South Asia., Macmillan Publishers India.
12. Raina J. L. (2008) : Agriculture Geography , Pointer Publishers.

13. हुसैन, माजिद : कृषि भूगोल, रावत पब्लिकेशन, जयपुर।

१४. कुमार, प्रमीला एवं शर्मा, श्रीकमल : कृषि भूगोल, मध्य प्रदेश हिन्दी ग्रन्थ अकादमी, भोपाल।

EXISTING SCHEME	PROPOSED SCHEME	REMARKS
Paper 3.4 Research Techniques in Social Science (Inter Disciplinary) *RATIONALE :* The Social investigation of a social phenomenon requires certain procedures and techniques used in survey research methods which may cut across various disciplines. Research Methodology, thus, is not discipline specific, but may be used by the students of various disciplines in their research work. Therefore, it is essential that the students of various disciplines, especially in social sciences, are exposed and made aware of the various procedures and techniques of research methods. The present syllabus, which will be common for the students of various social science discipline, has been designed to achieve dual goals. The emphasis in this paper is more on the procedure and techniques of survey research requires for social investigation.	***3.4 (a) Population Geography (Optional)*** ***Section - A : Scope of Population Geography & Demographic Characteristics*** ***a) Definition and Scope of population geography and its relation with other sciences.*** ***b) Recent trends in population geography.*** ***c) Factors affecting distribution and density of population.*** ***d) Population distribution and growth in the world.*** ***e) Demographic characteristics of developed and developing nations.*** ***Section - B : Theories of Population Growth and Migration*** ***a) Theories of population growth - Malthusian theory, Optimum population theory. and theory of demographic transition.*** ***b) Factors affecting population change, Population resource regions of the world.*** ***c) Migration: Major factors, Consequences and types of migration.*** ***d) Theories of migration: Lee, Rewensteen and Zelinsky's model.***	***Population geography has been replaced from 4.2(b) optional to 3.4(a) as an optional paper in place of interdisciplinary .**

Section – A : Techniques of Selection :

Formulation of Research Problem.

Devising Research Strategy in terms of

a) Goals - Exploratory, Descriptive, Explanatory, Comparative (Cross sectional, longitudinal, spatial comparison).
b) Selecting Field (Universe).
c) Selecting a Sample.

Section – B

Section – B : Techniques of Data Collection :

a) Types of data : Primary and secondary data.
b) Techniques of primary data collection : Observation, Interview, Questionnaire and Schedule.
c) Sources of secondary data.
d) Content Analysis.

Section – C : Techniques of Analysis and Presentation :

a) Coding and Tabulation.
b) Scale and Index Construction : SES, SPE.
c) Tabular Presentation :
(i) Univariate, Bivariate, Multivariate.

e) Important migration of the world.

Section - C : Population Geography in India

a) Development of population geography in India.
b) Birth rate and Death rate in India.
c) Population growth of India.
d) Demographic structure, occupation structure and livelihood.
e) Internal migration and population policy of India.

**** Note – Stencils are to be permitted in the examination***

Books Recommended:

1. ***Chandana, R. C (2008): A Geography of population, Kalyani Publishers, New Delhi.***
2. ***Clarks : Population Geography.***
3. ***Jones : A population Geography.***
4. ***Woods : Theoretical Population Geography.***
5. ***Wilson : Population Geography.***
6. ***Davis : The Population of India and Pakistan.***
7. ***Dyson and Crook : India's Demography.***
8. ***Gary, L., Peters, Robert, P. Larkin (2008):***

(ii) Interpreting Tables : concept of data matrix and property space.

b) Analysis of quantitative data : Measures of central tendency (Arthmetic Mean, Median, Mode), Standard deviation, Correlation Coefficient. Chi-square.

e) Analysis of qualitative data : Association of attributes.

f) Graphic Presentation : Histogram, Bar diagram, Pie (Use of computer).

g) Report Writing and preparation of Bibliography.

h) An Introduction to S. P. S. S.

Note : Internal assessment will be based on practical work.

Population Geography: Problems, Concepts and Prospects. Kendall Hunt Publishing.

9. ***K. Bruce Newbold (2010): Population Geography:- Tools and Issues. Rowman and Littlefield Publishers, Inc.***
10. ***Qazi, S.A. (2006): Population Geography. APH publishing corporation.***
11. ***Graham, David (2009): Population Geography. Routledge.***
12. ***Hassan, Mohd Izhar (2005): Population Geography. Rawat Publications.***
13. ***Chopra, Girish (2006): Population Geography. Commonwealth Publishers.***
14. ***Tripathi, R.K. (2007): Population Geography. Commonwealth Publishers.***

१५. पडां, बी. पी. : जनसंख्या भूगोल, मध्यप्रदे''। हिन्दी ग्रंन्थ अकादमी, भोपाल।

Books Recommended:

1. De Vaus D.A. : Surveys in Social Research (5th edition), Rawat Publication, Jaipur and New Delhi.
2. Sellitz, G., Jahoda : Research Methods in Social Relations, New York : M., Cook Stuart W. Holt Runehar & Winston.
3. Young P. V. : Scientific Social Survey and Research, Prentice Hall 1966, New Delhi.
4. Goode and Hatt : Methods of Social Research, McGraw Hill.

Specific Readings :

Section – A

a) Sanders William B. and Pinhay Thomas K. : The Conduct of Social Research, CBS College Publishing, Reinhart and Winston (First three chapters).

b) Moser C. and Kaltong G. (1971) : Survey Method in Social Investigations, Heinemann London.

c) Merton Robert K., Broom Leonard, Cottrel Leonard S. : Sociology Today: Problems and Prospects, Vol. I Harper and Raw Publishers, New York (Introduction).

3.4 (b) SOCIAL GEOGRAPHY (Optional)

Section – A : Introduction to Social Geography

a) Meaning , Scope and Aim of Social Geography.

b) Approaches to the study of social geography: Ecological approach, Regional approach, Historical approach , Welfare approach ,System approach and Behavioral approach.

c) Society: Definition ,Origin and Classification of Society .

d) Social Process: Forms of Social Interaction (Cooperation, Accommodation, Assimilation ,Competition, and Conflict).

e) Social Stratification, Caste and Class. Social Organization and Groups.

Section – B : Society and Culture

a) Society and Culture.

b) Cultural Hearths.

c) Cultural Diffusion: Definition, Elements, and causes of diffusion. Barriers of diffusion, Effects and Types of diffusion. Hagerstand's model of diffusion.

d) Cultural Realms : Meaning of Cultural Realms ,Basis of delimitation of cultural realms, Modern classification of the cultural realms.

e) Cultural Regions of the world: Meaning and Bases of delimitation of cultural regions, United States of America cultural region, British Island cultural region, German cultural region, Russian cultural region, Arab cultural region, Mesopotamia cultural

Section – B a) Madge John : Tools of Social Science, Longman 1963 (Chapter, 2, 3, 4). b) Bulmer Martin (ed) : Sociological Research Methods : An Introduction, Macmillan (For Secondary data Part IV). c) Oppenheim A.N. : Questionnaire Design and Attitude Measurement, Heinemann London (For Questionnaire). **Section – C** a) Babbie E.R. : Survey Research Methods. Wadsworth Publishing Company, Belmont California (Chapter 13, 14). b) Lazarsfeld Paul F. and Rosenburd Morris (ed) : "Language of Social Research", New York : The Free Press 1955 (For Concept of Property Space). c) Rossenberg Morris : The Logic of Survey Analysis, Basic Book, INC. Publishers, New York, London (For Task Reading). d) Shah Vimal P. : Reporting Research, Rachana Prakashan, Ahemedabad. **Books Recommended:** 1. Sijoberg Gideon and Nett Roger : A Methodology for Social Research, Rawat	***region, Indian cultural region.*** ***Section – C : Social Planning in India*** ***a) Social Geography of India: Indian Society in Historical Perspective, Traditional Hindu Social Organization.*** ***b) Status of Women in India.*** ***c) Social Change in India.*** ***d) Human Development in India.*** ***e) Social Planning in India: Meaning, Importance and Major aspects of Social planning. Social Welfare Programmes in Planned Period (Child Welfare Programme, Women Welfare Programme, Labour Welfare Programme, Family Planning and Family Welfare Programme, Adult Education Programme).*** **Books Recommended:** 1. ***Ahmad, Aijazuddin : Social Geography, Rawat Publications, Jaipur And New Delhi.*** 2. ***Chris Hamnett : Social Geography (Ed.) : A Reader, Wiley – Blackwell, A John Wiley & Sons Lit., Publication, New York.*** 3. ***Guha, B. S. Racial Elements in India's Population.*** 4. ***Ghurye, B. S. Caste and Class in India.*** 5. ***Jones, E & Eyles, J., An Introduction to Social Geography.*** 6. ***Jones, E. (ed.) Readings in Social Geography.*** 7. ***Mohanthy, G. S., Social & Cultural Geography***	***New paper has been introduced in place of interdisciplinary .**

Publication, Jaipur 2002.

2. Festinger Leon and Katz Daniel : Research Methods in the Behavioural Science, Amerind Publishing, New Delhi 1976.
3. Rosenburg Kenneth : Statistics for Behavioural Sciences. W. C. Brown Publishers, 1990.
4. Kohaut Frank J. : Statistics for Social Scientists, New York, Wiley & Sons, 1974.

(Ed.), Isha Books Publication, Adharsh Nagar, Delhi.

8. Vincent J. Del Casino Jr : Social Geography - A Critical Introductions, Wiley – Blackwell, A John Wiley & Sons Lit., Publication.

9. *डॉ. श्रीकान्त दीक्षित एवं डॉ. रामदेव त्रिपाठी, सांस्कृतिक भूगोल, वसुन्धरा प्रका ान, गोरखपुर।*

10. डॉ. एस. डी. मौर्य, सामाजिक भूगोल, भारदा पुस्तक भवन, इलाहाबाद।

EXISTING SCHEME	PROPOSED SCHEME	REMARKS
4.1 Remote Sensing and GIS **Section – A : Aerial Photographs and their Interpretation** a) Aerial Photographs : Types, scale, resolution. b) Classification of aerial photographs and their utility. c) Stereoscopy / Stereoscopic vision. d) Relief Displacement and Image formations. e) Elements of Aerial Photographs, Interpretation and Parallex and Calculation of heights. **Section – B : Fundamentals of Remote Sensing** a) Remote Sensing: Definition and Scope, history and its development. b) Electromagnetic Radiation: Characteristics. c) Electromagnetic regions and bands. d) Image Enhancement and Classification Techniques. e) Sensors : Passive and Active sensors; Characteristics of Remote Sensing Platforms.	***4.1 Remote Sensing and GIS (Theory)*** ***Section-A : Aerial Photograph*** ***a) Aerial Photographs: Definition, Terms and Scale and Overlapping in aerial photographs*** ***b) Classification of aerial photographs, their utility and Factors effecting the quality of an aerial photo*** ***c) Fundamental of aerial photographs- Aerial camera, Time and Season of Photography, Planning and Execution of photographic flight, Completion of photographic task*** ***d) Elements of air photo interpretation and interpretation keys*** ***e) Difference between Aerial photograph and Maps; Aerial Photo Mosaics*** ***Section- B : Remote Sensing*** ***a) Remote sensing: Definition, Process and Stages; Historic Development*** ***b) Electromagnetic Radiation (EMR) - Properties, Interaction of EMR with the earth's surface and atmosphere, Spectral***	***To make more consistant** ***To add relevant topics**

Section – C : Fundamentals of GIS and GPS

a) Definition and Scope of GIS and GPS.
b) Components and Advantages of GIS.
c) Application of GIS.
d) Spatial DATA – Geographical data and information.
e) Non – spatial data.

Books Recommended:

1. George Joseph, 2008 "Fundamentals of Remote Sensing ", Universities press (India) Pvt Ltd. Hyderabad
2. Abbasi, S. A. , 2005, Application of GIS & Remote Sensing in Environment Managements, Discovery Publishing House, New Delhi.
3. American Society of Photogrammtry, 1993, Manual of Remote Sensing Publishers, Falls Church Virginia.
4. AN Palet, 1992, Remote Sensing : Principles & Application, Scientific Publishers, Jodhpur.
5. Avery, T. E. & Berlin, G. L. 1985, Interpretation of Aerial photographs, Burgess, Minneapolis.
6. Curran P. J., 1985, Principles of Remote Sensing, Longman, London.
7. Doi R. D., 2002, Remote Sensing and its Application : A Monograph Monitoring

Signatures.

c) Remote sensing Platforms and Sensors

d) Basic Principles of Thermal and Microwave Remote Sensing- Characteristics of IR Images and Uses of thermal Imagery

e) Remote sensing programmes of India

Section- C : GIS and GPS

a) GIS: Meaning and Concept, Historical Development; Components of GIS

b) Data Structure and Data Models; Data Base Management System (DBMS), GIS manipulation and analysis

c) Basic Principles of GPS; GPS segments; GPS signals and codes; GPS receivers

d) Application of GIS and GPS

Recommended Books :

1. George Joseph, 2008 "Fundamentals of Remote Sensing ", Universities press (India) Pvt Ltd. Hyderabad
2. Abbasi, S. A. , 2005, Application of GIS & Remote Sensing in Environment Managements, Discovery Publishing House,

Vegetal Landcover & Desertification, University Book House, Jaipur.
8. Joseph, G., 2005, Fundamentals of Remote Sensing, University Press, Hyderabad.
9. Lillersaad & Thomas M., 1998, Remote Sensing & Image Interpretation, Singapore.
10. Moffit, H. F. & Ed word, M., 1980, Photogrammetry, Hampered Row Publishers, New York.
11. N. K. Agrawal, 2004, Essentials of GIS, Spatial Network PVT Ltd.
12. Navayan, L. R. A., 1999, Remote Sensing and its Application, Hyderabad.
13. Pearson, 2003, Remote Sensing of The Environment An Earth Resource Perspective.
14. Siddiqui, M. A., 2006, Interdiction Systems, Sharda Pustak Bhawan, Allahabad.
15. Wolf, Paul R., 1983, Elements of Photogrammetry, McGraw – Hill, New York.

New Delhi.
3. American Society of Photogrammtry, 1993, Manual of Remote Sensing Publishers, Falls Church Virginia.
4. AN Palet, 1992, Remote Sensing : Principles & Application, Scientific Publishers, Jodhpur.
5. Avery, T. E. & Berlin, G. L. 1985, Interpretation of Aerial photographs, Burgess, Minneapolis.
6. Curran P. J., 1985, Principles of Remote Sensing, Longman, London.
7. Lo CP & Yeung AKW, 2004. Concepts and Techniques of GIS, Prentice-Hall of India, New Delhi
8. **Heywood I, Cornelius S, Carver S. 2000. Introduction to GIS. Addison Wesley Longman, New York**
9. **Burrough P.A. and Rachael A. McDonnell. Principles of Geographic Information Systems, 2nd Ed.**

EXISTING SCHEME	PROPOSED SCHEME	REMARKS
Paper 4.2 (A) Urban Geography **Section – A : Introduction to Urban Geography** a) Meaning and scope of Urban Geography. Approaches to the study of Urban Geography. b) Development of Urban Geography. c) Origin and evolution of towns. d) Stages of Evolution of Cities, Origin, and growth of Ancient, Medieval and Modern towns (one example from each). e) Urbanization: Trends of Urbanization in Wor and India. **Section – B : Urban Morphology** a) Urban Morphology: Meaning, affecting factors and stages of Development of Urban Morphology. b) Theories of Urban growth: Concentric zone theory of Burgess, Sector theory of Homer Hayt and Multiple Nuclei theory of Harris& Ullman. c) Morphology of an Indian City. d) Urban land use and functional zones of a city (CBD). e) Functional Classification of Cities	***4.2 Bio & Environmental Geography*** ***Section - A : Introduction to Bio & Environment Geography*** ***a) Definition and scope of Bio Geography and its relation with environmental science.*** ***b) Factors of the environment: Physiographic, Climatic, Edaphic, Biotic and Anthropogenic.*** ***c) Bio Geochemical Cycles: The Carbon cycle, the Oxygen cycle, the Nitrogen cycle.*** ***d) The Hydrological cycle.*** ***Section – B : Concept of Ecology and Ecosystem*** ***a) Concept of Ecosystem : With special reference to desert, forest and aquatic ecosystem.*** ***b) Food chain ,Food web & succession.*** ***c) Ecological Pyramids and their types.*** ***d) Energy flow in ecosystem.*** ***e) Concepts of Biomes. Major biomes of the world: Tropical forest, Temperate forest, Grassland and Tundra.***	***Bio. & environmental geography has been replaced from 4.3(b) optional to 4.2 as a compulsory paper.**

according to Harris. **Section – C : Models of Urban Geography** a) Concept of Urban Hierarchy : Base and Methods of determination (on the basis of numbers and level of work). b) Rank size rule and the law of the Primate City. c) Central place theory of Walter Christaller and August losch. d) Rural urban fringe: Conceptual explanation, internal structure, characteristic features. e) Introduction of Conurbation and umland, methods of delimitation of umland (breaking point theory). *** Note – Stencils are to be permitted in the examination** **<u>Books Recommended :</u>** 1. Alam, S.M.. Hyderabad – Secundrabad Twin Cities, Asia Publishing House, Bombay. 2. Barry. B.J.L and Horton, F.F., Geographic perspectives on Urban Systems, Petrentice Hall, Englewood Cliff, New Jersy, 1970. 3. Beaujeu Garnier, J., Chabot, G., Urban Geography, London, 1969. 4. Carter, Harold, The study of Urban	***Section – C : Environmental Geography and Environmental Pollution*** ***a) Meaning and scope of environmental geography.*** ***b) Approaches to study of environment, Types of environment.*** ***c) Environmental pollution-Pollutants and sources:*** ***1. Water pollution,*** ***2. Soil pollution,*** ***3. Air pollution and,*** ***4. Noise pollution.*** ***d) Environmental Hazards :*** ***a. Natural hazards:*** ***i. Landslides,*** ***ii. Soil erosion,*** ***iii. Droughts and floods.*** ***b. Man-made hazards:*** ***i. Technological hazards,*** ***ii. Global climatic changes,*** ***iii. Green house effects and Global warming,*** ***iv. Ozone depletion.*** ***e) Concept of Environmental impact assessment (EIA).***	

Geography, Edward Arnold Publishers, London.
5. Dickinson, R.E., 1964.,City and Region, Routledge, London.
6. Gibbs, J.P., Urban Research Methods, New Jersy, 1961.
7. Hall, T., Urban Geography, London, 1988.
8. Johnson, J.H., 1967, An Introductory Analysis, London.
9. Mayer, H.M. & Kohn, C.F., 1967, Reading in Urban Geography, Allahabad.
10. Murphy, R.E., 1966, The American city : An Urban Geography, Macgra Hill Book Co., New York.
11. Rao, V.L.S.P. 1984, Urbanization in India: Spatial Dimensions, Concept Publishing Company, New Delhi.
12. Singh, K. and Steinberg, F. (eds.), Urban India in Crisis, New Age Interns, New Delhi.
13. Smailes, A. E. 1953, The Geography of Towns, London. 1953.

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16- flag vkj-,y-] vf/kokl Hkwxksy] iz;kx izdk'ku] bykgkcknA

Books Recommended:

1. Odum, E.P.(1968) : Fundamentals of Ecology, W.B. Sanders. Company, Philadelphia and London.
2. Mathur, H.S.(1998) : Essentials of Biogeography, Pointer Publishers, Jaipur.
3. New begin : Plant and Animal Geography.
4. Darlington : Zoo—geography.
5. Schinper : Plant Geography.
6. Mielke, H.W. : Patterns of Life, Biogeography of a Changing World.
7. Lomolino, Mark V., Riddle, Brett R., Whittaker, Robert J. & Brown, James H. (2010): Biogeography. Sinauer Associates, Inc.; Fourth Edition.
8. MacDonald, Glem Michael (2001): Biogeography: Introduction to Space, Time, and Life. Wiley.
9. Cox, C. Barry & Morre, Peter D. (2010): Biogeography: An Ecological and Evolutionary Approach. Wiley' 8th Ed.
10. Williams, David M., Ebach, Malte C. & Nelson, G. (2007): Foundations of Systematics and Biogeography. Sringer.
11. Mehtani, S. & Sinha, A. (2010): Biogeography. Commonwealth Publisher.
12. Atkinson & Raw, Michael (2007): Biogeography. Philip Allan Updates.

Paper 4.2 (B) Population Geography

Section - A : Scope of Population Geography & Demographic Characteristics

a) Definition and Scope of population geography and its relation with other sciences.

b) Recent trends in population geography.

c) Factors affecting distribution and density of population.

d) Population distribution and growth in the world.

e) Demographic characteristics of developed and developing nations.

Section - B : Theories of Population Growth and Migration

a) Theories of population growth - Malthusian theory, Optimum population theory. and theory of demographic transition.

b) Factors affecting population change, Population **resource** regions of the world.

13. Hughs, Foreman (2010): Biogeography & Geomorphology. Apple academics.
14. Anjuneyulu, Y. (2002): **Environmental Impact Assessment Methodologies**. B. S. Publications, Hyderabad.
15. Anjuneyulu, Y. (2004) : **Introduction to Environmental Science**. B. S. Publications, Hyderabad.
16. Anderson J.M. (1981): **Ecology for Environmental Science: Biosphere, Ecosystems and Man,** Arnold, London.
17. Bilas, R. (1988): **Rural Water Resource Utilization and Planning.** Concept Publishing. Company, New Delhi.
18. Clarke, J. I., Curson, P., Kayastha S. L. and Nag P. (eds.) (1991): **Population and Disaster**. Basil Blackwell, USA.
19. Gautam, A (2007): **Environmental Geography**, Sharda Pustak Bhawan, Allahabad.
20. Gautam, A. (2005): **Resource and Environment** (in Hindi), Sharda Pushtak Bhawan, Allahabad.
21. Goudie, Andrew (1984) : **The Nature of the Environment**, Oxford Katerpring Co. Ltd.
22. Huggett, R. J (1998): **Fundamental of Biogeography**. Routledge, London.
23. Kayastha, S.L. and Kumra V.K. (1986): **Environmental Studies**. Tara Book Agency, Varanasi.
24. Khoshoo, T. N. (1981): **Environmental**

c) Migration: Major factors, Consequences and types of migration.

d) Theories of migration: Lee, Rewensteen and Zelinsky's model.

e) Important migration of the world.

Section - C : Population Geography in India

a) Development of population geography in India.

b) Birth rate and Death rate in India.

c) Population growth of India.

d) Demographic structure, occupation structure and livelihood.

e) Internal migration and population policy of India.

*** Note – Stencils are to be permitted in the examination**

Books Recommended:

15. Chandana, R. C (2008): A Geography of population, Kalyani Publishers, New Delhi.
25. Mathur, H. S. (2003): **Essentials of Biogeography**. Pointer Publication, Jaipur.
26. Nag, P., Kumra, V. K. and Singh, J. (1990): **Geography and Environmental Issues at Local, Regional and National Levels**. (in 3 vols.), Concept Publishing Company, New Delhi.
27. Nobel and Wright (1996): **Environmental Science**, Prentice Hall, New York.
28. Odum, E. P. (1975): **Ecology**. Rowman and Littlefield, Lanham USA.
29. Rajagopalan, R. (2005): **Environmental Studies: From Crisis to Cure**, Oxford University Press, New Delhi.
30. Reddy, M. A. (2004): **Geoinformatics for Environmental Management**. B. S. Publishers., Hyderabad.
31. Saxena, K.K. (2004): **Environmental Studies**. University Book House Private Ltd., Jaipur.
32. Saxena, H. M. (1999): **Environmental Geography**. Rawat Publications., Jaipur and New Delhi.
33. Saxena, H. M. (2000): **Environmental Management**. Rawat Publications., Jaipur and New Delhi.
34. Singh, A. K., Kumra, V. K. and Singh, J. (1986): **Forest Resource, Economy and Concerns and Strategies**. Ashish Publishing House, New Delhi.

16. Clarks : Population Geography.
17. Jones : A population Geography.
18. Woods : Theoretical Population Geography.
19. Wilson : Population Geography.
20. Davis : The Population of India and Pakistan.
21. Dyson and Crook : India's Demography.
22. Gary, L., Peters, Robert, P. Larkin (2008): Population Geography: Problems, Concepts and Prospects. Kendall Hunt Publishing.
23. K. Bruce Newbold (2010): Population Geography:- Tools and Issues. Rowman and Littlefield Publishers, Inc.
24. Qazi, S.A. (2006): Population Geography. APH publishing corporation.
25. Graham, David (2009): Population Geography. Routledge.
26. Hassan, Mohd Izhar (2005): Population Geography. Rawat Publications.
27. Chopra, Girish (2006): Population Geography. Commonwealth Publishers.
28. Tripathi, R.K. (2007): Population Geography. Commonwealth Publishers.

Environment. Concept Publishing. Company, New Delhi.
35. Singh, D.N., Singh, J. and Raju, K.N.P. (eds.) (2003): **Water Crisis and Sustainable Management**, Tara Book Agency, Varanasi.
36. Singh, M. B., Kumra, V.K., Singh, Rana P.B., Singh, J, Bilas, R. and Singh, B.N. (eds.) (2005): **Sustainable Management of Natural Resources**, Tara Book Agency, Varanasi.
37. Singh, O., Nag P., Kumra V.K. and Singh J. (eds.) (1993): **Frontier in Environmental Geography**. Concept Publishing Company, New Delhi.
38. Singh, O., Kumra V. K. and Singh J. (1988): **India's Urban Environment. Pollution, Perception and Management**. Tara Book Agency, Varanasi.
39. Singh, R. B. (ed.) (1990): **Environmental Geography**. Heritage Publication, New Delhi.
40. Singh, R. B. (ed) (1995): **Studies in Environment and Development**. Rakesh Prakashan, Varanasi.
41. Singh, S. (2006): **Environmental Geography**. Prayag Pustak Bhawan, Allahabad.
42. Singh, S. (2007): **Paryavaran Bhugol**. Prayag Pustak Bhawan, Allahabad.
43. Singh, S. N. (1993): **Elements of Environmental Geography and Ecology**

(in Hindi), Tara Book Agency, Varanasi.
44. Singh, S. N. (1993): **Vatavaran Bhugol**. Tara Book Agency. Varanasi.
45. Strahler, A.N. and Strahler, A.H. (1973): **Environmental Geosciences : Interaction between natural system and man**, John Wiely and Sons, New York.
46. Strahler, A.H. and Strahler A.N. (1977): **Geography and Mans Environment**, John Wiley, New York.
47. Valdiya, K. S. (1987): **Environmental Geology: Indian Context**. Tata McGraw Hill Publishing Company. Ltd., New Delhi
48. William, M.W. and John, G (1996): **Environmental Geography-Science, Landuse and Earth system,** John Wiley and sons, New York.

EXISTING SCHEME	PROPOSED SCHEME	REMARKS
Paper 4.3 (A) Industrial & Transport Geography **Section – A : Classification and New Trends in Industrial Geography** a) Definition and scope of industrial geography. b) Classification of the industries /types of industries. c) New trends in industrial geography. d) Geographical and non – geographical factors of industrial localization. **Section – B : Industrial Location Theories & Industrial Regions** a) The least cost school – Industrial location theory by Alfred Weber; The transport cost school : Locational Theory by Idgar M. Hoover. b) The market area school and marginal location school : Theory by August Losch, E. M. Rowstron and D. M. Smith. c) The Behavioural school : Location Theory by Allen Pred.	***4.3 (a) Tourism Geography (Optional)*** ***Section-A : Geography of Tourism And Concept of Tourism*** ***a) Geography of Tourism- its Nature and purpose*** ***b) Role of geography in Tourism & temporal development of Tourism geography*** ***c) Concept and nature of Tourism, type of tourism*** ***d) Factors affecting tourism development*** ***e) Development of tourism in India*** ***Section-B: Eco Tourism And Environment*** ***a) Effect of tourism on environment*** ***b) Concept of Eco tourism - its nature and scope*** ***c) Ecotourism and related sub sectors of the tourism industry*** ***d) The Dimensions of Ecotourism*** ***e) Ecotourism in India*** ***Section-C : Tourism And Development*** ***a) Tourism as a source of employment*** ***b) Economic and Social benefits of Tourism*** ***c) Government policies with special reference***	***New paper has been introduced to study modern branches of geography**

d) Cotton Textile Industry, Iron & Steel Industry Paper & Pulp Industry, Ship building industry.

e) Study of Some Important Industrial Regions of World :-

I. The Great Lakes Industrial Region.

II. The Ruhr Industrial Region.

III. Ural Industrial Region.

IV. Hooghly side Industrial Region.

Section – C : Transport Geography

a) Definition and scope of Transport Geography.

b) Analysis of Network of Transport Routes – Density, Accessibility, Connectivity.

c) Models : Gravity Model and Potential Surface Models.

d) Major Rail (Trans-Siberian and Trans-Canadian Railway) and Water Transportation Routes (The North Atlantic, Cape of Good Hope, Panama and Suez canal).

e) Transportation Problems of Metropolitan Areas.

to tourism in India

d) Environmental and cultural properties of tourist spots in India

e) Rajasthan- A tourist hub of India

Books Recommended:

1. Bhatia A.K.(1978): Tourism in India. Sterling pub. New Delhi.
2. Burkarl, A.J.(1974): Tourism, Past, present and future Heineman London.
3. Gearing Charles, E (1976): planning for Tourism development Praeger Pub, New York
4. Lawbon, F & Bauet B.(1977): Tourism and recreation Development mass, CBI pub.
5. Lundberg, D.E.)1996): The Tourist Business Cehners Books. Internationa, Boston.
6. Robinson H.(1976): A geography of Tourism. Mac Donald and Evans Ltd; London.
7. Douglas Pearce (1981): Topics in Applied Geography, Tourist Development. Longman London New York.
8. Stephen L.J. Smoth (1989): tourism Analysis : A Handbook- Longman Scientific of Technical.
9. Ministry of Tourism Govt. of India (1992): Report on National Action Plan on Tourism, New Delhi.

*** Note – Stencils are to be permitted in the examination**

Books Recommended:

1. Alexander, J. W. : Economic Geography (Prentice Hall, New York).
2. Berry, B. J. L. Essarys on Commodity Flow and the Spatial structure of Indian Economy, University of Chicago, Chicago, 1966.
3. Eliot, H. and E. Micheal, Eds. : Transportation Geography Comments and Readings M.C. Growth M.S., 1974.
4. Hagget, P. and Red. Chorley, Network Analysis in Geography, St Mairni, N. Y. and Edward Arnold, Loudh, 1919.
5. Hoover, E. M.: The Location of Economic Activity, (McGraw – Hill Books Co. New York).
6. Kauesty, K. J. : Structure of Transportation Networks. University of Chicago, 1963.
7. Lloyd and Dicken : Location in Space : A theoretical Approach to Economic Geography.
8. M. C. Cart and Lindberg Hodder and Lee Economic Geography : A Preface to Economic Geography.
9. Riley, R. C. : Industrial Geography, 1973, Chalto and Windus, London.
10. Saafe, E. L. and H. L. Gautir : Geography of Transportation, Prentice
10. Ministry of tourism Govt. of India (1996): Report on National strategy for development of tourism New Delhi.
11. Ministry of Tourism Govt. of India (1999): Report on National Tourism.
12. Garg Deepa (2009) : Geography of Tourism, Mohit Punlication, New Delhi.
13. Negi Jagmohen : Tourism Market and development
14. Pathania Kulwant Singh and Kumar Arun : Tourism in India, Regal Publication, New Delhi.
15. “kqDyk jkts”k ,oa “kqDyk jf”e ¼2009½ % i;ZVu es Hkwxksy] vtZqu ifCyf”kax gkÅl] fnYyhA
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17- usxh txeksgu % i;ZVu ,oa ek=k ds fl}kUr] r{kf”kyk izdk”ku] ubZ fnYyhA
18- usxh txeksgu % lEiw.kZ Hkkjr ds lkLd`frd i;ZVu LFkyA
19- usxh txeksgu % i;ZVu ekdsafVx ,oa fodklA
20- “kekZ lat; dqekj % i;ZVu ,oa i;ZVu

Hall, Englewood Cliffe, 1973.
11. Smith, D. E. Cox K. P. Man : Industrial Location. A Economic Geographical Analysis Location and Behavior – An Industrial to Human Geography.

4.3 (B) Bio & Environmental Geography **Section - A : Introduction to Bio Geography and Environment** a) Definition and scope of Bio Geography and its relation with environmental science. b) Factors of the environment: Physiographic, Climatic, Edaphic, Biotic and Anthropogenic. c) Bio Geochemical Cycles: The Carbon cycle, the Oxygen cycle, the Nitrogen cycle. d) The Hydrological cycle. **Section – B : Concept of Ecology and Ecosystem** a) Concept of Ecosystem : With special reference to desert, forest and aquatic ecosystem. b) Food chain ,Food web & succession. c) Ecological Pyramids and their types. d) Energy flow in ecosystem. e) Concepts of Biomes. Major biomes of the world: Tropical forest, Temperate forest, Grassland and Tundra.	***4.3 (b) Geography of Rural Settlement (Optional)*** **Section - A :** ***Introduction to Geography of Rural settlements*** ***a) Meaning, definitions and scope of geography of rural settlements*** ***b) Development of the concept of geography of rural settlements with special reference to India*** ***c) Approaches to geography of rural settlements.*** ***d) The relationalship with other branches of geography and social sciences*** ***e) Evolution and growth of rural settlements: morphological studies, functional studies, studies on filed system and filed patterns.*** **Section – B :** ***Growth of rural settlements*** ***a) Types of rural settlements: bases, factors affecting the type of rural settlements, views of scholars on the types of rural settlements, main types of rural settlements in India and their features.*** ***b) Pattern of rural settlements : factors affecting the pattern, pattern types*** ***c) Morphological structure of rural settlements: factors affecting, process of development, forces affecting the morphology of rural***	***New paper has been introduced**

Section – C : Environmental Geography and Environmental Pollution

a) Meaning and scope of environmental geography.

b) Approaches to study of environment, Types of environment.

c) Environmental pollution-Pollutants and sources:

i. Water pollution,
ii. Soil pollution,
iii. Air pollution and ,
iv. Noise pollution.

d) Environmental Hazards :

1. Natural hazards:
   i. Landslides,
   ii. Soil erosion,
   iii. Droughts and floods.
2. Man-made hazards:
   i. Technological hazards,
   ii. Global climatic changes,
   iii. Green house effects and Global warming,
   iv. Ozone depletion.

e) Concept of Environmental impact assessment (EIA).

<u>Books Recommended</u>:

1. Odum, E.P.(1968) : Fundamentals of

settlements,

d) Empirical analysis of social morphology of villages

e) Geographical zones based on development process of rural morphology and pattern of fields and villages

Section – C : ***Rural Dwellings and Typology***

a) Houses and their types: bases, factors affecting, classification, effect of building material on the houses

b) Regional distribution of houses in India on the basis of building material used in house walls and roofs

c) House types and their characteristics in different geographical environments: mountainous region, Punjab-Hariyana region, Rajasthan, Ganga plain, Madhya Pradesh, Orrisa, South Indian plateau and coastal regions

d) Distribution of rural settlements in India: size pattern of rural settlements, trends of disperssion and spatial distribution of rural settlements in India. Rural population of India: growth, distribution, density

e) Rural service centres and their identification: periodic markets and their characteristics, hierarchy of rural settlements and methods for the determination of hierarchy

Ecology, W.B. Sanders. Company, Philadelphia and London.
2. Mathur, H.S.(1998) : Essentials of Biogeography, Pointer Publishers, Jaipur.
3. New begin : Plant and Animal Geography.
4. Darlington : Zoo—geography.
5. Schinper : Plant Geography.
6. Mielke, H.W. : Patterns of Life, Biogeography of a Changing World.
7. Lomolino, Mark V., Riddle, Brett R., Whittaker, Robert J. & Brown, James H. (2010): Biogeography. Sinauer Associates, Inc.; Fourth Edition.
8. MacDonald, Glem Michael (2001): Biogeography: Introduction to Space, Time, and Life. Wiley.
9. Cox, C. Barry & Morre, Peter D. (2010): Biogeography: An Ecological and Evolutionary Approach. Wiley' 8th Ed.
10. Williams, David M., Ebach, Malte C. & Nelson, G. (2007): Foundations of Systematics and Biogeography. Sringer.
11. Mehtani, S. & Sinha, A. (2010): Biogeography. Commonwealth Publisher.
12. Atkinson & Raw, Michael (2007): Biogeography. Philip Allan Updates.
13. Hughs, Foreman (2010): Biogeography & Geomorphology. Apple academics.
14. Anjuneyulu, Y. (2002): **Environmental Impact Assessment Methodologies**. B. S. Publications, Hyderabad.
15. Anjuneyulu, Y. (2004) : **Introduction to**

*** Note – Stencils are to be permitted in the examination.**

Books Recommended :

1. Ambrose, P., Settlement Patterns, Longmans, London, 1970.
2. Chisholm, M. (1967): Rural Settlements and Land use, john Wiley, New York
3. Chisholm, M., Rural Settlement and Land Use, Hutchinson University Library, London, 1962.
4. Daniel, P. (2002): Geography of Settlement. Rawat Publications., Jaipur and New Delhi.
5. Ghosh, S. (1999): Geography of Settlements. Orient Longman, Kolkata.
6. Ghosh, Sumita, Introduction to Settlement Geography, Orient Longman, Calcutta, 1998.
7. Hudson, F. S. (1976): A Geography of Settlements. MacDonald and Evans, New York.
8. Mandal R.B. (2001): Introduction to Rural Settlement,
9. Mosley, M.J. (2005): Rural Development: Principles and Practice. Sage Publication, London.
10. Mukerji, R.K., Man and His Habitation, Popular Prakashan, Bombay, 1968.
11. Oliver, P. (1987): Dwellings. The House across the World. University of Texas Press, Austin.

Environmental Science. B. S. Publications, Hyderabad.

16. Anderson J.M. (1981): **Ecology for Environmental Science: Biosphere, Ecosystems and Man,** Arnold, London.

17. Bilas, R. (1988): **Rural Water Resource Utilization and Planning.** Concept Publishing. Company, New Delhi.

18. Clarke, J. I., Curson, P., Kayastha S. L. and Nag P. (eds.) (1991): **Population and Disaster**. Basil Blackwell, USA.

19. Gautam, A (2007): **Environmental Geography**, Sharda Pustak Bhawan, Allahabad.

20. Gautam, A. (2005): **Resource and Environment** (in Hindi), Sharda Pushtak Bhawan, Allahabad.

21. Goudie, Andrew (1984) : **The Nature of the Environment**, Oxford Katerpring Co. Ltd.

22. Huggett, R. J (1998): **Fundamental of Biogeography**. Routledge, London.

23. Kayastha, S.L. and Kumra V.K. (1986): **Environmental Studies**. Tara Book Agency, Varanasi.

24. Khoshoo, T. N. (1981): **Environmental Concerns and Strategies**. Ashish Publishing House, New Delhi.

25. Mathur, H. S. (2003): **Essentials of Biogeography**. Pointer Publication, Jaipur.

26. Nag, P., Kumra, V. K. and Singh, J. (1990): **Geography and Environmental Issues at**

12. Rykwert, J. (ed.) (2004): Settlements. University of Pennsylvania Press, University Park,
13. Sauer, C.O., Land and Life, University of California Press, Berkely, 1963.
14. Sing W. L. and Singh, K.N. (ed) (1975): Readings in Rural Settlement Geography, NGSI,
15. Singh R. L. Rural Settlements in Monsoon Asia, Varanasi, Banaras Hindu University, 1972
16. Singh, R.Y. (2005): Geography of Settlements. Rawat Publications, Jaipur and New Delhi.
17. Singh, S.B. (1977): Rural Settlement Geography. U.B.B.P., Publications, Gorakhpur.
18. Tiwari, R. C. (2000): Settlement Geography; in Hindi. Prayag Pustak Bhawan Allahabad.
19. Wanmali, S. (1983): Service Centres in Rural India. B.R. Publications Corporation, New Delhi.

२०. मौर्य एस.डी.(२००६) : अधिवास भूगोल, "ाारदा पुस्तक भवन, इलाहबाद।

२१. बंसल सुरे"ा चन्द्र (२००६) : ग्रामीण बस्ती भूगोल, मिनाक्षी प्रका"ान, मेरठ।

२२. तिवारी आर. सी. (२००६) : अधिवास भूगोल, प्रयाग पुस्तक भवन, इलाहबाद।

२३. सिंह रामयज्ञ (२००५) : अधिवास भूगोल, रावत पब्लिके"ान, जयपुर एव नई दिल्ली

२४. सिंह इन्दिरा (२००८) : अधिवास भूगोल, यूनिवर्सिटी पब्लिके"ान, नई दिल्ली।

Local, Regional and National Levels. (in 3 vols.), Concept Publishing Company, New Delhi.

27. Nobel and Wright (1996): **Environmental Science**, Prentice Hall, New York.

28. Odum, E. P. (1975): **Ecology**. Rowman and Littlefield, Lanham USA.

29. Rajagopalan, R. (2005): **Environmental Studies: From Crisis to Cure**, Oxford University Press, New Delhi.

30. Reddy, M. A. (2004): **Geoinformatics for Environmental Management**. B. S. Publishers., Hyderabad.

31. Saxena, K.K. (2004): **Environmental Studies**. University Book House Private Ltd., Jaipur.

32. Saxena, H. M. (1999): **Environmental Geography**. Rawat Publications., Jaipur and New Delhi.

33. Saxena, H. M. (2000): **Environmental Management**. Rawat Publications., Jaipur and New Delhi.

34. Singh, A. K., Kumra, V. K. and Singh, J. (1986): **Forest Resource, Economy and Environment**. Concept Publishing. Company, New Delhi.

35. Singh, D.N., Singh, J. and Raju, K.N.P. (eds.) (2003): **Water Crisis and Sustainable Management**, Tara Book Agency, Varanasi.

36. Singh, M. B., Kumra, V.K., Singh, Rana P.B., Singh, J, Bilas, R. and Singh, B.N.

(eds.) (2005): **Sustainable Management of Natural Resources**, Tara Book Agency, Varanasi.

37. Singh, O., Nag P., Kumra V.K. and Singh J. (eds.) (1993): **Frontier in Environmental Geography**. Concept Publishing Company, New Delhi.

38. Singh, O., Kumra V. K. and Singh J. (1988): **India's Urban Environment. Pollution, Perception and Management**. Tara Book Agency, Varanasi.

39. Singh, R. B. (ed.) (1990): **Environmental Geography**. Heritage Publication, New Delhi.

40. Singh, R. B. (ed) (1995): **Studies in Environment and Development**. Rakesh Prakashan, Varanasi.

41. Singh, S. (2006): **Environmental Geography**. Prayag Pustak Bhawan, Allahabad.

42. Singh, S. (2007): **Paryavaran Bhugol**. Prayag Pustak Bhawan, Allahabad.

43. Singh, S. N. (1993): **Elements of Environmental Geography and Ecology** (in Hindi), Tara Book Agency, Varanasi.

44. Singh, S. N. (1993): **Vatavaran Bhugol**. Tara Book Agency. Varanasi.

45. Strahler, A.N. and Strahler, A.H. (1973): **Environmental Geosciences : Interaction between natural system and man**, John Wiely and Sons, New York.

46. Strahler, A.H. and Strahler A.N. (1977):

Geography and Mans Environment, John Wiley, New York. 47. Valdiya, K. S. (1987): **Environmental Geology: Indian Context**. Tata McGraw Hill Publishing Company. Ltd., New Delhi 48. William, M.W. and John, G (1996): **Environmental Geography-Science, Landuse and Earth system,** John Wiley and sons, New York.		

EXISTING SCHEME	PROPOSED SCHEME	REMARKS
Paper 4.4 Women Studies (Inter Disciplinary) RATIONALES : This Paper focuses " Woman Studies " as a discipline, where students would be able to know states of Woman in Society, their strategies of development, issues concerning woman, Special lows and institutional mechanism for Protection of Woman at National and International level and the role of NGO's for woman's development in India Context. **Section – A** Women Studies as a discipline - Status of women in term of cultural milieu, family structure, Caste, class and community, Women	***4.4 (a) Urban Geography (Optional)*** ***Section – A: Introduction to Urban Geography*** ***a) Meaning and scope of Urban Geography. Approaches to the study of Urban Geography.*** ***b) Development of Urban Geography.*** ***c) Origin and evolution of towns.*** ***d) Stages of Evolution of Cities, Origin, and growth of Ancient, Medieval and Modern towns (one example from each).*** ***e) Urbanization: Trends of Urbanization in World and India.*** ***Section – B: Urban Morphology*** ***a) Urban Morphology: Meaning, affecting factors and stages of Development of Urban***	*** Urban geography has been replaced from 4.2(a) to 4.4 (a) in place of inter-disciplinary .**

in India : Demographic Profile, Social Profile (Education, Health, Violence Related to Women), Economic Profile (Female work participation, Property Rights) and Political Profile.

Section – B

Strategies for women development in India (from welfare to empowerment). Role of NGO's in women's development in India. Development Index (Human Development Index, Gender Development Index and Gender Expowerment Measure - GEM). Emerging concepts - Gender, Women Empowerment, Gender Sensitization, Gender Bias, Gender Discrimination. Women in Media. Factors affecting decision making by Woman.

Section – C

1. International norms for protection of women.
2. Special laws for protection of women :
   - Suppression of Immoral Traffic Act, 1956.
   - Indecent Representation of Women (Prohibition) Act, 1986.
   - Commission of Sati (Prevention) Act, 1982.

Morphology.

b) Theories of Urban growth: Concentric zone theory of Burgess, Sector theory of Homer Hayt and Multiple Nuclei theory of Harris& Ullman.

c) Morphology of an Indian City.

d) Urban land use and functional zones of a city (CBD).

e) Functional Classification of Cities according to Harris.

Section – C: Models of Urban Geography

a) Concept of Urban Hierarchy: Base and Methods of determination (on the basis of numbers and level of work).

b) Rank size rule and the law of the Primate City.

c) Central place theory of Walter Christaller and August losch.

d) Rural urban fringe: Conceptual explanation, internal structure, characteristic features.

e) Introduction of Conurbation and umland, methods of delimitation of umland (breaking point theory).

**** Note – Stencils are to be permitted in the examination***

Books Recommended :

1. Alam, S.M.. Hyderabad – Secundrabad Twin

- Medical Termination of Pregnancy Act, 1971.
- Maternity Benefit Act, 1961.
- Equal Remuneration Act, 1976.
- Dowry Prohibition Act, 1961.

3. Institutional mechanism for women : National Commission for Women, State Commissions, National Human Right Commission (Organizational setup and functions).

Books Recommended:

1. Altekar, A.S. 1983. The Position of Women in Hindu Civilization, Delhi : Moti Lal Banarsidas, Second Edition. Fifth Reprint.
2. Chanana Karuna, 1988. Socialization, Women and Education : Exploration in Gender Identity. New Delhi : Orient Longman.
3. Chodrow, Nancy, 1978. The Reproduction of Mothering, Berkeley : University of California Press.
4. Desai, Neera and M. Krishnraj, 1987. Women and Society in India, Delhi : Ajanta Press.
5. Dube, Leela et. al. (eds.). 1986. Visibility and Power, Essays on Women in Society and Development. New Delhi : O. U. P.
6. Dube, Leela. 1997. Women and Kinship : Comparative Perspectives on Gender in Cities, Asia Publishing House, Bombay.
2. Barry. B.J.L and Horton, F.F., Geographic perspectives on Urban Systems, Petrentice Hall, Englewood Cliff, New Jersy, 1970.
3. Beaujeu Garnier, J., Chabot, G., Urban Geography, London, 1969.
4. Carter, Harold, The study of Urban Geography, Edward Arnold Publishers, London.
5. Dickinson, R.E., 1964.,City and Region, Routledge, London.
6. Gibbs, J.P., Urban Research Methods, New Jersy, 1961.
7. Hall, T., Urban Geography, London, 1988.
8. Johnson, J.H., 1967, An Introductory Analysis, London.
9. Mayer, H.M. & Kohn, C.F., 1967, Reading in Urban Geography, Allahabad.
10. Murphy, R.E., 1966, The American city : An Urban Geography, Macgra Hill Book Co., New York.
11. Rao, V.L.S.P. 1984, Urbanization in India: Spatial Dimensions, Concept Publishing Company, New Delhi.
12. Singh, K. and Steinberg, F. (eds.), Urban India in Crisis, New Age Interns, New Delhi.
13. Smailes, A. E. 1953, The Geography of Towns, London. 1953.

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South and South-East Asia, Tokyo : United Nations University Press.
7. Gandhi, N. and N. Shah. 1992. The Issue at Stake : Theory and Practice in the Contemporary Women's Movement in India, New Delhi : Kali for Women.
8. Ghadially, Rehana (ed.) 1988. Women in Indian Society, New Delhi : Sage Publication.
9. Maccoby, Eleaner and Carol Jacklin. 1975. The Psychology of Sex Differences, Stanford : Stanford University Press.
10. McCormack, C. and M. Strathern (ed.) 1980. Nature, Culture and Gender Cambridge : Cambridge University Press.
11. Oakley, Ann. 1972. Sex, Gender and Society. New York : Harper and Row,
Additional Readings :
12. Anderson, Margret L. 1997. Thinking about Women: Sociological Perspectives on Sex and Gender. 4th ed. Boston : Allyn and Bacon.
13. Avasthi, Abha and A.K. Srivastava (eds.) 2001. Modernity, Feminism and Women Empowerment, Jaipur : Rawat Publication.
14. Desai, Neera and Vibhuti Patel. 1990. Indian Women : Change and Challenge in the International Decade 1975-85.
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4.4 (b) Medical Geography (Optional)

Section – A : Introduction to Medical Geography

a) Meaning, definitions and scope of Medical Geography
b) Spatio-temporal development of Medical Geography with special reference to India
c) Relationship of Medical geography with other social sciences (sociology, psychology, economics, political sciences, law, natural science)
d) Approaches to study medical geography
e) Meaning of health (physical, mental and social health), health and hygiene, disease cycle, causes of ill health, disease ecology
Section – B : Geographical Factors Affecting Human Health and Diseases

a) Physical factors – climate, relief, soil, vegetation
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*New paper has been introduce
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Bombay : Popular Prakashan. 15. Kumar, Ranjana (ed.) 1992. Women in Decision Making , New Delhi : Vikas Publishing House Pvt. Ltd. 16. Mishra, Anil Dutta (ed.) 1999. Gender Perspective : Participation, Empowerment and Development, New Delhi : Radha Publication. 17. Ollenburger, Jane C. and Helen A. Moore. 1992. A Sociology of Women: The Intersection of Patriarchy, Capitalism and Colonization, New Jersey: Prentice Hall. 18. Roy, Kalpana, 1999. Women's Oppression and Protective Law, Delhi : Rajat Publications. 19. Sahai, Shailly. 1996. Social Legislation and Status of Hindu Women, Jaipur : Rawat Publication. 20. Sarkar, Lotika and B. Sivararamayya (ed.) 1994. Women and Law, New Delhi : Vikas Publishing House. 21. Srivastava, T.N. 1985. Women and Law, New Delhi : Intellectual Publishing House. 22. Tapan, Neeta, 2000. Need for Women Empowerment, Jaipur : Rawat Publication.	***b) Social factors – population density, literacy, social customs and traditions and poverty*** ***c) Economic Factors – occupation, standard of living, food security and nutrition*** ***d) Environmental Factors - urbanization and congesting, water, air and noise pollution and solid waste.*** ***e) Factors influencing health in India*** ***f) WHO classification of diseases and their distribution (major diseases) in world.*** ***Section – C: Human Health in India*** ***a) Indicators of health - changes in Birth and death rates, Infant mortality rates, life Expectancy, changes in sex ratio, population growth, Population Control*** ***b) Food: classification, food stuffs, balanced diet and Basal Metabolic Rate (BMR)*** ***c) Nutrition - mal & under nutrition – causes & consequences, position of food and nutrition in India and personal health*** ***d) Heath care delivery system : areas of health education, tools for health education, Health Planning (aim, district level, block level, local level organizations)*** ***e) Health Care Programmes, Family Welfare Programmes, Family Planning Association of India (FPAI)*** **** Note – Stencils are to be permitted in the examination***	**in place of inter-disciplinary .**

Books Recommended :

1. Akhtar, Rais 1991 : Environment and Health Themes and Medical Geography, Ashish Publishing House, New Delhi.
2. Bedi Yash Pal and Ram Atma 1979 : Social and Preventive Medicine, Anand Publishing Co. Amritsar.
3. Cliff, A. and Haggett, P.: Atlas of Disease Distribution Basil Blackwell, Oxford, 1989.
4. Deer S. Basu Mitra Kamal R. 1991 : Introduction to health education, Friends Publications, Delhi.
5. Hussain Majid (1994): Medical Geography, Anmol pub. New Delhi.
6. Learmon.,A.T.A."So you want to be a Medical Geographer?An open letter to students".In:Prakashan Rao,V.L.S.etal.(Eds).The Golden Jubliee Volume.Madras.The Indian Geographical Society.1976,pp.280-85.
7. Learmonth A.T.A.: Patterns of Disease and Hunger: A Study in Medical Geography, David & Charles, Victoria, 1978.
8. Learmonth,A.T.A."Models and Medical Geography"in Mishra,V.C.(Ed)Essays in Applied Geography.Saugor.University of Saugar,1976pp. 17-38.
9. May J.M.: The World Atlas of Diseases, Nat Book Trust, New Delhi, 1970.
10. Mayer, A. Ishtiq 2007 : Medical Geography APH Publishing Corporation, New Delhi.
11. Mc Glashan,N.D.(Ed) Medical Geography Techniques and Field studies.London Methuen,1072.

12. Meade M. S., Earickson R. J. 2006 : Medical Geography, Rawat Publications, Jaipur, New Delhi, Bangalore, Mumbai.
13. Mishra,R.P. The Medical Geography of India,New Delhi National Book Trust,1969.
14. Park, J.E. and Park, K. 1979 – Text Book of Community Health for Nurses, Ansari Publishers, Jabalpur
15. Park, J.E. and Park.,K.-2007- Preventive and Social Medicine- M/s Banarsidas Bhanot Publisher, Jabalpur
16. Pyle G.F. (1979): Applied Medical Geography John wifey washington.
17. Pyle, G.: Applied Medical Geography, Winston Halsted Press, Silver Springs, Md. U.S.A. 1979.
18. Pyle.G.W.and Alan Dever,G.E.Health care Delivery:Spatial perspectives,New York,McGraw.
19. Rais, A. and Learmonth, A.T.A.: Geographical Aspects of Diseases in India.
20. Shannon G.W. & Dever G.E.A.(1974): Health care Delivery McGraw Hill New York
21. Stamp,L.D.Some Aspects of Medical Geography.Oxford,University press,1964.
22. Stamp,L.D.The Geography of Life and Death London,Fontana,1964.
23. Vashist S. R. (1997) : A Textbook of Health education and child development Book Enclave, Jaipur.
24. Woods E.J. (1983): Social Geography of Medicine & health, Croon Helm, London

EXISTING SCHEME	PROPOSED SCHEME	REMARKS
4.5 Practical (Remote Sensing and GIS) **<u>Photogrammetry :</u>** 1. Stereoscopic Vision Test. 2. Stereoscopic Orientation of Aerial Photographs. 3. Determination of Scale, Stereoscopic Area, Principal point, Conjugate principal point, Direction of Flight line and Air base. 4. Calculation of Photographic coverage for a planning area. 5. Height Determination Methods. 6. Interpretation of Aerial Photographs. **<u>GIS :</u>** 1. Basic software and operating system concept. Introduction to Arc View's Modular Structure, Introduction to Arc View. 2. Projection and Cartography, Basic concept	**4.5 Practical (Remote Sensing and GIS)** **<u>Photogrammetry :</u>** ***a. Stereoscopic Vision Test: Zeiss test for depth perception*** ***b. Orientation of Aerial Photographs under mirror Stereoscope.*** ***c. Identification of object/features using aerial photograph*** ***d. Determination of Scale, Stereoscopic Area, Principal point, Conjugate principal point, Direction of Flight line and Air base.*** ***e. Calculation of number of strips and number of photographs*** ***f. Height Determination using vertical aerial photographs.*** ***g. Preparation of Map*** ***<u>GIS :</u>*** ***1. Basic software and operating system***	***To make more systematic and consistant**

of the theme in Arc View, Cartographic design concepts.

3. Vector Data Model,
   The Vector data model: Points, Lines and Polygons,Joining attribute data to spatial data,
   Visualization Techniques.
4. Digitizing and Data Automation,
   Digitizing in Arc View,Creating a map, Creating a table and entering data.
5. Spatial Analysis,Classification,
   Distance measures and Buffers.
6. Digital Image Processing ,Processing, Enhancement Techniques, Image Classification Techniques.

*** Note – Non- scientific calculators are allowed in the examination**

Books Recommended:

1. American Society of Photogrammetry, 1993. Manual of Remote Sensing (2nd Edition), ASP, Falls church, Virginia.
2. Burnside, C. D., 1979, Mapping from Aerial photographs, Graeda, London.
3. Hord, R. M., 1982, Digital Image Processing of Remotely Sensed DAT, Academic Press, New York.
4. Lillisand, T. M. & Kiefer, P. W., 1998, Remote Sensing & Image Interpretation, John Wiley & Sons, New York.
5. Moffit, H. F. & Edword M.M., 1980, Photogrammetry, Harperand Row

Introduction to Arc View's GIS softwareGeorefencing and creation of spatial dataJoining attribute data with spatial data, Creation of thematic maps.

2. Spatial Analysis, Classification, Proximity and Buffer analysis.
3D analysis in GIS: Generation of DEM and Slope

*** Note – Non- scientific calculators are allowed in the examination**

Books Recommended :

1. American Society of Photogrammetry, 1993. Manual of Remote Sensing (2nd Edition), ASP, Falls church, Virginia.
2. Burnside, C. D., 1979, Mapping from Aerial photographs, Graeda, London.
3. Hord, R. M., 1982, Digital Image Processing of Remotely Sensed DAT, Academic Press, New York.
4. Lillisand, T. M. & Kiefer, P. W., 1998, Remote Sensing & Image Interpretation, John Wiley & Sons, New York.
5. Moffit, H. F. & Edword M.M., 1980, Photogrammetry, Harperand Row Publishers, New York.
6. Paine, D. P., 1981, Aerial Photography & Interrelation for Resource Management,

Publishers, New York. 6. Paine, D. P., 1981, Aerial Photography & Interrelation for Resource Management, Willey, New York. 7. Waag, Bu – Chin, 2008, Digital Signal Processing Techniques & Applications in Radar Image Processing, John Willey, New Jersey. 8. Wolf. P. R., 1974, Elements of Photogrammetry McGraw – Hill Books Co., London.	Willey, New York. 7. Waag, Bu – Chin, 2008, Digital Signal Processing Techniques & Applications in Radar Image Processing, John Willey, New Jersey. 8. Wolf. P. R., 1974, Elements of Photogrammetry McGraw – Hill Books Co., London.	

Verified

Offg. Secretary
Banasthali Vidyapith
P.O. Banasthali Vidyapith
Distt. Tonk (Raj.)-304022

MINUTES OF THE MEETING OF BOARD OF STUDIES IN SCHOOL OF EARTH SCIENCES HELD ON 29th DECEMBER, 2018 AT 3.00 P.M. IN THE CONFERENCE ROOM, BHU MANDIR, BANASTHALI VIDYAPITH, RAJASTHAN.

PRESENT

1. Mr. Amit Kumar Mishra	-	Internal Member
2. Dr. Anju Patel	-	Internal Member
3. Mrs. ArpanaChaudhary	-	Internal Member
4. Ms. ArushiRana	-	Internal Member
5. Dr. Ashima Sharma	-	Internal Member
6. Dr. Ashutosh	-	Internal Member
7. Dr. Ashutosh Kumar Pandey	-	Internal Member
8. Ms. ChetnaSoni	-	Internal Member
9. Dr. Chilka Sharma	-	Internal Member
10. Dr. Kartar Singh	-	Internal Member
11. Dr. Kh. Moirangleima	-	Internal Member
12. Dr. MamtaChauhan	-	Internal Member
13. Dr. Ng. Mamata Devi	-	Internal Member
14. Mrs. PradeepikaKaushik	-	Internal Member
15. Dr. Rashmi Sharma	-	Convener
16. Dr. Resmi M.R.	-	Internal Member
17. Dr. SalahuddinMohd.	-	Internal Member
18. Dr. Sarika Singh	-	Internal Member
19. Dr. Subhashree Mishra	-	Internal Member
20. Dr. Vipin Kumar	-	Internal Member
21. Mr. Vivek Deep	-	Internal Member
22. Ms. NishaChoudhary	-	Special Invitee
23. Ms. Rinku Singh	-	Special Invitee
24. Prof. H.S.Sharma	-	External Member
25. Prof. M.G. Thakkar	-	External Member
26. Prof.P.K. Joshi	-	External Member

Note: Prof. H.S.Sharma, Prof. P.K. Joshi, Prof. M.G. Thakkar, Dr. Ng. Mamata Devi and Mrs. PradeepikaKaushik could not attend the meeting.

The meeting started with a welcome of the members by the convener of Board of Studies for School of Earth Sciences, Dr. Rashmi Sharma, Dean, School of Earth Sciences, Banasthali Vidyapith, Rajasthan.

1. The board took up the minutes of its last meeting held on April, 24, 2016.

The Board resolved that the minutes to be confirmed.

2. The board reviewed the existing panel of examiners and suggested to update the address and phone numbers of the existing examiners for each examination of Geography, Geology, Remote Sensing, Environmental Science and Environment Studies of UG, PG,

and M.Phil. examination keeping in view the by-law 15.03.02 of the Vidyapith. Updated panel is sent to the examination and secrecy section.

3. The board reviewed the Study/Curricula, scheme of examination and proposed revisions in various courses of study as follows:

B.A./B.Sc.

i.	First Semester	Minor change[a]
ii.	Second Semester	Minor change[b]
iii.	Third Semester	Minor change[c]
iv.	Fourth Semester	Minor change[d]
v.	Fifth Semester	Major change[e]
vi.	Sixth Semester	Majorchange[f]

The Board reviewed the objectives, syllabi, learning outcomes of the B.A./B.Sc. (Geography).

(a) In B.A./B.Sc. (Geography) I Semester, revision in the syllabus of *Fundamentals of Cartography Lab* (Course Code: GEOG 101L) was proposed. Board discussed the revision proposed and agreed upon the suggested syllabus. Board also recommended implementing the proposed revision in syllabus of *Fundamentals of Cartography lab*Semester Examination, December, 2019.

(b) In B.A./B.Sc. (Geography) II Semester, revision in the syllabus of *Statistical Techniques and Data Representation lab* (Course Code: GEOG 104L) &*Human Geography* (Course Code: GEOG 102) were proposed. Board discussed the revision proposed and agreed upon the suggested syllabus. Board also recommended implementing the proposed revision in syllabi of *Statistical Techniques and Data Representation lab*, *Human Geography*Semester Examination,April/May, 2020.

(c) In B.A./B.Sc. (Geography) III Semester, revision in the syllabus of *Introduction to Geography of India*(Course Code: GEOG 202) was proposed. Board discussed the revision proposed and agreed upon the suggested syllabus. Board also recommended implementing the proposed revision in syllabus of *Introduction to Geography of India*Semester Examination, December, 2020.

(d) In B.A./B.Sc. (Geography) IV Semester, revision in the syllabus of *Relief Representation and Topographical Maps lab* (Course Code: GEOG 204L) &*Economic Geography* (Course Code: GEOG 201) were proposed. Board discussed the revision proposed and agreed upon the suggested syllabus. Board also recommended implementing the proposed revision in syllabi of *Relief Representation and Topographical Maps lab*, *EconomicGeography* Semester Examination,April/May, 2021.

(e) In B.A./B.Sc. (Geography) V Semester, revision in the syllabus of *Map Projection lab* (Course Code: 5.2) was proposed. Board discussed the revision proposed and agreed upon the suggested syllabus. Board also recommended implementing the proposed revision in syllabus of *Map Projection lab* Semester Examination, December, 2021.The Board proposed introduction of pool of Discipline Elective courses and agreed upon it. The courses *Geographical Thought* (Course Code: GEOG 302) and *World Regional Geography* (Course Code: GEOG 304) has been shifted in the pool as courses *Geographical Thought* (Course Code: GEOG_to be generated) and *World Regional Geography* (Course Code: GEOG_to be generated) of Discipline electives and another two new courses has also been added.

(f) In B.A./B.Sc. (Geography) VI Semester, revision in the syllabus of *Geographical Thought* (Course Code: GEOG 6.1) was proposed. Board discussed the revision proposed and agreed upon the suggested syllabus.

The Board proposed introduction of pool of Discipline Electives in Semester V and VI also and agreed upon it.

List of Discipline Electives:
Environment and Disaster Management (Course Code: GEOG_*to be generated*)
Geographical Thought (Course Code: GEOG_*to be generated*)
Settlement Geography (Course Code: GEOG_*to be generated*)
World Regional Geography (Course Code: GEOG_*to be generated*)

Board proposed to introduce Open (Generic) audit/credit Elective and agreed to implement as per Vidyapith policy.

Board also recommended implementing the proposed changes in syllabus from Semester Examination,April/May, 2022.

Board recommended implementation of reviewed Recommended Books and e-learning materials from session 2019-20 in all semesters respectively.

Programme educational objectives, outcomes and the list of courses of the B.A./B.Sc. (Geography) programme is attached and marked as **Annexure –1 (PP. 1-4).**

The revised syllabus, learning outcomes, list of recommended books and e-learning materials of the B.A./B.Sc. (Geography) programme is attached and marked as **Annexure –2 (PP. 1-37).**

I. **B.Sc. (Geology)**:

i.	First Semester	Major change[a]
ii.	Second Semester	Major change[b]
iii.	Third Semester	Major change[c]

iv.	Fourth Semester	Major change[d]
v.	Fifth Semester	Major change[e]
vi.	Sixth Semester	Major change[f]

The Board reviewed the objectives, syllabi, learning outcomes of the **B.Sc. (Geology).**

a) In B.Sc. Geology I Semester, the courses *Physical Geology and Plate Tectonics* (Course Code: GEOL 102) *& Physical Geology and Plate Tectonics Lab* (Course Code: GEOL 102 L) have been proposed to be replaced by new course *Physical Geology* (Course Code: *to be generated*) *containing* both theory and practical. Board discussed the changes proposed and agreed upon suggested changes. Board also recommended implementing the proposed replacement in the syllabus of new course in Semester Examination, December, 2019.

b) In B.Sc. Geology II Semester, the courses *Mineralogy, Crystallography and Economic Geology* (Course Code: GEOL 101) & *Mineralogy, Crystallography and Economic Geology Lab* (Course Code: GEOL 101L) have been proposed to be replaced by new course *Structural Geology and Plate Tectonics* (Course Code: *to be generated*)containing both theory and practical. Board discussed the changes proposed and agreed upon suggested changes. Board also recommended implementing the proposed replacement in the syllabus of new courses inSemester Examination, April/May, 2020.

c) In B.Sc. Geology III Semester, the courses *Petrology and Structural Geology* (Course Code: GEOL 202) &*Petrology and Structural Geology Lab* (Course Code: GEOL 202L) have been proposed to be replaced by new course *Mineralogy, Crystallography and Geochemistry*(Course Code: *to be generated)* containing both theory and practical. Board discussed the changes proposed and agreed upon suggested changes. Board also recommended implementing the proposed replacement in the syllabus of new courses in Semester Examination, December, 2020.

d) In B.Sc. Geology IV Semester, the courses *Palaeontology and Stratigraphy* (Course Code: GEOL 201)&*Palaeontology and Stratigraphy Lab* (Course Code: GEOL 201L)have been proposed to be replaced by new course *Petrology and Economic Geology* (Course Code: *to be generated*)containing both theory and practical. Board discussed the proposed changes and shifting of the courses and agreed upon suggested changes. Board also recommended implementing the proposed changes in the syllabus of new courses inSemester Examination, April/May, 2021.

e) In B.Sc. Geology V Semester, the courses *Geochemistry, Geomorphology, Photogeology and Remote Sensing* (Course Code: 5.1) & *Geochemistry, Geomorphology, Photogeology and Remote Sensing Lab* (Course Code: 5.2) have been proposed to be replaced by newly introduced pool of Discipline Electives containing both theory and practical. Board discussed the changes proposed and agreed upon the suggested changes. Board also

recommended implementing the proposed replacement in the syllabus of new courses in Semester Examination, December, 2021.

f) In B.Sc. Geology VI Semester, the courses *Hydrogeology, Environmental and Engineering Geology* (Course Code: 6.1) &*Hydrogeology, Environmental and Engineering Geology Lab* (Course Code: 6.2) have been replaced by newly introduced pool of Discipline Electives containing both theory and practical. Board discussed the changes proposed and agreed upon suggested changes. Board also recommended implementing the proposed replacement in the syllabus of new courses in Semester Examination, April/May, 2022.

The Board proposed introduction of pool of Discipline Electives containing both theory and respective practicals and agreed upon it.

List of Discipline Electives:

Applied Geology (Course Code: GEOL_*to be generated*)
Field Geology: Tools and Techniques (Course Code: GEOL_*to be generated*)
Geology of Rajasthan (Course Code: GEOL_*to be generated*)
Palaeontology and Stratigraphy (Course Code: GEOL_*to be generated*)

Board proposed to introduce Open (Generic) audit/credit Elective and agreed to implement as per Vidyapith policy.

Board recommended implementation of reviewed Recommended Books and e-learning materials from session 2019-20 in all semesters respectively.

Programme educational objectives, outcomes and the list of courses of the B.Sc. (Geology) programme is attached and marked as **Annexure –3 (PP. 1-5).**

The revised syllabus, learning outcomes, list of recommended books and e-learning materials of the B.Sc. (Geology) programme is attached and marked as **Annexure -4 (PP. 1-55).**

III. M.A./M.Sc. (Geography):

i.	First Semester	Minor Change[a]
ii.	Second Semester	Minor Change[b]
iii.	Third Semester	Major Change[c]
iv.	Fourth Semester	Major Change[d]

The Board reviewed the objectives, syllabi, learning outcomes of the M.A./M.Sc. (Geography).

The Board discussed the recent trends in Geography at postgraduate level and found that the knowledge of computational software is the necessity of today's research environment. In addition to this, board suggested to give more weightage to self-learning and independent research activities.

(a) In M.A./M.Sc. (Geography) I Semester, the board reviewed the syllabi of *Cartographic Techniques Lab* (Course Code: GEOG 402L). It was found that students had already studied the diagrammatic representation of data manually in their graduation. It was suggested to introduce advanced techniques of this diagrammatic representation using Microsoft Excel at post graduate level. Board also recommended implementing the proposed revision in syllabus of *Cartographic Techniques Lab* Semester Examination, December, 2019.

(b) In M.A./M.Sc. (Geography) II Semester, the board reviewed the syllabi of *Geography of India* (Course Code: GEOG 406) & *Oceanography* (Course Code: GEOG 409) and recommended to add some topics for enrichment and specification. Board also recommended implementing the proposed revision in syllabi of *Geography of India* and *Oceanography* Semester Examination, April/May, 2020.

(c) In M.A./M.Sc. (Geography) III Semester, the board reviewed the syllabi of *Political Geography* (Course Code: GEOG 504), *Research Methodology and Quantitative Techniques* (Course Code: GEOG 507), *Systematic Agricultural Geography* (Course Code: GEOG 510) and *Surveying Lab* (Course Code: GEOG 509L) and recommended to add some topics for enrichment and specification. Board also recommended implementing the proposed revision in syllabi of *Political Geography*, *Research Methodology and Quantitative Techniques*, *Systematic Agricultural Geography* and *Surveying Lab* Semester Examination, December, 2020.

The Board proposed introduction of pool of Discipline Electives and courses of Elective I *Population Geography* (Course Code: GEOG 505) and *Social Geography* (Course Code: GEOG 508) to be shifted in pool of Discipline Electives and agreed upon it.

Board recommended the introduction of Reading Elective I which has to be opted from common pool of Reading Electives in PG courses of School of Earth Sciences (Environmental Science, Geology & Geography).

The Board also recommended implementing the Reading Elective by III Semester Examination, December, 2020.

(d) In M.A./M.Sc. (Geography) IV Semester, the board reviewed the syllabi of *Environmental Geography* (Course Code: GEOG 501), *Remote Sensing and GIS* (Course Code: GEOG 506), *Remote Sensing and GIS Lab* (Course Code: GEOG 506 L), *Geography of Rural Settlements* (Course Code: GEOG 502) and *Urban Geography* (Course Code: GEOG 512) and recommended to add some topics for enrichment and specification. Board also recommended implementing the proposed revision in syllabi of *Environmental Geography*, Remote *Sensing and GIS*, *Remote Sensing and GIS Lab*, *Geography of Rural Settlements* and *Urban Geography* Semester Examination, April/May, 2021.

The Board proposed introduction of pool of Discipline Electives and courses of Elective II *Geography of Rural Settlements*(Course Code: GEOG 502)and *Tourism Geography*(Course Code: GEOG 511) and courses of Elective III *Medical Geography*(Course Code: GEOG 503) and *Urban Geography*(Course Code: GEOG 512) to be shifted in pool of Discipline Electives and agreed upon it.

List of Discipline Electives:

- *Geography of Rural Settlements* (Course Code: GEOG 502)
- *Medical Geography* (Course Code: GEOG 503)
- *Population Geography* (Course Code: GEOG 505)
- *Social Geography* (Course Code: GEOG 508)
- *Tourism Geography* (Course Code: GEOG 511)
- *Urban Geography* (Course Code: GEOG 512)

Board recommended the introduction of Reading Elective II which has to be opted from common pool of Reading Electives in PG courses of School of Earth Sciences (Environmental Science, Geology & Geography).

The Board has proposed the following List of Reading Electives in the curricula:

- *Agroforestry* (Course Code :ENVS_R *to be generated*)
- *Energy Resources and Conservation* (Course Code: ENVS_R *to be generated*)
- *Man and Environment* (Course Code :ENVS_R *to be generated*)
- *Water and Sustainable Development* (Course Code : ENVS_R *to be generated*)
- *Environmental Challenges and Disaster Management* (Course Code :GEOG_R *to be generated*)
- *India: Socio-Political and Environmental Scenario* (Course Code: GEOG_R *to be generated*)
- *Rajasthan: Challenges and Prospects*(Course Code :GEOG_R *to be generated*)
- *Transforming India* (Course Code: GEOG_R *to be generated*)
- *Geo Tourism* (Course Code: GEOL_R *to be generated*)
- *Indian Mineral Deposits, Economics and Mining Ethics* (Course Code: GEOL_R *to be generated*)
- *Innovation and Entrepreneurship in Earth Sciences* (Course Code: GEOL_R *to be generated*)
- *Natural Hazards and Disasters* (Course Code: GEOL_R *to be generated*)

Board proposed to introduce open elective course in Semester IV.

Board recommended implementation of reviewed recommended books and e-learning materials from session 2019-20 in all semesters respectively.

Programme educational objectives, outcomes and the list of courses of the M.A./M.Sc. (Geography) programme is attached and marked as **Annexure –5 (PP. 1-6).**

The revised syllabus, learning outcomes, list of recommended books and suggested e-learning materials of the M.A./M.Sc. (Geography) programme is attached and marked as **Annexure -6 (PP. 1-80).**

IV. M.Sc. (Geology):

i.	First Semester	Major change[a]
ii.	Second Semester	Major change[b]
iii.	Third Semester	Major change[c]
iv.	Fourth Semester	Major change[d]

The Board reviewed the objectives, syllabi, learning outcomes of the **M.Sc. (Geology)**.

The course scheme has been changed as earlier there were five credits for lectures and in proposed the credits are four. The credits for Lab are remaining same.

a) In M.Sc. Geology I Semester, the course *Fuel Geology* (Course Code: GEOL 401) has been proposed to shift to semester III as a pool of discipline elective course and is replaced by modified course *Geochemistry and Isotope Geology* (Course Code: GEOL__ *to be generated*) from semester III.
Geomorphology (Course Code: GEOL__ *to be generated*) is suggested to introduce in place of *Ore Genesis and Economic Geology* (Course Code: GEOL 409). Earlier it was present in semester IV.
The courses *Geotectonics and Structural Geology* (Course Code: GEOL 405) & *Mineralogy and Analytical Techniques* (Course Code: GEOL 408) were proposed to be retained with modifications in the same semester as *Geotectonics and Structural Geology* (Course Code: GEOL__ *to be generated*) & *Mineralogy and Analytical Techniques* (Course Code:GEOL__ *to be generated*) respectively under revised scheme.
The course *Sedimentary Petrology* (Course Code: GEOL__ *to be generated*) is proposed to introduce as a modified course under revised scheme. Earlier it was in Semester II as *Sedimentary Petrology* (Course Code: GEOL 410).
The course *Geology Lab-I* (Course Code: GEOL 402L) has been suggested to be replaced with the updated course *Geology Lab-I with Field work* (Course Code: GEOL__L *to be generated*). Board discussed all the changes proposed in the new syllabus and agreed with the suggested changes. Board also recommended implementing the proposed changes in the syllabus of new courses in Semester Examination, December, 2019.

b) In M.Sc. Geology II Semester**,** the courses *Geophysics and Exploration Method* (Course Code: GEOL 404), *Igneous Petrology* (Course Code: GEOL 406) & *Metamorphic Petrology* (Course Code: GEOL 407) are proposed to retain in the same semester with minor modifications under revised scheme as *Geophysics and Exploration Method* (Course Code: GEOL__ *to be generated*), *Igneous Petrology* (Course Code:GEOL__ *to be generated*) &*Metamorphic Petrology*(Course Code:GEOL__ *to be generated*).
Sedimentary Petrology (Course Code: GEOL 410) has been proposed to replace by *Ore Genesis and Economic Geology* (Course Code:GEOL__ *to be generated*), earlier was in semester I.
The course *Stratigraphy*(Course Code:GEOL 510) was earlier in semester III, suggested to shift to semester II with minor modifications under revised course scheme as *Stratigraphy*(Course Code:GEOL__ *to be generated*).
The course *Geology Lab-II with Field work* (Course Code: GEOL 403L) has been proposed to replace by new course *Geology Lab-II* (Course Code: GEOL__L *to be generated*).
Board discussed the changes proposed and agreed upon suggested changes. Board also recommended implementing the proposed replacement in the syllabus of new courses in Semester Examination, April/May, 2020.

c) In M.Sc. Geology III Semester,the course *Geochemistry and Isotope Geology* (Course Code: GEOL 504) have been shifted to semester I and replaced by new course *Hydrogeology*(Course Code: GEOL__*to be generated*).
Mining and Engineering Geology(Course Code: GEOL 508) has been shifted to pool of discipline electives under new course scheme with minor modifications as *Mining and Engineering Geology*(Course Code: GEOL__*to be generated*).
Palaeontology (Course Code: GEOL 509) is retained in the same semester under new course scheme with minor modifications *Palaeontology*(Course Code: GEOL__*to be generated*).
Stratigraphy(Course Code: GEOL 510) is replaced by new course *Remote Sensing and GIS in Geology* (Course Code: GEOL__ *to be generated*).
Geology Lab-III with Field work(Course Code: GEOL 505L) is retained as *Geology Lab-III with Field work*(Course Code: GEOL__L *to be generated*) in the same semester with significant modifications.
Board discussed the changes proposed and agreed upon suggested changes. Board also recommended implementing the proposed replacement in the syllabus of new courses in Semester Examination, December, 2020.

Board discussed and recommended to introduce pool of discipline electives in III semester
The complete list of pool of discipline electives is as follows:

- *Environmental Geology* (Course Code: GEOL_ *to be generated)*
- *Fuel Geology* (Course Code: GEOL_ *to be generated)*
- *Marine Geology* (Course Code: GEOL_ *to be generated)*
- *Mining and Engineering Geology* (Course Code: GEOL_ *to be generated)*

Board recommended the introduction of Reading Elective I which has to be opted from common pool of Reading Electives in PG courses of School of Earth Sciences (Environmental Science, Geology & Geography).

The Board also recommended implementing the Reading Elective by III Semester Examination, December, 2020.

Board proposed to introduce open elective course in Semester III.

d) In M.Sc. Geology IV Semester, the courses *Concepts of Remote sensing and GIS* (Course Code: GEOL 501) & *Environmental Geology and Hydrogeology* (Course Code: GEOL 503) have been removed and *Geomorphology* (Course Code: GEOL 507) has been shifted to Semester I under revised course scheme.
   Geology Lab-IV (Course Code: GEOL 506L) has been removed from the semester. *Dissertation* (Course Code: GEOL 502 D) has been retained as Dissertation (Course Code: GEOL_D *to be generated*) and now being introduced for the **entire semester** under revised scheme.
   Board discussed the changes proposed and agreed upon suggested changes. Board also recommended implementing the proposed replacement in the syllabus of new courses in Semester Examination, April/May, 2021.

Board recommended the introduction of Reading Elective II which has to be opted from common pool of Reading Electives in PG courses of School of Earth Sciences (Environmental Science, Geology & Geography).
The Board has proposed the following Reading Electives in the curricula:

- *Agroforestry* (Course Code :ENVS_R *to be generated*)
- *Energy Resources and Conservation* (Course Code: ENVS_R *to be generated*)
- *Man and Environment* (Course Code :ENVS_R *to be generated*)
- *Water and Sustainable Development* (Course Code : ENVS_R *to be generated*)
- *Environmental Challenges and Disaster Management* (Course Code :GEOG_R *to be generated*)
- *India: Socio-Political and Environmental Scenario* (Course Code: GEOG_R *to be generated*)
- *Rajasthan: Challenges and Prospects*(Course Code :GEOG_R *to be generated*)
- *Transforming India* (Course Code: GEOG_R *to be generated*)
- *Geo Tourism* (Course Code: GEOL_R *to be generated*)
- *Indian Mineral Deposits, Economics and Mining Ethics* (Course Code: GEOL_R *to be generated*)
- *Innovation and Entrepreneurship in Earth Sciences* (Course Code: GEOL_R *to be generated*)
- *Natural Hazards and Disasters* (Course Code: GEOL_R *to be generated*)

Board recommended implementation of reviewed recommended books and e-learning materials from session 2019-20 in all semesters respectively.

Programme educational objectives, outcomes and the list of courses of the M.Sc. (Geology) programme is attached and marked as **Annexure –7 (PP. 1-8).**

The revised syllabus, learning outcomes, list of recommended books and suggested e-learning materials of the M.Sc. (Geology) programme is attached and marked as **Annexure - 8 (PP. 1-67).**

Board reviewed the process of Dissertation and recommended formal guidelines for it. The proposed guidelines with evaluation scheme are attached and marked as **Annexure-9 (PP.1).** Board also recommended implementing the proposed guidelines by IV Semester Examination, April/May, 2021.

IV. M.Sc. (Environmental Science)

i.	First Semester	Major Change[a]
ii.	Second Semester	Major Change[b]
iii.	Third Semester	Major Change[c]
iv.	Fourth Semester	Major Change[d]

The Board reviewed the objectives, syllabi, learning outcomes of the M.Sc. (Environmental Science).

The Board discussed the recent trends in Environmental Science at postgraduate level and found that the knowledge of computational software is the necessity of today's research environment. In addition to this, board suggested to give more weightage to self-learning and independent research activities.

(a)In M.Sc. (Environmental Science I Semester), revision in the syllabi of *Ecology and Environment* (Course Code: ENVS 402), *Environmental Chemistry* (Course Code: ENVS 405) and *Environment Lab - I* (Course Code: ENVS 403 L) were proposed. Board discussed the revision proposed and agreed upon the suggested syllabi. Board recommended implementing the proposed revision in the syllabi of *Ecology and Environment*, *Environmental Chemistry* and *Environment Lab - I* by I Semester Examination, December, 2019.

Board agreed to replace the course *Geography of Environment* (Course Code: ENVS 410) by *Climate Change and Environment* (Course Code: ENVS_*to be generated*). Board found that proposed syllabus is more elaborated and well arranged. Board recommended implementing the proposed revision in the syllabus of *Climate change and Environment* by I Semester Examination, December, 2019.

(b) In M.Sc. (Environmental Science II Semester), Board reviewed the syllabi of *Biostatistics and Research Methodology* (Course Code: BIO 406) and *Environmental Biology and Toxicology* (Course Code: BIO 408), discussed and agreed that these course should be

replaced by new courses *Environmental Statistics and Research Methodology* (Course Code:ENVS_*to be generated*) & *Environmental Toxicology* (Course Code:ENVS_*to be generated*) respectively. Board recommended implementing the proposed changes by II Semester Examination, April, 2020.

Board reviewed the revision in the syllabi of *Environmental Legislation* (Course Code: ENVS 406) & *Environment Lab - II* (Course Code: ENVS 404 L) and agreed upon the suggested syllabi. Board recommended implementing the proposed revision in the syllabi of *Environmental Legislation* along with *Environment Lab - II* respectively by II Semester Examination, April, 2020.

Board suggested replacement of *Environmental Physics* (Course Code: ENVS 407) by *Biodiversity & conservation* (Course Code: ENVS 502), which was an elective course of III semester as *Biodiversity & conservation* (Course Code: ENVS_*to be generated*) and Board recommended *Environmental Physics* (Course Code: ENVS_*to be generated*) to be placed in discipline elective pool of III semester. Board discussed the change and agreed upon the suggested syllabus. Board recommended implementing the proposed changes by II Semester Examination, April, 2020.

(c) In M.Sc. (Environmental Science III Semester), Board reviewed the course of *Disaster Management and Mitigation Strategies*(Course Code: ENVS 504) and *Energy Auditing and Conservation*(Course Code: ENVS 505) and suggested that these courses have been replaced by *Air Pollution Monitoring, Control Technology and Management* (Course Code: ENVS 501) & *Water Pollution Monitoring, Control Technology and Management* (Course Code: ENVS 511) as *Air Pollution Monitoring, Control Technology and Management* (Course Code: ENVS_*to be generated*) & *Water Pollution Monitoring, Control Technology and Management* (Course Code: ENVS_*to be generated*), which was part of an elective in III semester. Board suggested inclusion of air and water courses should be part of core subjects of Environmental Science. Board recommended *Disaster Management and Mitigation Strategies* (Course Code: ENVS_*to be generated*) and *Energy Auditing and Conservation* (Course Code: ENVS_*to be generated*) to be placed in discipline elective pool of III semester.

Board reviewed the revision in the syllabi of *Environment Lab -III* (Course Code: ENVS 506L) agreed upon the suggested syllabi.

Board suggested to shift *Biodiversity and Conservation* (Course Code: ENVS 502) from the pool of Elective to core course in Semester II. *Environmental Impact Assessment and Management* (Course Code: ENVS 508) to be shifted as *Environmental Impact Assessment and Management* (Course Code: ENVS_*to be generated*) in the Pool of Discipline Elective Semester III from core course of same semester.

Board recommended implementing the proposed changes by III Semester Examination, December, 2020.

Board discussed and recommended to introduce pool of discipline electives in III semester

The complete list of Discipline Electives is as follows:

- *Biotechnology Application to Environmental Science* (Course Code: ENVS *to be generated*)
- *Disaster Management and Mitigation Strategies* (Course Code: ENVS *to be generated*)
- *Energy Auditing and Conservation* (Course Code: ENVS *to be generated*)
- *Environmental Health Management* (Course Code: ENVS *to be generated*)
- *Environmental Impact Assessment and Management* (Course Code: ENVS *to be generated*)
- *Environmental Physics* (Course Code: ENVS *to be generated*)

Board recommended the introduction of Reading Elective I which has to be opted from common pool of Reading Electives in PG courses of School of Earth Sciences (Environmental Science, Geology & Geography).

Board proposed to introduce open elective course in Semester III.

(d) In M.Sc. (Environmental Science IV Semester), Board discussed and agreed modification in credits of *Project* (Course Code: ENVS 509P) and proposed implementation as *Project* (Course Code: ENVS_P *to be generated*), also proposed the Reading Elective-II in IV semester.

Board recommended the introduction of Reading Elective II which has to be opted from common pool of Reading Electives in PG courses of School of Earth Sciences (Environmental Science, Geology & Geography).

The Board has proposed the following Reading Electives in the curricula:

- *Agroforestry* (Course Code :ENVS_R *to be generated*)
- *Energy Resources and Conservation* (Course Code: ENVS_R *to be generated*)
- *Man and Environment* (Course Code : ENVS_R *to be generated*)
- *Water and Sustainable Development* (Course Code : ENVS_R *to be generated*)
- *Environmental Challenges and Disaster Management* (Course Code :GEOG_R *to be generated*)
- *India: Socio-Political and Environmental Scenario* (Course Code: GEOG_R *to be generated*)
- *Rajasthan: Challenges and Prospects*(Course Code : GEOG_R *to be generated*)
- *Transforming India* (Course Code: GEOG_R *to be generated*)
- *Geo Tourism* (Course Code: GEOL_R *to be generated*)
- *Indian Mineral Deposits, Economics and Mining Ethics* (Course Code: GEOL_R *to be generated*)
- *Innovation and Entrepreneurship in Earth Sciences* (Course Code: GEOL_R *to be generated*)

- *Natural Hazards and Disasters* (Course Code: GEOL_R *to be generated*)

Board recommended implementing the proposed revision in the scheme of *Project* by IV Semester Examination, April, 2021.

Programme educational objectives, outcomes and the list of courses of the M.Sc. (Environmental Science) programme is attached and marked as **Annexure –10 (PP. 1-6).**
Board recommended implementation of reviewed recommended books and e-learning materials from session 2019-20 in all semesters respectively.

The revised syllabus, learning outcomes, list of recommended books and suggested e-learning materials of the M.Sc. (Environmental Science) programme is attached and marked as **Annexure -11 (PP. 1-88).**

Board reviewed the process of *Project* and recommended formal guidelines for it. The proposed guidelines with evaluation scheme is attached and marked as **Annexure-12 (PP. 1).**
Board also recommended implementing the proposed guidelines by IV Semester Examination, April/May, 2021.

V. M. Phil. (Geography):

Board discussed the curriculum structure of M.Phil. (Geography) and proposed further discussion in Faculty meeting. (Annexure I)

Board recommended implementation of reviewed Recommended Books and e-learning materials from session 2019-20 in all semesters respectively.

VI. M.Tech. (Remote Sensing):

i.	First Semester	Major Change[a]
ii.	Second Semester	Major Change[b]
iii.	Third Semester	Major Change[c]
iv.	Fourth Semester	Major Change[d]

Board reviewed the scheme of M.Tech. and recommended to introduce discipline electives and Term paper/Minor project/Seminar in semester I & II with modified credit. Board also recommended introduction of open elective in semester II. Board suggested to replace existing lab with restructured labs.

(a) In M.Tech. (Remote Sensing) I Semester, Board reviewed the syllabi of *Fundamentals of Geographic Information Sciences and Digital Cartography*(Course Code: RS 504), *GIS Programming and Scripting* (Course Code: RS 505), *Microwave, Thermal and Hyperspectral Remote Sensing* (Course Code: RS 506), *Principles of Remote Sensing* (Course Code: RS 508), *Fundamentals of Geographic Information Sciences and Digital Cartography Lab* (Course Code: RS 504L), *GIS Programming and Scripting Lab* (Course Code: RS 505L), and *Microwave, Thermal and Hyperspectral Remote Sensing Lab* (Course Code: RS 506L) and found that few topics need to be reordered, modified and detailed for adequate and systematic approach. It was suggested to introduce recent technologies and essential application following the modified national security policies and advanced data, tools and techniques for underpinning the essential component for further research. It was suggested to introduce discipline elective I and discipline elective II and shift courses *GIS Programming and Scripting* (Course Code: RS__*to be generated*), *Microwave, Thermal and Hyperspectral Remote Sensing*(Course Code: RS__*to be generated*), *Applied Statistics and Research Methodology* (Course Code: RS__*to be generated*) to pool of discipline electives. Introduction of Term paper-I /Minor project-I/Seminar-I was suggested. *Fundamentals of Geographic Information Sciences and Digital Cartography Lab* (Course Code: RS 504L) and *GIS Programming and Scripting Lab* (Course Code: RS 505L) was combined as new Remote Sensing Lab-II (Course Code: RS_L *to be generated*) and *Microwave, Thermal and Hyperspectral Remote Sensing Lab* (Course Code: RS506L) and *Principles of Remote Sensing Lab* (Course Code: RS 508L) was combined as new Remote Sensing Lab-I (Course Code: RS_L *to be generated*). *Applied Statistics and Research Methodology Lab* (Course Code: RS 502L) was proposed to remove. Board proposed and agreed to implement the revision in syllabi and introduction of new components of above mentioned courses by I Semester Examination, December, 2019.

(b) In M.Tech. (Remote Sensing)II Semester,Board reviewed the syllabi of *Applications of Remote Sensing*(Course Code: RS 501), *Digital Image Processing* (Course Code: RS 503), *Photogrammetry, Global Positioning Systems and Mobile Mapping* (Course Code: RS 507), *Spatial Database Systems, Analysis and Modeling* (Course Code: RS 509), *Spatial Decision Supports Systems* (Course Code: RS 510), *Applications of Remote Sensing Lab* (Course Code: RS 501L), *Digital Image Processing Lab* (Course Code: RS 503L) and *Photogrammetry, Global Positioning Systems and Mobile Mapping Lab* (Course Code: RS 507L) and found that few topics need to be reordered, modified and detailed for adequate and systematic approach. It was suggested to introduce recent technologies and essential application following the modified national security policies and advanced data, tools and techniques for underpinning the essential component for further research. It was suggested to introduce discipline elective III and open elective and shift courses *Applications of Remote Sensing* (Course Code: RS__*to be generated*), *Spatial Database Systems, Analysis and Modeling* (Course Code: RS__*to be generated*), *Spatial Decision Supports Systems* (Course Code: RS__*to be generated*) to pool of discipline electives. Introduction of Term paper-II /Minor project-II/Seminar-II was suggested. *Digital Image Processing Lab* (Course Code: RS 503L) and *Applications of Remote Sensing Lab* (Course Code: RS 501L) was combined as new Remote Sensing Lab-III (Course Code: RS_L *to be generated*) and *Photogrammetry, Global Positioning Systems and Mobile Mapping* (Course Code: RS 507) and *Spatial Database Systems, Analysis and Modeling Lab* (Course Code: RS 509L), was combined as new Remote Sensing Lab-IV (Course Code: RS_L *to be generated*). Board proposed and agreed to implement the revision in syllabi and introduction of new components of above mentioned courses by II Semester Examination, April/May, 2020.

List of Discipline Electives:
Applications of Remote Sensing(Course Code: RS_*to be generated*)
Applied Statistics and Research Methodology(Course Code: RS_*to be generated*)
Geospatial Entrepreneurship (Course Code: RS_*to be generated*)
Geospatial Intelligence(Course Code: RS_*to be generated*)
GIS Programming and Scripting(Course Code: RS_*to be generated*)
Microwave, Thermal and Hyperspectral Remote Sensing(Course Code: RS_*to be generated)*
Spatial Database Systems, Analysis and Modeling(Course Code: RS_*to be generated*)
Spatial Decision Supports Systems(Course Code: RS_*to be generated*)

(c) In M.Tech. (Remote Sensing) III Semester, Board reviewed the list of reading electives and found that the course *Geoinformatics in Human Settlement Analysis*(Course Code: RS 601R) should be replaced by *Spatial Planning and Urban Development* (Course Code: RS _ R *to be generated*), the course *Pattern Recognition and Processing* (Course Code: RS 602R) should be replaced by *Geospatial BigData: Challenges and Opportunities* (Course Code: RS _ R *to be generated*) and the course *Remote Sensing in Environment Studies* (Course Code: RS 605R) should be replaced by *Environmental Remote Sensing and Modeling* (Course Code: RS _ R *to be generated*) and shifted to the pool of reading electives. Board also suggested that some more emerging technologies and national programmes should be added. Board proposed and agreed to implement the syllabus by III Semester Examination, December, 2020.

(d) In M.Tech. (Remote Sensing) IV Semester, Board reviewed the list of reading electives and found that the course *Remote Sensing in hydrology and water resources*(Course Code: RS _R*to be generated*), should be modified, as there are significant changes in syllabi and few topics need to be reordered and detailed for adequate and systematic approach. The board also found that the course *Remote Sensing in Resource Management* (Course Code: RS 607R) should be replaced by *Geo-informatics for Resource Management* (Course Code: RS _ R *to be generated*) and the course *Spatial Modeling and Resource Model* (Course Code: RS 608R) should be replaced by *Open Source Software, Services and Utility Application* (Course Code: RS _ R *to be generated*) and shifted to the pool of reading electives. Board also suggested that some more emerging technologies and national programmes should be added. Board proposed and agreed to implement the syllabus byIV Semester Examination, April/May, 2021.

The Board also recommended implementing the reading electives by Session 2020-2021.

Board recommended implementation of reviewed Recommended Books and e-learning materials from session 2019-20 in all semesters respectively.

Programme educational objectives, Programme specific outcomes and the list of courses of the M.Tech. (Remote Sensing) programme is attached and marked as **Annexure –13 (PP. 1-5).**

The revised syllabus, learning outcomes, list of recommended books and e-learning materials of the M.Tech. (Remote Sensing) programme is attached and marked as **Annexure -14 (PP. 1-74).**

In M.Tech. (Remote Sensing) III Semester, Board reviewed the process of *Project* (*Part I)* (Course Code: RS 603P) and recommended formal guidelines for it. The proposed guidelines with evaluation scheme is attached and marked as **Annexure-15 (PP. 1).** Board also recommended implementing the proposed guidelines by III Semester Examination, December, 2020.

In M.Tech. (Remote Sensing) IV Semester, Board suggested that similar guidelines **Annexure-15(PP. 1).**as suggested for *Project* (*Part I)* (Course Code: RS 603P), should be followed for *Project* (*Part II)* (Course Code: RS 604P). Board also recommended implementing the proposed guidelines by IV Semester Examination, April/May, 2021.

4. Board reviewed the curriculum for the courses running in the other programs of the Vidyapith. Following suggestions were given

Bachelor of Arts and Bachelor of Education		
GEOG 101L	Fundamentals of Cartography lab	Minor Change
GEOG 102	Human Geography	Minor Change
GEOG 103	Physical Geography	No change
GEOG 104L	Statistical Techniques and Data Representation lab	Minor Change
GEOG 201	Economic Geography	Minor Change
GEOG 202	Introduction to Geography of India	Minor Change
GEOG 203L	Mapping and Prismatic Compass Survey lab	No change
GEOG 204L	Relief Representation and Topographical Maps lab	Minor Change
GEOG 301L	Fundamentals of Geoinformatics lab	No change
GEOG 302	Geographical Thought	Major Change
GEOG 303L	Map Projection lab	Minor Change
GEOG 304	World Regional Geography	Major change

The Board proposed introduction of pool of Discipline Elective courses and agreed upon it.The courses *Geographical Thought* (Course Code: GEOG 302) and *World Regional Geography* (Course Code: GEOG 304)has been shifted in the pool as courses*Geographical Thought* (Course Code: GEOG_ to be generated) and *World Regional Geography* (Course Code: GEOG_to be generated) of Discipline electives and another two new courses has also been added.

The board reviewed the courses of Bachelor of Arts and Bachelor of Education and recommended to implement as per **Annexure 1 (PP. 1-4) &Annexure 2(PP. 1-38) .**

Bachelor of Science and Bachelor of Education		
GEOG 101L	Fundamentals of Cartography lab	Minor Change
GEOG 102	Human Geography	Minor Change
GEOG 103	Physical Geography	No change
GEOG 104L	Statistical Techniques and Data Representation lab	Minor Change
GEOG 201	Economic Geography	Minor Change
GEOG 202	Introduction to Geography of India	Minor Change
GEOG 203L	Mapping and Prismatic Compass Survey lab	No change
GEOG 204L	Relief Representation and Topographical Maps lab	Minor Change
GEOG 301L	Fundamentals of Geoinformatics lab	No change
GEOG302	Geographical Thought	Major Change
GEOG 303L	Map Projection lab	Minor Change
GEOG 304	World Regional Geography	Major change
GEOL 101	Mineralogy, Crystallography and Economic Geology	Major Change
GEOL 101L	Mineralogy, Crystallography and Economic Geology Lab	Major Change
GEOL 102	Physical Geology and Plate Tectonics	Major Change
GEOL 102L	Physical Geology and Plate Tectonics Lab	Major Change
GEOL 201	Palaeontology and Stratigraphy	Major Change
GEOL 201L	Palaeontology and Stratigraphy Lab	Major Change
GEOL 202	Petrology and Structural Geology	Major Change
GEOL 202L	Petrology and Structural Geology Lab	Major Change
GEOL 301	Hydrology, Environmental and Engineering Geology	Major Change
GEOL 301L	Hydrology, Environmental and Engineering Geology Lab	Major Change
GEOL 303	Geochemistry, Geomorphology, Photogeology and Remote Sensing	Major Change
GEOL 303L	Geochemistry, Geomorphology, Photogeology and Remote Sensing Lab	Major Change

In B.Sc. Geology I Semester, the courses *Physical Geology and Plate Tectonics* (Course Code: GEOL 102) *&Physical Geology and Plate Tectonics Lab*(Course Code: GEOL 102

L) have been proposed to be replaced by new course *Physical Geology* (Course Code: *to be generated*) *containing* both theory and practical. In B.Sc. Geology II Semester, the courses *Mineralogy, Crystallography and Economic Geology* (Course Code: GEOL 101) &*Mineralogy, Crystallography and Economic Geology Lab* (Course Code: GEOL 101L) have been proposed to be replaced by new course *Structural Geology and Plate Tectonics* (Course Code: *to be generated*) containing both theory and practical. In B.Sc. Geology III Semester, the courses *Petrology and Structural Geology* (Course Code: GEOL 202) &*Petrology and Structural Geology Lab* (Course Code: GEOL 202L) have been proposed to be replaced by new course*Mineralogy, Crystallography and Geochemistry*(Course Code: *to be generated)* containing both theory and practical. In B.Sc. Geology IV Semester, the courses *Palaeontology and Stratigraphy* (Course Code: GEOL 201) & *Palaeontology and Stratigraphy Lab* (Course Code: GEOL 201L)have been proposed to be replaced by new course *Petrology and Economic Geology* (Course Code: *to be generated*)containing both theory and practical. In B.Sc. Geology V Semester, the courses *Geochemistry, Geomorphology, Photogeology and Remote Sensing* (Course Code: 5.1) & *Geochemistry, Geomorphology, Photogeology and Remote Sensing Lab* (Course Code: 5.2) have been proposed to be replaced by newly introduced pool of Discipline Electives containing both theory and practical. In B.Sc. Geology VI Semester, the courses *Hydrogeology, Environmental and Engineering Geology* (Course Code: 6.1) &*Hydrogeology, Environmental and Engineering Geology Lab* (Course Code: 6.2) have been replaced by newly introduced pool of Discipline Electives containing both theory and practical.

The board reviewed the courses of Bachelor of Science and Bachelor of Education and recommended to implement as per **Annexure 1 (PP. 1-4) & Annexure 2(PP. 1-37) and Annexure 3 (PP. 1-5) &Annexure 4 (PP. 1-55).**

Master of Arts (Textile Designing - Printing)		
ENVS 408	Environmental Studies	Deal by Design Department
Master of Arts (Textile Designing - Weaving)		
ENVS 408	Environmental Studies	Deal by Design Department

It will be submitted by Design Department.

Bachelor of Technology (Computer Science and Engineering)		
RS 401	Geoinformatics	No change
Bachelor of Technology (Electronics and Communication Engineering)		
RS 401	Geoinformatics	No change
Bachelor of Technology (Information Technology		
RS 401	Geoinformatics	No change

Bachelor of Technology (Electronics and Electricals		
RS 401	Geoinformatics	No change
Bachelor of Technology (Electronics and Instrumentation		
RS 401	Geoinformatics	No change
Bachelor of Technology (Biotechnology)		
RS 401	Geoinformatics	No change

The Board also recommended to introduce RS 401 Geoinformatics in Chemical Engineering Fourth Year.

The course scheme, learning outcomes, list of recommended books and e-learning materials of the (RS 401 Geoinformatics) programme is attached and marked as **Annexure- 16 (PP.1) and 17 (PP. 1-2).**

5. Board reviewed the reports received from the examiners of different examinations of 2017 and 2018. All the reports were found to be satisfactory. It was noted that the examiners have generally reported 'to the point' answers and have found expression/method of representation satisfactory/good. Few examiners suggested to give more emphasis on maps & charts, graphical representation and labeled diagrams to support their answers.

6. The board evaluated the semester examination papers and found that most of them were descriptive and few analytic &application based depending on the nature of course. The Board concluded that the quality of question papers is good but sometimes some questions are out of syllabus, format is not clear, so, the board recommended for consideration of the syllabi while setting question papers.
The analysis of question papers is enclosed in **Annexure–18 (PP. 1-9).**

7. a).

Foundation Course (Environment Studies)		
BVF 002	Environment Studies	No change

Board reviewed the learning outcomes and syllabus and agreed to continue with the existing syllabus of *Environment Studies*(Course Code:BVF 002).

The course scheme, learning outcomes, list of suggested books and e-resources of the Foundation Course (Environment Studies)programme is attached and marked as **Annexure-19(PP. 1) and Annexure - 20 (PP. 1).**

b). Online courses
The Board suggested to introduce online courses as a substitute of Reading Electives in PG Programmesin III & IV Semester, respectively of School of Earth Sciences.

List of Alternate online courses (to be given in BOS minutes)

S No	Agency/ Portal	Name of course	Duration	(Core/ Elective/ Reading Elective)	Credit point(s)	URL
In M.Sc.(Environmental Science/Geology/ Geography) and M.A. (Geography) III & IV Semester Reading Electives						
1	**Indian Institute of Technology** Roorkee, NPTEL	Mineral Resources: Geology, Exploration, Economics and Environment	Self paced 48h (Registration at any time)	Reading Elective I	2	https://onlinecourses.nptel.ac.in/noc18_ce13/preview
2	**Indian Institute of Technology** Kanpur, NPTEL	Natural Hazards Part 1	Self paced 48h (Registration at any time)	Reading Elective I	2	https://onlinecourses.nptel.ac.in/noc19_
3	**Indian Institute of Technology Madras,** NPTEL	Non-Conventional Energy Resources	Self paced 48h (Registration at any time)	Reading Elective II	2	https://onlinecourses.nptel.ac.in/noc18_ge 09/preview

The alternate online course name, duration, credits and URL is attached and marked as **Annexure -21(PP. 1).**

Annexure - 5

BANASTHALI VIDYAPITH
SCHOOL OF EARTH SCIENCES

Name of the Programme : M.A. / M.Sc. (Geography)

Programme Educational Objectives:

Banasthali Vidyapith is an epitome of tradition and modernity. Vidyapith aims to preserve and inculcate the essential values and ideals of Indian culture. It believes in simple living and high thinking. Our educational ideology is based on the concept of fivefold education focusing on physical, practical, aesthetic, moral and intellectual aspects in order to develop a balanced personality.

Geography studies the earth in relation to mankind. Man's lifestyle is influenced by physical aspects in its immediate surroundings and Geography act as a bridge between man and its environment. Geography is also related to human dimension wherein man using the resources and creates its economic dimension. Various arenas of human aspects such as business, trade, commerce, agriculture, industry, navigation, military operations, spacecraft and administration needs Geography as a foundation.

Master's in Geography provides knowledge about scientific methods and facts from physical and human geography, particularly biogeography, climatology, oceanography, remote sensing, economic and resource geography, population geography, morphometric analysis, regional development & planning and geoinformatics. Furthermore students will gain profound knowledge of current research problems, approaches, and insights regarding the interactions between the environment and society in the context of global change. Students learn to integrate scientific theories, findings, and procedures in order to analyze and model human-environmental systems.

The main objectives of the Post Graduate Geography programme are:

- **To illustrate the atmospheric and hydrospheric phenomenon of the earth, geographical dimensions of India, regional development and planning at national & state level.**
- **To explain contribution of various scholars in the evolution and origin of the discipline along with paradigms, concepts, approaches and social relevance revolutions.**
- **To develop skills in surveying and explain standard quantitative methods for research in physical and socio- economic aspects.**
- **To use Geographic Information Systems (GIS), particularly for the purpose of map making, classification, 3D analysis etc.**
- **To minimize negative impacts of agriculture, mining, industries, urbanization etc. by conveying concept of environmental protection and conservation.**
- **To develop gender-neutral attitudes and practices; respect for all races, nations, religions, cultures, languages and traditions.**
- **To raise sensitivity for ethical codes of conduct, social values with help of eco-feminism, gender equality, social balance and respect for each strata of the society.**

Programme Outcomes (PO):

PO1: Geography Knowledge: Explain geomorphic processes involved in landform development, resource distribution, and concept of geographical grid, cosmogony, cosmology and geographical thoughts and concepts; Students have knowledge of atmosphere and hydrosphere as well as the importance of regional planning and associated developmental phenomenon. Analyze drainage basins and their linear, areal and relief aspects. Students can identify, delineate watershed area and extent of erosion to plan for its management.

PO2: Planning abilities: Apply surveying techniques with the help of theodolite, dumpy level, total station and GPS for mapping and planning of any area.

PO3: Design/development of solution for problems: Development is solution oriented. The program enables them to use several research techniques in portraying the problem at regional national and world forums. The capability to generate solution to most common social, economic, and environmental problems is developed among the future handlers of the society.

PO4: Problem analysis: Apply Statistical techniques for data analysis, computation and its representation. Students will become familiar with standard quantitative methods, enabling them to accurately understand the meaning of information and how this information can be used to understand economic and social issues.

PO5: Modern tool usage: Use remote sensing and GIS techniques in medical, urban & rural settlements, environment, agriculture, resource, tourism and several other aspects from a geographical perspective. The applications can further enhance research in the discipline and contribute towards a better living environment.

PO6: Leadership skills: Fieldwork is an essential component and an ideal setting in which teamwork and leadership skills are developed in young geographers. Geographical Investigations test hypothesis and involve spatial and temporal analysis. Geographers are used to manipulating and interpreting data and preparing reports regarding several aspects of human and physical environment.

PO7: Professional Identity: understand, analyze and contribute towards the discipline adopting professions as a researcher, teacher, cartographer, climatologist, meteorologist and planner.

PO8: Geographical Ethics: Apply ethical principles in personal, professional and social levels. Honor personal values and apply ethical principles in professional and social contexts. Demonstrate behavior that recognizes cultural and personal variability in values, communication and lifestyles. Use ethical frameworks; apply ethical principles while making decisions and take responsibility for the outcomes associated with the decisions.

PO9: Communication: Communicate effectively with the Earth Science community and with society at large, such as, being able to comprehend and write effective, make effective presentations and documentation, and give and receive clear instructions.

PO10: The Geographer and society: Create awareness in society about the conservation and management of Resources; Understand spatial distribution, socio-cultural, economic and administrative aspects of various tribes and races at regional and global level and their problems; Describe and understand political, social, agriculture, population and related problems associated with society and environment.

PO11: Environment and sustainability: Understand resource production, distribution and trade at regional and global level and join hands towards sustainable development of the society.

PO12: Life- long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. Self-access and use feedback effectively from others to identify learning needs and to satisfy theses needs on an ongoing basis.

Programme Scheme :

Semester I

EXISTING

Course Code	Course Name	L	T	P	C
GEOG 401	Advance Geomorphology	5	0	0	5
GEOG 404	Economic and Resource Geography	5	0	0	5
GEOG 405	Geographical Thoughts and Concepts	5	0	0	5
GEOG 407	Introduction to Geography	5	0	0	5
GEOG 402L	Cartographic Techniques Lab	0	0	12	6
	Total:	**20**	**0**	**12**	**26**

PROPOSED

Course Code	Course Name	L	T	P	C
GEOG 401	Advance Geomorphology	5	0	0	5
GEOG 404	Economic and Resource Geography	5	0	0	5
GEOG 405	Geographical Thoughts and Concepts	5	0	0	5
GEOG 407	Introduction to Geography	5	0	0	5
GEOG 402L	**Cartographic Techniques Lab**	0	0	12	6
	Total:	**20**	**0**	**12**	**26**

Semester II

Course Code	Course Name	L	T	P	C
GEOG 403	Climatology	5	0	0	5
GEOG 406	Geography of India	5	0	0	5
GEOG 409	Oceanography	5	0	0	5
GEOG 410	Regional Development and Planning	5	0	0	5
GEOG 408L	Morphometric Analysis Lab	0	0	12	6
	Total:	**20**	**0**	**12**	**26**

Course Code	Course Name	L	T	P	C
GEOG 403	Climatology	5	0	0	5
GEOG 406	**Geography of India**	5	0	0	5
GEOG 409	**Oceanography**	5	0	0	5
GEOG 410	Regional Development and Planning	5	0	0	5
GEOG 408L	Morphometric Analysis Lab	0	0	12	6
	Total:	**20**	**0**	**12**	**26**

Semester III

Course Code	Course Name	L	T	P	C
GEOG 504	Political Geography	5	0	0	5
GEOG 507	Research Methodology and Quantitative Techniques	5	0	0	5
GEOG 510	Systematic Agricultural Geography	5	0	0	5
GEOG 509L	Surveying Lab	0	0	12	6
	~~Elective I~~	5	0	0	5
	Total:	**20**	**0**	**12**	**~~26~~**

Course Code	Course Name	L	T	P	C
GEOG 504	**Political Geography**	5	0	0	5
GEOG 507	**Research Methodology and Quantitative Techniques**	5	0	0	5
GEOG 510	**Systematic Agricultural Geography**	5	0	0	5
GEOG 509L	**Surveying Lab**	0	0	12	6
GEOG ___	**Discipline Elective I**	5	0	0	5
	Reading Elective I	0	0	0	2
	Total:	**20**	**0**	**12**	**28**

~~**Elective I**~~

GEOG ~~505~~	Population Geography	5	0	0	5
GEOG ~~508~~	Social Geography	5	0	0	5

Semester IV

Course Code	Course Name	L	T	P	C
GEOG 501	Environmental Geography	5	0	0	5
GEOG 506	Remote Sensing and GIS	5	0	0	5
GEOG 506L	Remote Sensing and GIS Lab	0	0	12	6
	~~Elective II~~	5	0	0	5
	~~Elective III~~	5	0	0	5
	Total:	**20**	**0**	**12**	**26**

Course Code	Course Name	L	T	P	C
GEOG 501	**Environmental Geography**	5	0	0	5
GEOG 506	**Remote Sensing and GIS**	5	0	0	5
GEOG 506L	**Remote Sensing and GIS Lab**	0	0	12	6
GEOG ___	**Discipline Elective II**	5	0	0	5
	Open Elective	5	0	0	5
	Reading Elective II	0	0	0	2
	Total:	**20**	**0**	**12**	**28**

~~**Elective II**~~

GEOG ~~502~~	Geography of Rural Settlements	5	0	0	5
GEOG ~~511~~	Tourism Geography	5	0	0	5

~~**Elective III**~~

GEOG	Medical Geography	5	0	0	5

~~503~~					
GEOG ~~512~~	Urban Geography	5	0	0	5

List of Discipline Electives

Course Code	Course Name	L	T	P	C
GEOG 502	**Geography of Rural Settlements**	5	0	0	5
GEOG 503	Medical Geography	5	0	0	5
GEOG 505	Population Geography	5	0	0	5
GEOG 508	Social Geography	5	0	0	5
GEOG 511	Tourism Geography	5	0	0	5
GEOG 512	**Urban Geography**	5	0	0	5

List of Reading Electives

Course Code	Course Name	L	T	P	C
ENVS_R	Agroforestry	0	0	0	2
ENVS_R	Energy Resources and Conservation	0	0	0	2
ENVS_R	Man and Environment	0	0	0	2
ENVS _R	Water and Sustainable Development	0	0	0	2
GEOG_R	Environmental Challenges and Disaster Management	0	0	0	2
GEOG_R	India: Socio-Political and Environmental Scenario	0	0	0	2
GEOG_R	Rajasthan: Challenges and Prospects	0	0	0	2
GEOG_R	Transforming India	0	0	0	2
GEOL_R	Geo Tourism	0	0	0	2
GEOL_R	Indian Mineral Deposits, Economics and Mining Ethics	0	0	0	2
GEOL_R	Innovation and Entrepreneurship in Earth Sciences	0	0	0	2
GEOL_R	Natural Hazards and Disasters	0	0	0	2

List of Online Reading Electives

S. No.	Course Name	Proposed Alternative On-line Course	Credit point(s)	URL link
1	ENVS__R Energy Resource and Conservation	Non-Conventional Energy Resources	2	https://onlinecourses.nptel.ac.in/noc18_ge09/preview
2	GEOL__R Indian Mineral Deposits, Economics and Mining Ethics	Mineral Resources: Geology, Exploration, Economics and Environment	2	https://onlinecourses.nptel.ac.in/noc18_ce13/preview
3	GEOL__R Natural Hazards and Disasters	Natural Hazards Part 1	2	https://onlinecourses.nptel.ac.in/noc19_ce14/preview

***Lecture hrs./week; T-Tutorials hrs./week; P-Project/Practical/Lab/All other non-classroom academic activities, etc. hrs./week; C-Credit Points of the Course**

Note: Yellow highlighted and bold content illustrate the modification in the syllabus.

Annexure - 6

Name of the Programme : M.A. /M.Sc. (Geography)

Course Details :

FIRST SEMESTER

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
1.	GEOG 401 Advance Geomorphology	**After the completion of this course, students should be able to:** • **Analyze the relation between geomorphological processes and landscape formation.** • **Explain the structure of earth's interior.** • **Describe endogenetic and exogenetic activities transforming the earth.** • **Apply geomorphological knowledge in research related to land-use, mining and agriculture.**	____	____ .	**Reviewed** **Learning outcomes, recommended books &** **e-learning materials** **and rearranged the content.**

				Recommended Books: **1. Bloom, A. L. (2009). *Geomorphology* (3rd ed.). New Delhi, India: Prentice Hall.** **2. Chorley, R. J., Schumm, S. A., & Sugden, D. E. (1984). *Geomorphology*. London, UK: Methuen.** **3. Dayal, P. (2010). *A Text Book of Geomorphology* (5th ed.). New Delhi, India: Kalyani.** **4. Fairbridge, R. W. (Ed.). (1968). *Encyclopedia of Geomorphology*. New York, NY: Reinhold Book Corporation.** **5. Gregory, K. J., & Walling, D. E. (1973). *Drainage Basin Form and Process*. London, UK: Edward Arnold.** **6. Gutierrez, M. (2013). *Geomorphology*. London, UK: Taylor and Francis.** **7. Huggett, R. J. (2018). *Fundamentals of Geomorphology*. New York, NY: Routledge** **8. Husain, M. (2002). *Fundamentals of Physical Geography* (4th ed.). Jaipur, India: Rawat.** **9. Kale, V., & Gupta, A. (2010). *Introduction to Geomorphology*. Hyderabad, India: Orient Longman.** **10. Singh, S. (2013). *Geomorphology* (5th ed.). Allahabad, India: Prayag Pustak Bhawan.** **11. Strahler, A. N. (2016). *Introducing Physical Geography* (6th ed.). New York, NY: John Wiley & Sons.** **12. Thornbury, W. D. (2002). *Principles of Geomorphology* (2nd ed.). New Delhi, India: John Wiley & Sons.** **13. दयाल, पी. (2010). *भूआकृति विज्ञान* (तृतीय सं.). नई दिल्ली, भारतः राजेश.** **14. शर्मा, एच. एस., शर्मा, एम. एल., एवं मिश्रा, आर. एन. (2014). *भौतिक भूगोल*. जयपुर, भारतः पंचशील.** **15. सिंह, एस. (2008). *भूआकृति विज्ञान* (सप्तम् सं.). गोरखपुर, भारतः वसुन्धरा.** **Suggested e-learning materials:** **1. Plate Tectonics, Weathering, Mass Wasting and Erosion http://hkss.cedd.gov.hk/hkss/eng/education/GS/eng/hk**	

				g/chapter4.htm 2. **Geomorphic Processes** http://ncert.nic.in/ncerts/l/kegy206.pdf	

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
2.	GEOG 404 Economic and Resource Geography	**After the completion of this course, students should be able to:** • **Describe and develop the approaches to economic and resource geography.** • **Describe the resource related issues, map them systematically.** • **Explain the interference of world trading blocs in international economics.** • **Describe the non-conventional resources and their usability and apprise public about the depletion of resources.**	**——**	**——** **Recommended Books :** **1. Gautam, A. (2010). *Advanced Economic Geography.* Allahabad, India: Sharda Pustak Bhawan.**	**Reviewed Learning outcomes, recommended books &** **e-learning materials** **and rearranged the content.**

				2. Guha, J. L., & Chattoraj, P. R. (2009). *Economic geography – A Study of Resources* (9th ed.). Kolkata, India: The World Press. 3. Hartshorn, T. A., & Alexander, J. W. (2009). *Economic Geography* (8th ed.). New Delhi, India: Prentice Hall. 4. Leong, G. C., & Morgan, G. C. (2010). *Human and Economic Geography* (2nd ed.). New Delhi, India: Saurabh. 5. Siddharth, K. (2018). *Economic Geography* (3rd ed.). Allhabad, India: Kitab Mahal. 6. गौतम, ए. (2015). *आर्थिक भूगोल.* मेरठ, भारतः रस्तोगी. 7. जाट, बी. सी. (2016). *आर्थिक भूगोल* (चतुर्थ सं.). जयपुर, भारतः पंचशील. 8. मामोरिया, सी. (2012). *आर्थिक भूगोल* (द्वितीय सं.). आगरा, भारतः साहित्य भवन. 9. सिंह, के. (1978). *मानव और आर्थिक भूगोल* (द्वितीय सं.). वाराणसी, भारतः तारा. 10. सिंह, के. (2009). *आर्थिक भूगोल के मूलतत्व : संसाधन उपयोग, संरक्षण एवं आर्थिक विकास का अध्ययन* (11 वाँ सं.). वाराणसी, भारतः ज्ञानोदय. 11. सिंह, के. एन., एवं सिंह, जे. (2010). *आर्थिक भूगोल के मूलतत्व* (11 वाँ सं.) . गोरखपुर, भारतः ज्ञानोदय. 12. सिंह, जे. (2009). *संसाधन भूगोल.* नई दिल्ली, भारतः राधा. **Suggested e-learning materials** 1. **International trade** https://gspp.berkeley.edu/assets/uploads/research/pdf/ssrn-id1783908.pdf 2. **NAFTA** https://idatd.cepal.org/Normativas/TLCAN/Ingles/North_American_Free_Trade_Agreement-NAFTA.pdf	

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
3.	GEOG 405 Geographical Thoughts and Concepts	**After the completion of this course, students should be able to:** • **Analyze the work of several scholars and their contribution to the field.** • **Analyze the historical works and extract geographical information from them.** • **Describe the concepts, paradigms and models in Geography.** • **Develop an individual approach towards the subject.**	____	____	**Reviewed** **Learning outcomes, recommended books &** **e-learning materials** **and rearranged the content**.

				Recommended Books : 1. **Daniels, P., Bradshaw, M., Shaw, D., & Sidaway, J. (2008). *An Introduction to Human Geography: Issues for the 21st Century* (3rd ed.). London, UK: Prentice Hall.** 2. **Dikshit, R. D. (2018). *A Contextual History of Ideas* (2nd ed.). New Delhi, India: PHI.** 3. **Hussain, M. (2014). *Evolution of Geographical thought* (6th ed.). New Delhi, India: Rawat .** 4. **Kaushik, S. D., & Rawat. D. S. (2017). *Geographical thought and Methodology*. Meerut, India: Rastogi.** 5. **Martin, G. (2007). *All Possible Worlds. A History of Geographical Ideas* (4th ed.). New York, NY: Oxford University Press.** 6. **Maurya, S. D. (2013). *History Of Geographical Thought.* Allahabad, India: Sharda Pustak Bhawan.** 7. **Rana, L. (2008). *Geographical thought A systematic record of evolution*. New Delhi, India: Concept.** 8. **Singh, M. (2016). *Geographical Thought*. New Delhi, India: Sonali.** 9. **कौशिक, एस. डी., एवं रावत, डी. एस. (2017). *भौगोलिक विचारधारा एवं विधि तंत्र* (नवम् सं.). मेरठ, भारत रस्तोगी.** 10. **जैन, एस. एम. (2018). *भौगोलिक चिन्तन का विकास* (संशोधित सं.). आगरा, भारतः साहित्य भवन.** 11. **प्रसाद, जी. (2006). *भौगोलिक संकल्पनाएँ.* नई दिल्ली, भारतः डिसकवरी.** 12. **मौर्य, एस. डी. (2015). *भौगोलिक चिन्तन का इतिहास.* इलाहाबाद, भारतः प्रयाग पुस्तक भवन.** 13. **सिंह, जे. (2009). *भौगोलिक चिन्तन के मूल आधार.* नई दिल्ली, भारतः वसुन्धरा.** 14. **हुसैन, एम. (2006). *भौगोलिक चिन्तन का इतिहास.* जयपुर, भारतः रावत.** **Suggested e-learning materials** **1. Dualism** **https://epgp.inflibnet.ac.in/ahl.php?csrno=17 P-06, M-16** **2. System Analysis** **https://epgp.inflibnet.ac.in/ahl.php?csrno=17 P-06, M-26**	

				3. Quantitative Revolution **https://epgp.inflibnet.ac.in/ahl.php?csrno=17 P-06, M-25** **4. Explanation in Geography** **https://epgp.inflibnet.ac.in/ahl.php?csrno=17 P-06, M-32** **5. Gender Geography** **https://epgp.inflibnet.ac.in/ahl.php?csrno=17 P-06, M-33**	

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
4.	GEOG 407 Introduction to Geography	**After the completion of this course, students should be able to:** • **Describe the nature of the subject and understand the geographical knowledge in ancient civilizations.** • **Develop an understanding of latitudes, longitudes, rotation, revolution, day and night and seasons.** • **Explain human dimensions in geography in context of several tribes and their economic activities.** • **Know the human adaptation to the environment in relation to several tribes.**	—	— Recommended Books : 1. **Chauniyal, D. D. (2010). *Remote sensing and Geographical Information System*. Allahabad, India: Sharda Pustak Bhawan.** 2. **Dikshit, R. D. (2019). *Geographical Thought- A contextual History of Ideas* (2nd ed.). Delhi, India: Prentice Hall.** 3. **Haq, M. (1995). *Reflection on Human Development*. New Delhi, India: Oxford University Press.** 4. **Husain, M. (2002). *Fundamentals of Physical Geography* (2nd ed.). New Delhi, India: Rawat.** 5. **Husain, M. (2014). *Evolution of Geographical Thought*. Jaipur, India: Rawat.** 6. **Jean, D., & Sen, A. (1995). *Economic Development and Social Opportunity*. New Delhi, India: Oxford University press.** 7. **Johnston, R. J. (Ed.). (1983). *Philosophy and Human Geography: An Introduction to Contemporary Approaches*. London, UK: Edward Arnold.**	**Reviewed Learning outcomes, recommended books &** **e-learning materials** **and rearranged the content.**

				8. Lownsburg, J. F., & Aldrich, F. T. (1979). *Introduction to Geographical Methods and Techniques*. Columbus, OH: Charles Marrili. 9. Matthews, J. A., & Herbert, D.T. (2008). *Geography: A very short introduction*. New York, NY: Oxford University Press. 10. Singh, L. R. (2009). *Fundamentals of Human Geography* (2nd ed.). Allahabad, India: Sharda Pustak Bhawan. 11. Singh, S. (2006). *Physical Geography*. Allahabad, India: Prayag Pustak Bhawan. 12. कौशिक, एस. डी. (2011). *मानव भूगोल के सरल सिद्धांत* (12वाँ सं.).मेरठ, भारत: रस्तोगी. 13. मौर्य, एस. डी. (2010). *भौगोलिक चिन्तन का इतिहास* (तृतीय सं.). इलाहाबाद, भारत: प्रयाग पुस्तक भवन. 14. हुसैन, एम. (2012). *मानव भूगोल* (चतुर्थ सं.). जयपुर, भारत: रावत. **Suggested e-learning materials:** 1. Human adaptation to the environment with special reference to Bushman http://www.newworldencyclopedia.org/entry/Bushmen 2. Solar and Lunar eclipse https://spaceplace.nasa.gov/eclipses/en/	

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
5.	GEOG 402L Cartographic Techniques Lab	**After the completion of this course, students should be able to:** • **Diagrammatically display secondary and primary data through diagrams for all three dimensions** • **Have an understanding of map projections which further helps in cartography** • **Interpret toposheets and open series maps for applied aspects** • **Use the tools of cartography for research purpose**	a) Cartography – Techniques and Tools of Cartography. b) Introduction and Interpretation of Topographical maps, calculate Nearest neighbour analysis. c) Profiles – The method of drawing a profile, Types of profiles – serial, superimposed, projected, composite. d) Mathematical Construction of Map Projections:- i) Conical Projections: - Simple conical projection with one standard Parallel - Conical projection with two standard parallel. - Bonne's Projection - Polyconic Projection ii) Cylindrical Projections: - Cylindrical equidistant projection - Mercator's projection iii) Zenithal Projections: - Polar zenithal equal area projection - Orthographic polar Zenithal projection Conventional Projection: - Mollweide's Projection e) Representation of Statistical data: - ~~One dimensional, Two dimensional and Three dimensional diagrams (6 Diagrams 2 from each).~~ f) Geological Maps: Determination of Dip and Strike.	Cartography – Techniques and Tools of Cartography. 1. Introduction and Interpretation of Topographical maps, calculate Nearest neighbour analysis. 2. Profiles – The method of drawing a profile, Types of profiles – serial, superimposed, projected, composite. 3. Mathematical Construction of Map Projections:- 4. Conical Projections: - Simple conical projection with one standard Parallel - Conical projection with two standard parallel. - Bonne's Projection - Polyconic Projection 5. Cylindrical Projections: - Cylindrical equidistant projection - Mercator's projection 6. Zenithal Projections: - Polar zenithal equal area projection - Orthographic polar Zenithal projection 7. Conventional Projection: - Mollweide's Projection 8. Representation of Statistical data **using Microsoft Excel** 9. Geological Maps: Determination of Dip and Strike.	**Reviewed Learning outcomes, recommended books & e-learning materials and added topic for enrichment** .

			Non – scientific calculators are allowed during the examination. Recommended Books : ~~1. Ahmed, K. S. (1971) Simple map projections, Friends Book House, Aligarh.~~ ~~2. Mishra, R. P. and A. Ramesh (2002) Fundamentals of Cartography, Concept Publishing Company, New Delhi.~~ ~~3. Singh, R. L. (2011) Elements of Practical Geography, Kalyani Publishers, New Delhi~~ ~~4. Singh, R. L. and Dutt, P. K. (1960) Elements of Practical Geography, Students Friends, Allahbad.~~ ~~5. भल्ला, एल. आर. (2006) प्रयोगात्मकभूगोल, के. डी. प्रकाशन, अजमेर।~~ ~~6. शर्मा, जे.पी. (2012) प्रायोगिकभूगोल, रस्तोगीप्रकाशन, मेरठ।~~ 7. ~~सिंह, एल. आर. (2011) मानचित्र एवंप्रयोगात्मकभूगोल, सेन्ट्रलबुकडिपो, इलाहबाद।~~	Non – scientific calculators are allowed during the examination. **Recommended Books :** **1. Mishra, R. P., & Ramesh, A. (2002). *Fundamentals of Cartography*. New Delhi, India: Concept.** **2. Saha, P., & Basu, P. (2011). *Advanced Practical Geography*. Kolkatta, India: Books and Allied.** **3. Singh, L. R. (2011). *Fundamentals of Practical Geography*. Allahabad, India: Sharda Pustak Bhawan.** **4. Singh, R. L. (2011). *Elements of Practical Geography*. New Delhi, India: Kalyani.** **5. तिवारी, आर. सी., एवं त्रिपाठी, एस. (2014). *अभिनव प्रयोगात्मक भूगोल.* इलाहाबाद, भारतः प्रवालिका.** **6. भल्ला, एल. आर. (2006). *प्रयोगात्मक भूगोल.* अजमेर, भारतः कुलदीप.** **7. शर्मा, जे. पी. (2012). *प्रायोगिक भूगोल* मेरठ. भारतः रस्तोगी.** **8. सिंह, एल. आर. (2011). *मानचित्र एवं प्रयोगात्मक भूगोल.* इलाहबाद, भारतः सेन्ट्रल बुक डिपो.** **Suggested e-learning materials** **1. Map Projection https://www.gislounge.com/map-projection/** **2. Dip & Strike http://www.jsu.edu/dept/geography/mhill/phylabtwo/lab4/dipf.html**	

SECOND SEMESTER

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
1.	GEOG 403 Climatology	**After the completion of this course, students should be able to:** • **Describe climate and climatic factors such as temperature, pressure, insolation and their distribution.** • **Describe the origin and location of winds with world map.** • **Explain Air masses, fronts, Jet streams and their impacts.** • **Explain the relation of climate with agriculture, urban planning and health.**	____	____ Recommended Books : 1. **Agarwal, S. K. (2013). *Global Warming and Climate Change (Past, Present and future)*. New Delhi, India: A. P. H.** 2. **Critchifield, J. H. (2009). *General Climatology* (4th ed.). Delhi, India: Prentice Hall.** 3. **Hussain, M. (2003). *Climatology*. New Delhi, India: Anmol.** 4. **Lal, D. S. (2014). *Climatology*. Allahabad, India: Sharda Pustak Bhawan.** 5. **Malhotra, R. (2010). *Climatology*. New Delhi, India: Global Vision.** 6. **Mehtani, S., & Sinha, A. (2010). *Climatology*. New Delhi, India: Commonwealth.** 7. **Singh, S. (2006). *Physical Geography*. Allahabad, India: Prayag.** 8. **Strahler, A. N. (2016). Introducing Physical Geography (6th ed.). New york, NY: John Wiley & Sons.** 9. **Strahler, A. N., & Strahler, A. H. (1977). *Geography and Man's environment*. New York, NY: John Wiley & Sons.**	**Reviewed Learning outcomes, recommended books &** **e-learning materials** **and rearranged the content.**

				10. लाल, डी. एस. (2009). *जलवायु विज्ञान.* इलाहाबाद, भारतः शारदा पुस्तक भवन. 11. शर्मा, एच. एस. (2014). *भौतिक भूगोल.* जयपुर, भारतः पंचशील. 12. सिंह, एस. (2013). *जलवायु विज्ञान* (अष्ट सं.). इलाहबाद, भारतः प्रयाग पुस्तक भवन. **Suggested e-learning materials:** 1. **Cyclones** https://www.imdtvm.gov.in/index.php?option=com_content&task=view&id=15&Itemid=30 2. **EL Nino** https://www.nationalgeographic.org/encyclopedia/el-nino/	

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
2.	GEOG 406 Geography of India	**After the completion of this course, students should be able to:** • **Demarcate India physiographically into major divisions and understand seasons prevailing in the country.** • **Locate the several mineral, energy and industrial resources on country's map.** • **Describe demographic structure of India.** • **Describe the geography of Rajasthan, its resources and problems.**	Section – A : Physical Features a) Physiographic divisions of India: Evolution, Division and Significance of each division. b) Major river systems of India: Himalayan and the Peninsular river systems. c) Seasons of India: detail study of Monsoon. d) Climatic regions of India: Koeppen's climatic regions. e) Soils of India, major problems and methods of soil conservation. Section – B : Economic & Human Resources a) Major mineral resources: Iron ore, manganese and mica. b) Energy resources: conventional (coal) and non-conventional (solar, wind). c) Major industries: Iron-steel, cotton textile inustries and Industrial regions of India and their problems. d) Population: Growth, distribution, Composition: density, sex ratio e) Means of Transport: Road and Rail. Section – C : Geography of Rajasthan a) Physiographic Divisions ~~of Rajasthan~~. b) Climate ~~of Rajasthan~~ c) Drainage System of Rajasthan. ~~d) Irrigation Projects: Indira Gandhi Canal, Chambal Valley and Mahi Project.~~ e) Dairy development in Rajasthan. f) ~~Problem of Desertification~~. * Note – Stencils are to be permitted during the examination.	Section A Physical Features Physiographic divisions of India: Evolution, Division and Significance of each division; Major river systems of India: Himalayan and the Peninsular river systems; Seasons of India: detail study of Monsoon; Climatic regions of India: Koeppen's climatic regions; Soils of India, major problems and methods of soil conservation. Section B Economic & Human Resources Major mineral resources: Iron ore, manganese and mica; Energy resources: conventional (coal) and non-conventional (solar, wind); Major industries: Iron-steel, cotton textile industries and Industrial regions of India and their problems; Population: Growth, distribution, Composition: density, sex ratio; Means of Transport: Road and Rail. Section C Geography of Rajasthan Physiographic Divisions; Climate; Drainage System; **New comprehensive system of Soil Classification**; **Live stock (Sheep and Camel)** and Dairy development. Stencils are to be permitted during the examination. Recommended Books : 1. **Bhalla, L. R. (2016). *Geography of Rajasthan* (12th ed.). Jaipur, India: Kuldeep.**	**Reviewed Learning outcomes, recommended books & e-learning materials and rearranged the content.** **Addition of new content for enrichment and specification.**

			Recommended Books : ~~1. Bhalla, L. R. (2015) Geography of Rajasthan, Kuldeep Publications, Jaipur.~~ ~~2. Khullar D.R. (2014) India : A Comprehensive Geography, Kalyani Publication, Ludhiyana~~ ~~3. Krishnan, M.S.(2012) Geology of India and Burma, CBS Publication, New Delhi.~~ ~~4. Mishra, V.C. (1967) Geography of Rajasthan, National Book Trust, New Delhi.~~ ~~5. Puri, G. S.(1960) Indian forest Ecology, Oxford Book and Stationary, New Delhi.~~ ~~6. Raychaudhary. S.P. (1966) Land and Soil, National Book Trust, New Delhi.~~ ~~7. Singh Gopal, (2010) Geography of India, Atma Ram Publication, Delhi~~ ~~8. Wadia, D. N., (1957) Geology of India, Macmillan, London.~~ ~~9. हुसैन मजिद, सिंह रमेश (2015) भारत का भूगोल, टाटा मैक्ग्राहिल प्रकाशन, नई दिल्ली।~~ ~~10. मामोरिया चतुर्भुज (2009) भारत का वृहत भूगोल, साहित्य भवन आगरा।~~ ~~11. बंसल सुरेश चन्द्र (2011) भारत का भूगोल, मीनाक्षी प्रकाशन, मेरठ।~~ ~~12. सिंह गोपाल (2006) भारत का भूगोल, आत्माराम, दिल्ली।~~ ~~13. डॉ. हरिमोहन सक्सैना (2014) राजस्थान का भूगोल, राजस्थान हिन्दी ग्रंथ अकादमी प्रकाशन।~~ ~~14. डॉ. राजकुमार शर्मा (2010) राजस्थान का भूगोल, हिमाशुं पब्लिकेशंन, उदयपुर।~~ ~~15. एच. एस. शर्मा एवं डॉ. एम.एल. शर्मा (2015) राजस्थान का भूगोल, पचंशील प्रकाशन, जयपुर~~ ~~16. गुर्जर आर. के. (2010) इन्दिरा गाँधी नहर के क्षेत्र का भूगोल, राजस्थान हिन्दी ग्रंथ अकादमी जयपुर।~~	**2. Khullar, D. R. (2014). *India, A Comprehensive Geography* (3rd ed.). Ludhiyana, India: Kalyani.** **3. Mishra, V. C. (1967). *Geography of Rajasthan*. New Delhi, India: National Book Trust.** **4. Singh, G. (2010). *Geography of India* (9th ed.). Delhi, India: Atma Ram.** **5. बंसल, एस. सी. (2015). *भारत का भूगोल* (तृतीय सं.). मेरठ, भारत: मीनाक्षी.** **6. मामोरिया, सी. (2018). *भारत का वृहत भूगोल.* आगरा, भारत: साहित्य भवन.** **7. शर्मा, आर. (2014). *राजस्थान का वृहत भूगोल* (द्वितीय सं.). उदयपुर, भारत: हिमाशुं.** **8. शर्मा एच. एस., एवं शर्मा, एम. एल. (2017). *भारत का नूतन भूगोल.* जयपुर, भारत: आर. बी. डी.** **9. शर्मा, एच. एस., एवं शर्मा, एम. एल. (2017). *राजस्थान का भूगोल* (13वाँ सं.). जयपुर, भारत: पचंशील.** **10. सक्सैना, एच. (2014). *राजस्थान का भूगोल* (12वाँ सं.). जयपुर, भारत: राजस्थान हिन्दी ग्रंथ अकादमी.** **11. सक्सैना, एच. एम., सक्सैना, आर., एवं सक्सैना, पी. (2017). *भारत का भूगोल.* जयपुर, भारत: रावत.** **12. सिंह, जी. (2006). *भारत का भूगोल.* दिल्ली, भारत: आत्माराम.** **13. हुसैन, एम. (2018). *भारत का भूगोल* (सप्तम् सं.). नई दिल्ली, भारत: टाटा मैक्ग्राहिल.** **Suggested e-learning materials:** **1. Detail study of Monsoon http://www.imd.gov.in/pages/monsoon_main.php** **2. Climate of India http://www.indiaenvironmentportal.org.in/files/climate_profile.pdf**	

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
3.	GEOG 409 Oceanography	**After the completion of this course, students should be able to:** • **Describe the scope of oceanography and morphology of ocean bottoms of Pacific, Atlantic and Indian oceans.** • **Have a knowledge about the density, salinity, temperature and its distribution in the oceans.** • **Explain Coral Reefs, its types and origin.** • **Describe the dynamics of the ocean and marine resources.**	Section – A : Introduction to Oceanography a) Oceanography: Definition and Scope. b) The morphology of the Ocean Bottom: Hypsometric Curve; Bottom Reliefs of Pacific, Atlantic and Indian Oceans. c) Temperature of the Ocean: Factors affecting the Horizontal distribution of surface Temperature of the oceans, Importance of the ocean water Temperature, d) Heat Budget of the Oceans, Annual and Diurnal Range of Temperature. e) Horizontal and Vertical distribution of Temperature. Section - B : Oceanic Salinity, Density and Deposits a) Salinity of Ocean Water: Meaning, Sources and Controlling factors. b) Horizontal and Vertical distribution of Salinity. c) Density of Ocean Water: Meaning & controlling factors d) Horizontal and Vertical distribution of Density. e) Ocean Deposits: Meaning and Types Section – C : Circulation Of Oceanic Water And Coral Reefs a) Ocean Currents: Definition, Types of ocean Currents. Generating and Modifying factors of Ocean Currents	Section A Introduction to Oceanography Oceanography: Definition and Scope; The morphology of the Ocean Bottom: Hypsometric Curve; Bottom Reliefs of Pacific, Atlantic and Indian Oceans; Temperature of the Ocean: Factors affecting the Horizontal distribution of surface Temperature of the oceans, Importance of the ocean water Temperature; Heat Budget of the Oceans, Annual and Diurnal Range of Temperature, Horizontal and Vertical distribution of Temperature. Section B Oceanic Salinity, Density and Deposits Salinity of Ocean Water: Meaning, Sources and Controlling factors; Horizontal and Vertical distribution of Salinity; Density of Ocean Water: Meaning & controlling factors; Horizontal and Vertical distribution of Density; Ocean Deposits: Meaning and Types Section C Circulation of Oceanic Water and Coral Reefs Ocean Currents: Definition, Types of ocean Currents. Generating and Modifying factors of Ocean Currents; The Currents of the Pacific, Atlantic and Indian Ocean; Tides: Tide producing Forces, Types of Tides, Theories of Ocean Tides: Equilibrium Theory, Progressive Wave Theory and Stationary Wave Theory; Coral Reefs: Required Conditions of Coral Growth, Types of Coral Reefs; Theories of Coral Reef Formation: Darwin's Subsidence Theory, The Non- Subsidence - Theory of Murry; Man and Marine Resources, Marine Pollution: causes, effects measures; **Laws of Ocean Protection (UNEP).** Stencils are to be permitted during the examination. Recommended Books : **1. Gohchengleong. (2011). *Certificate Physical and Human Geography*. New Delhi, India:Oxford University Press.** **2. King, C. A. (1965). *Oceanography for Geographers*. London, UK:**	**Reviewed Learning outcomes, recommended books &** **e-learning materials** **and rearranged the content.** **Addition of new topic for enrichment of the content.**

			b) The Currents of the Pacific, Atlantic and Indian Ocean. c) Tides: Tide producing Forces, Types of Tides, Theories of Ocean Tides: Equilibrium Theory, Progressive Wave Theory and Stationary Wave Theory. d) Coral Reefs: Required Conditions of Coral Growth, Types of Coral Reefs; Theories of Coral Reef Formation: Darwin's Subsidence Theory, The Non- Subsidence - Theory of Murry. e) Man and Marine Resources, Marine Pollution: causes, effects and measures. * Note – Stencils Stencils are to be permitted during the examination. Recommended Books : ~~1. Davis, R.J.A. (1986), Oceanography- An introduction of the marine Environment, Win C. Brown, Iowa.~~ ~~2. King, C.A., (1962) Oceanography for Geographers, Edward Arnold Pub., London~~ ~~3. Murray, S.J., (1913), Ocean, A General account of the Science of the sea, Thorton Butter Worth, London.~~ ~~4. Sharma, R.C. & Vatal, M., (2011), Oceanography for Geographers, Chaitanya publishing house, Allahabad.~~ ~~5. Siddhartha, K. (1999), Oceanography, A Brief Introduction, Kisalaya Pub. Pvt. Ltd., New Delhi.~~ ~~6. Thurnman, H.V., (1978), Introduction to oceanography, Charles E. Merrill Pub. Co., London.~~ ~~7. Weyl, P.K. (1970), Oceanography and Introduction of the Marine Environment, John Wiley and Sons Ltd., London.~~ ~~8. लाल. डी. एस.(2013) समुद्र विज्ञान,शारदा पुस्तक भवन, इलाहाबाद।~~	**Edward Arnold.** **3. Khullar, D. R. (2014). *Physical Geography*. Ludhiana, India: Kalyani.** **4. Murray, S. J. (1913). Ocean, *A General account of the Science of the sea.* London, UK: Thorton Butter Worth.** **5. Sharma, R. C., & Vatal, M. (2011*). Oceanography for Geographers*. Allahabad, India: Chaitanya.** **6. Siddartha, K. (2010). *The Earth's Dynamic surface:A textbook on Geomorphology*. New Delhi, India: Kisalya.** **7. Siddhartha, K. (2014). *Oceanography. A Brief Introduction*. New Delhi, India: Kisalaya.** **8. Singh, S. (2004).*Geomorphology*. Allahabad, India: Prayag.** **9. Strahler, A. N., & Strahler, A. H. (2008). *Modern Physical Geography* (4th ed.). New Jersey, NJ:John Wiley & Sons.** **10. लाल. डी. एस. (2013). *समुद्र विज्ञान.* इलाहाबाद, भारतः शारदा पुस्तक भवन .** **11. शर्मा एच. एस. (2008). *भौतिक भूगोल.* जयपुर, भारतः पंचशील.** **12. सिंह, एस. (2005). *भौतिक भूगोल का स्वरूप.* गोरखपुर, भारतः वसुन्धरा.** **Suggested e-learing materials:** **1. Tides** **https://www.britannica.com/science/tide** **2. Coral reefs** **https://www.britannica.com/science/coral-reef** **Ocean bottom reliefs** **3. https://www.britannica.com/place/Pacific-Ocean**	

			9. ~~सिंह सविन्द्र (2002) भौतिक भूगोल का स्वरूप, वसुन्धरा प्रकाशन, गोरखपुर।~~ 10. ~~शर्मा एच. एस. (2008) भौतिक भूगोल, पंचशील प्रकाशन, जयपुर।~~		

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
4.	GEOG 410 Regional Development and Planning	**After the completion of this course, students should be able to:** • **Describe planning, its types and need.** • **Explain region as a concept and describe its types.** • **Delineate and demarcate regions with statistical techniques.** • **Measure development statistically and have an understanding of development programmes currently existing in the county.**	—	— Recommended Books : 1. **Bhalla, L. R. (2015).** ***Geography of Rajasthan*****. Jaipur, India:**	**Reviewed Learning outcomes, recommended books &** **e-learning materials** **and rearranged the content.**

				Kuldeep. **2. Chand, M. , & Puri. V. K. (1983). *Regional Planning in India.* New Delhi,India: Allied.** **3. Chandana, R. C. (2000). *Regional Planning*. Ludhiana, India: Kalyani.** **4. Chandana, R. C. (2014). *Regional Planning and Development.* New Delhi, India: Kalyani.** **5. Chaudhuri, R. J. (2009). *An Introduction to Development and Regional Planning with special reference to India*. Hyderabad, India: Orient Blackswan.** **6. Mishra, R. P. (2002). *Regional Planning concepts, Techniques, Policies and Case studies.* New Delhi, India: Concept.** **7. Nath, V. (Ed.). (2009). *Regional Development and Planning in India* New Delhi, India: Concept.** **8. Nath,V. (2011). *Administration and Development Planning in India.* New Delhi, India: Concept.** **9. Shekhar, S. (2004). *Regional Planning in India.* New Delhi, India: Anmol.** **10. Singh, G. (2017). *Regional Planning and Sustainable Development.* Jaipur, India: Shruti.** **Suggested e-learning materials:** **1. Desert Development Programmes http://dolr.gov.in/desert-development-programme-ddp** **2. Five year plans in India http://planningcommission.nic.in/plans/planrel/fiveyr/welcome.html**	

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
5.	GEOG 408L Morphometric Analysis Lab	**After the completion of this course, students should be able to:** • **Relate river actions and the topography of the region.** • **Calculate linear, areal, relief and slope related parameters.** • **Analyse the nature of river, its structure, direction of flow.**	----	---- Recommended Books : 1. **Singh, R. L. (2011). *Elements of Practical Geography* (8th ed.). New Delhi, India: Kalyani.** 2. **Singh, S. (2010). *Geomorphology*. Allahabad, India: Prayag Pustak Bhawan.** 3. **Yadav, K. P. (2008). *Applications of Morphometry in Geomorphology*. New Delhi, India: Radha.** 4. **तिवारी, वी. (2010). *प्रायोगिक भूगोल.* आगरा, भारतः रामप्रसाद एण्ड संस.** 5. **पाण्डेय, ए. (2010). भूआकृतिक विश्लेषण की अभिनव प्रवृत्तियां. नई दिल्ली, भारतः डिस्कवरी.**	**Reviewed Learning outcomes, recommended books & e-learning materials and rearranged the content.**

		• **Analyse the drainage basin, erosional work of any river and its impact over the landscape.**		6. मिश्रा, पी. एल. (2013). *प्रयोगात्मक भूगोल. नई दिल्ली, भारतः विश्व भारती.* 7. वर्मा, एल. एन., एवं लोढा, आर. एम. (1999). *प्रयोगात्मक भूगोल.* जयपुर, भारतः राजस्थान हिन्दी ग्रंथ अकादमी. 8. शर्मा, जे. पी. (2011). *प्रायोगिक भूगोल* (पंचम् सं.). मेरठ, भारत: रस्तोगी. **Suggested e-learning materials:** 1. **Watershed Atlas of India** **http://cgwb.gov.in/watershed/about-ws.html**	

THIRD SEMESTER

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
1.	GEOG 504 Political Geography	**After the completion of this course, students should be able to:** • **Develop an approach to study political geography** • **Describe growth of the states and concept of Geopolitics.** • **Differentiate between state and nation and also explain geopolitical issues with special reference to Sino India and Indo Pak.** • **Discuss world political and environmental issues.**	Section – A : Introduction to Political Geography and Geopolitics a) Definition and scope of political geography and its relation with other social sciences. b) Development of Political Geography. c) Approaches to the study of Political Geography – Political-Environmental approach, Power analysis approach and Functional approach. d) Laws of Spatial Growth of states. e) Concept of Geopolitics. Section – B : Concept of States and Nation a) States and Nation: A historical perspective. b) The elements of a State and difference between Nation and State. c) Concept and classification of Frontiers and Boundaries. d) Buffer ~~zones~~. e) Concept of core areas. Section – C : Global Strategies and International Problems a) Geo Strategic Hypothesis-Theory of Heartland and Rimland. b) The round world perspective: Global strategies in Air age. c) Concept of Federalism and Politico-Geographic factor in rise of Indian federalism. d) International problems related with boundaries: Sino-India and India- Pakistan border.	Section A Introduction to Political Geography and Geopolitics Definition and scope of political geography; Approaches to the study of Political Geography – Political-Environmental approach, Power analysis approach, Functional approach and **A unified Field Theory;** Laws of Spatial Growth of states; Concept of Geopolitics. Section B Concept of States and Nation States and Nation: A historical perspective; The elements of a State and difference between Nation and State; Concept and classification of Frontiers and Boundaries; Buffer **states: Nepal and Bhutan**; Concept of core areas. Section C Global Strategies and International Problems Geo Strategic Hypothesis-Theory of Heartland and Rimland; The round world perspective: Global strategies in Air age; Concept of Federalism and Politico- Geographic factor in rise of Indian federalism; International problems related with boundaries: Sino-India and India- Pakistan border; Environmental problems and world politics * Note –Stencils are to be permitted during the examination. Recommended Books : **1. Blacksell, M. (2005). *Political Geography*. London, UK: Routledge.**	**Reviewed Learning outcomes, recommended books &** **e-learning materials and** **rearranged the content.** **Addition of relevant topic for enrichment and specification of content.**

			e) Environmental problems and world politics * Note –Stencils are to be permitted during the examination. Recommended Books : ~~1. Agnew, John A., Mitchell, Katharye., Tuathail, GearÓid Ó. (2003) A Companion to Political Geography. Wiley-Blackwell.~~ ~~2. Alexander, J. L. M. (1966) World Political Patterns, John Murray and Co., London.~~ ~~3. Blacksell, Mark (2005) Political Geography. Routledge. London~~ ~~4. Boggs, S.W. (1940) International Boundaries, Columbia University Press, New York.~~ ~~5. Borman, I. (1921) : The New World Problem in Political Geography, World Co., Yonkers, on Hudson.~~ ~~6. Chopra, Girish (2006) Political Geography. Commonwealth Publishers.~~ ~~7. Dixit, R.D. (1999): Political geography, the Spatiality of Politics, Tata McGraw Hill Publishing Co. Ltd., New Delhi.~~ ~~8. Goblet, Y.M. (1955) : Political Geography and world Map, Alfred A. Knob, New York.~~ ~~9. Fahrer, Chuck, Glassner, Martin Ira (2003) Political Geography, Wiley.~~ ~~10. Flint, Colin., Taylor, Peter James (2007) Political Geography: World economy, nation state, and locality (5th ed.). Pearson/Prentice Hall.~~ ~~11. Gallaher, Carolyn., Dahlman, Carl T., Gilmartin, Mary and Mountz, Alison (2009) Key Concept in Political Geography. Sage Publications Ltd.~~ ~~12. Huntington, E. (2009) World Power and Evolution, Yale University Press, New Haven.~~ ~~13. Jones, Rhys., Woods, Michael and Jones, Martin (2009): An Introduction to Political Geography:~~	**2. Chopra, G. (2006). *Political Geography*. New Delhi, India: Commonwealth.** **3. Dixit, R. D. (2006). *Political geography, the Spatiality of Politics*. New Delhi, India: Tata McGraw-Hill.** **4. Flint, C., & Taylor, P. J. (2018). *Political Geography: World-economy, nation-state, and locality* (6th ed.). New Jersey, NJ: Pearson/Prentice Hall.** **5. Gallaher, C., Dahlman, C. T., Gilmartin., M., & Mountz., A. (2012). *Key Concept in Political Geography*. California, CA: Sage.** **6. Jones, R., Woods., Michael., & Jones., M. (2009). *An Introduction to Political Geography: Space, Place and Politics*. Abingdon, UK: Routledge.** **7. Painter., Joe., Jeffrey., & Alex (2010). *Political Geography* (2nd ed.). California, CA: Sage.** **8. Singh, I. (2006). *Political Geography*. New Delhi, India: Alfa.** **9. Sukhwal, B. L. (1971). *India-A Political Geography*. New Delhi, India: Allied.** **10. चौहान, पी. आर. (2010). *राजनीतिक भूगोल*. गोरखपुर, भारत: वसुन्धरा.** **11. तिवारी, आर. सी. (2017). *राजनीतिक भूगोल*. इलाहाबाद, भारत: प्रवालिका.** **12. सक्सैना, एच. (2010). *राजनीतिक भूगोल* (पंचम् सं.). मेरठ, भारत: रस्तोगी.** **Suggested e-learning materials:** **1. Geopolitics https://epgp.inflibnet.ac.in/ahl.php?csrno=17 P-03; M-24** **2. International problems related with boundaries: India- Pakistan border http://www.newworldencyclopedia.org/entry/Indo-Pakistani_Wars**	

			Space, Place and Politics. Routledge. 14. Moodie, A. E. (1963) Geography behind Politics, Hutchinson's University Library, London. 15. Painter, Joe and Jeffrey, Dr. Alex (2009) Political Geography. Sage publications Ltd; 2nd ed. 16. Singh, I. (2006) Political Geography. Alfa Publication. 17. Sukhwal, B. L. (1971) India-A Political Geography, Allied Publishers, New Delhi. 18. चौहान, पी. आर. (2010) राजनीतिक भूगोल, बसुन्धरा प्रकाशन, गोरखपुर। 19. राकरौना, हरिमोहन (2010) राजनीतिक भूगोल, रस्तोगी पब्लिकेशन्स, मेरठ।		

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
2.	GEOG 507 Research Methodology and Quantitative Techniques	**After the completion of this course, students should be able to:** • **Analyse the importance of research in geography.** • **Design a research proposal and have an understanding about its structure and collection techniques for primary and secondary data.** • **Calculate measures of central tendency, dispersion and correlate two phenomenon.** • **Test the hypothesis of varied samples sizes and nature.**	Section – A : Significance of Research a) Significance of Research in Geographical Studies. b) Research – Selection & Identification of Research Problem c) Research Design-Meaning, characteristics, steps and types. d) Hypothesis-Meaning, characteristics, types and testing e) Data- sources, collection techniques, processing and analysis. Section – B : Measures of Central Tendency a) Frequency distribution: Histogram and Graphical Representation. b) Measures of Central tendency: mean, median and mode; coefficient of variation. c) Measures of Dispersion: Mean deviation, Standard deviation and quartile deviation. d) Correlation analysis: Karl Pearson's & Spearman's Rank Correlation. e) Sampling and its types. Section – C : Test of Significance a) Student 't' test b) Mann – Whitney U – Test c) 'F' test d) Chi Square test e) Analysis of variance Non – scientific calculators are allowed during the examination. BooksRecommended: ~~1. Chorley R. J. and Haggett, P., (1967), Model in Geography: Physical and information, University paper backs. Methuen, London.~~ ~~2. Ebdon, D., (1977), Statistics in Geography, Basil~~	Section A Significance of Research Significance of Research in Geographical Studies; Research – Selection & Identification of Research Problem; Research Design-Meaning, characteristics, steps and types; Hypothesis-Meaning, characteristics, types and testing; Data- sources, **levels**, collection techniques, processing and analysis. Section B Measures of Central Tendency Frequency distribution: Histogram and Graphical Representation; Measures of Central tendency: mean, median and mode; coefficient of variation; Measures of Dispersion: Mean deviation, Standard deviation and quartile deviation; Correlation analysis: Karl Pearson's & Spearman's Rank Correlation; **Composite Index**; Sampling and its types. Section C Test of Significance Student 't' test; Mann – Whitney U – Test ; 'F' test ; Chi Square test; Analysis of variance Non – scientific calculators are allowed during the examination. Recommended Books : **1. Ahuja, R. (2014). *Research Methods.* Jaipur, India: Rawat.** **2. Alvi, Z. (2005). *Statistical Geography Methods and Applications.* Jaipur and New Delhi, India: Rawat.** **3. Dadson, S. J. (2017). *Statistical Analysis of Geographical Data An Introduction.* New Jersey, NJ: John Wiley & Sons.** **4. Gupta, S. P. (2012). *Statistical methods*. New Delhi, India:**	**Reviewed Learning outcomes, recommended books & e-learning materials and rearranged the content.** **Addition of new topic for enrichment of the content.**

			~~Blackwell.~~ ~~3. Flowerdew, R. and Martin, D., (1999), Methods in Human Geography: a guide for students doing research project, Longman.~~ ~~4. Frank, H. and Althoen, S. C., (1994), Statistic : Concepts and Applications, Cambridge University Press.~~ ~~5. Gregory, S., (1978), Statistical Methods for Geographers, Longman.~~ ~~6. Hammond, R. and McCullagh, P., (1991), Quantitative Techniques in Geography, Clarendon Press, Oxford.~~ ~~7. Har Prasad, (1992), Research Method and Techniques in Geography, Rawat Publications.~~ ~~8. Mishra, H. N. and Singh, V. P. (Eds), (1998), Research Methodology : Social, spatial and policy dimensions, Rawat Publications.~~ ~~9. डॉ. आर. एन. त्रिवेदी एवं डॉ. डी. पी. शुक्ला (2012) रिसर्च मैथ्डोलॉजी, सी. बी. डी., जयपुर।~~ ~~10. तीरलाल यादव (2008) शोध प्रविधि एवं मात्रात्मक भूगोल, सधा प्रकाशन, नई दिल्ली।~~ ~~11. श्रीवास्तव एवं प्रसाद (2008) भूगोल की सांख्यिकीय विधियाँ, वसुन्धरा प्रकाशन, गोरखपुर।~~ 12. ~~कैलाश नाथ नागर (2013) सांख्यिकीय के मूल तत्व, मीनाक्षी प्रकाशन, मेरठ।~~	**Sultan Chand and sons.** **5. Jackson, L. S. (2009). *Research Methods and Statistics*. New Delhi, India: Cengage Learning.** **6. Kothari, C. R., & Garg, G. (2014). *Research Methodology Methods and Techniques* (3rd ed.). New Delhi, India: New age International.** **7. Kumar, R. (2016). *Research Methods A step-by-step Guide for Beginners* (2nd ed.). Sydney, Australia: Pearson Education and Dorling Kindersley.** **8. Mahmood, A. (2017). *Statistical Methods in Geographical studies* (6th ed.). New Delhi, India: Rajesh.** **9. Mishra, H. N., & Singh, V. P. (Eds.). (1998). *Research Methodology : Social, spatial and policy dimensions*. Jaipur, India: Rawat.** **10. Rao, G. N. (2012). *Research Methodology and quantitative Methods.* Hyderabad, India: B.S.** **11. Sarkar, A. (2013). *Quantitative Geography- Techniques and Presentations.* New Delhi, India: Orient Blackswan.** **12. नागर, के. एन. (2018). *सांख्यिकीय के मूलतत्व.* मेरठ, भारत: मीनाक्षी.** **Suggested e-learing materials:** **1. Chi-square test - http://ocw.jhsph.edu/courses/fundepiii/PDFs/Lecture17.pdf** **2. Measures of Dispersion https://sol.du.ac.in/mod/book/view.php?id=1317&chapterid=1066**	

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
3.	GEOG 510 Systematic Agricultural Geography	**After the completion of this course, students should be able to:** • **Describe approaches to study agricultural geography.** • **Apprise farmers about new farming techniques, influencing patterns and environmental degradation caused by agriculture.** • **Demarcate any region according to world classification systems through statistical techniques.** • **Classify land on several parameters and discuss the nature of agricultural problems of the nation.**	Section – A : Nature & Scope of Agricultural Geography a) Nature, scope and significance of Agricultural Geography. b) Approaches to the study of Agricultural Geography – Commodity Approach, Regional Approach and systematic approach. c) Factors influencing patterns and farm techniques. d) Soils – Major soil types, distribution & their characteristics. e) Environmental degradation – Causes and consequences. Section – B : Agricultural Regions &Typology a) Whittleseys's classification of Agricultural systems of the world. b) Agricultural location theory of Von-thunen and their limitations. c) Concept of Agricultural regions and delimitation. d) Agricultural Typology. e) Methods of Delimitations of crop combination Region – J.C. Weaver's minimum deviation and K. Doi's least square method. Section – C : Modern Concepts of Agricultural Geography a) Concepts in Agricultural geography – Sustainable development. Social forestry, Agribusiness, and dryland farming. b) Land classification and land capability. c) Agricultural transformation in India posts Independence – Land reforms and land use policy. d) Green revolution its implications in India and impact of white revolution in India. e) Food deficiet and surplus regions of India,	Section A Nature & Scope of Agricultural Geography Nature, scope and significance of Agricultural Geography; Approaches to the study of Agricultural Geography – Commodity Approach, Regional Approach and systematic approach; Factors influencing patterns and farm techniques; Soils – Major soil types, distribution & their characteristics; Environmental degradation – Causes and consequences. Section B Agricultural Regions &Typology Whittleseys's classification of Agricultural systems of the world; Agricultural location theory of Von-thunen and their limitations; Concept of Agricultural regions and delimitation; Agricultural Typology-**Kostrowicki;** Methods of Delimitations of crop combination Region – J.C. Weaver's minimum deviation and K. Doi's least square method. Section C Modern Concepts of Agricultural Geography Concepts in Agricultural Geography– Sustainable development, Social forestry, Agribusiness, and dryland farming; Land classification and land capability; Agricultural transformation in India posts Independence – Land reforms and land use policy; Green revolution its implications in India and impact of white revolution in India; Food deficit and surplus regions of India, Problems of Indian Agriculture, management and planning, National Agriculture Policy. Stencils and non-scientific calculators are to be permitted during the examination.	**Reviewed Learning outcomes, recommended books &** **e-learning materials and rearranged the content.** **Addition of content for specification**

			Problems of Indian Agriculture, management and planning, National Agriculture Policy. * Note – Stencils and non-scientific calculators are to be permitted during the examination Recommended Books : ~~1. Ali, Mohammad (1981): Situation of Agricultural Geography, Rajesh publication, New Delhi,~~ ~~2. Ali, Mohammad (1979) Dynamics of Agriculture Development in India, Concept Publication Co. Delhi.~~ ~~3. Chauhan Dharmendra Singh (2010) Agricultural Geography, Ritu Publications. Jaipur~~ ~~4. Chopra Girish (2006) Agricultural Geography, Commonwealth Publishers.~~ ~~5. Hanif M. (2005) Encyclopedia of Agriculture Geography, Anmol Publications PVT Ltd.~~ ~~6. Kostowickie, 2 (1983): Agricultural Typology, Polish Academy Warsaw.~~ ~~7. Leong, Gon Cheng & Morgan, Gilliam C. (1982) Human and Economic Geography, Oxford University Press.~~ ~~8. Raina J. L. (2008) Agriculture Geography, Pointer Publishers.~~ ~~9. Rummey A Thomas (2005) The study of Agriculture Geography: A Scholarly guide & Bibliography, The Scarecrow press, Lnc.~~ ~~10. Shafi Mohammed (2000) Agricultural Geography of South Asia., Macmillan Publishers India.~~ ~~11. Singh & Dhillon (2004) Agriculture Geography(3rd Edition), Tata McGraw Hill.~~ ~~12. Singh, R.L. (Ed.) (1968) Applied Geography, BHU press, Varanasi.~~ ~~13. दुसैन, मजिद (2000) कृषि भूगोल, रावत पब्लिकेशन, जयपुर।~~ ~~14. कुमार, प्रमीला एवं शर्मा, श्री कमल (2008) कृषि भूगोल,~~ ~~15. मध्य प्रदेश हिन्दी ग्रन्थ अकादमी, भोपाल।~~	Recommended Books : 1. **Chauhan, D. S. (2010). *Agricultural Geography*, Jaipur, India: Ritu.** 2. **Gautam, A. (2012). *Agricultural Geography*, Allahabad, India: Sharda Pustak Bhawan.** 3. **Hussain, M. (2010). *Agricultural Geography*, New Delhi, India: Rawat.** 4. **Kostowickie (1983). *Agricultural Typology*, Warsaw, Poland: Polish Academy.** 5. **Leong, G. C., & Morgan, G. C. (2010). *Human and Economic Geography* (2nd ed.). New Delhi, India: Saurabh.** 6. **Ali, M., & Hanafi, Y. S. (2013). *Agricultural Geography* .Gorakhpur, India: Vasundhra.** 7. **Ali, M. (1979). *Dynamics of Agriculture Development in India*, Delhi, India: Concept.** 8. **Ali, M. (1981). *Situation of Agricultural Geography*. New Delhi, India: Rajesh.** 9. **Shafi, M. (2006). *Agricultural Geography*. Delhi, India: Baba Barkha Nath.** 10. **Singh, J., & Dhillon, S. S. (2004). *Agriculture* Geography (3rd ed.). New Delhi, India: Tata McGraw – Hill.** 11. **कुमार, पी., एवं शर्मा, के. (2008). *कृषि भूगोल* (अष्ट सं.). भोपाल, भारत: मध्य प्रदेश हिन्दी ग्रन्थ अकादमी.** 12. **गौतम, ए. (2009). *कृषि भूगोल.* इलाहबाद, भारतः शारदा पुस्तक भवन.** 13. **दुसैन, एम. (2010). *कृषि भूगोल* (द्वितीय सं.) जयपुर, भारत: रावत.** **Suggested e-learning materials:** **1.White Revolution in India** **http://lnweb90.worldbank.org/oed/oeddoclib.nsf/fb71ec897615187985256885007b6ad0/1bdd436f3bb1c0d68525684800767e4e/$FILE/India_Dairy.pdf** **2.Agribusiness** **http://www.isapindia.org/uploads_isap/annual_report/1010_Report-2016-17.pdf**	

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
4.	GEOG 509L Surveying Lab	**After the completion of this course, students should be able to:** • **Handle the surveying instruments- Theodolite, dumpy level and Indian Clinometer.** • **Measure the angles and survey different areas through triangulation and traverse method.** • **Plot the longitudinal profile of any region through dumpy level.** • **Conduct a Field survey of any region**.	1. Surveying: Definition ~~and History of surveying,~~ 2. Theodolite and Total Station Surveying: Introduction of Theodolite andTotal Stationsurveying, Measurement of angles, Triangulation and Traverse method of Theodolite surveying. 3. Dumpy level and Auto Level Surveying: Introduction of Dumpy and Auto level surveying observation of staff reading, recording of staff reading. Methods of leveling, Plotting of longitudinal profile 4. Indian clinometer: Brief introduction of Indian clinometer, method of use and determining the heights of distant points. 5. Field ~~Study: Village Survey based on specially designed questionnaire as per the identified variables as per the objectives.~~ Scientific calculators are allowed during the examination. Recommended Books : ~~1. Kanetkar, T. P.(1985) : Surveying and Leveling, Vol. I, A. V. Griha Prakashan, Bombay.~~ ~~2. Mishra, R. P. and A. Ramesh, (2014): Fundamentals of Cartography, Concept Publishers, New Delhi.~~ ~~3. Monkhouse, F. J., (1952) : Maps and Diagrams, Methuen & Co. Ltd., London.~~ ~~4. Punmia, B.C., Jain, A.K. & Jain, A.K., (2005): Surveying, Laxmi Publication P. Ltd., New Delhi.~~ ~~5. Raize, E. (1948): General Cartography, McGraw Hill Book Co., London.~~ ~~6. Robinson, A. R., (1953) : Elements of Cartography, Chapman & Hall.~~ ~~7. Singh, R. L. (2009): Elements of Practical Geography, Kalyani Publishers.~~ ~~8. Singh, R. N. and Kanaujia L. R. S.,~~	**1.** Surveying: Definition, **Classification, Principles and Errors.** 2. Theodolite and Total Station Surveying: Introduction of Theodolite andTotal Stationsurveying, Measurement of angles, Triangulation and Traverse method of Theodolite surveying; **Surface generation and contour mapping by Total station; GPS** **3.** Dumpy level and Auto Level Surveying: Introduction of Dumpy and Auto level surveying. **Observation and recording of staff reading.** Methods of leveling, Plotting of longitudinal profile **by Dumpy level data**. **Cut & fill and Line Leveling by Auto level.** 4. Indian clinometer: Brief introduction of Indian clinometer, method of use and determining the heights of distant points. 5. **Field Survey.** Scientific calculators are allowed during the examination. Recommended Books : **1. Duggal, S. K. (2015). *Surveying* (4th ed., Vol. I). New Delhi, India: McGraw Hill.** **2. Ghilani, C. D., & Wolf, P. R. (2015). *Elementary surveying an introduction to geomatics* (14th ed.). New Jersey, NY: Pearson.** **3. Kanetkar, T. P. (1985). *Surveying and Leveling* (23rd ed., Vol. I). Pune, India: Pune Vidyarthi Griha.** **4. Mishra, R. P. (2014). *Fundamentals of Cartography* (2nd ed.). New Delhi, India: Concept.** **5. Punmia, B. C., Jain, A. K., & Jain, A. K. (2016). *Surveying* (17th ed., Vol. I). New Delhi, India: Laxmi.** **6. पुनमिया, बी. सी., जैन, ए. के., एवं जैन, ए. के. (2016). *सर्वेक्षण एवं क्षेत्रकार्य* (अष्ट सं., प्रथम भाग). नई दिल्ली, भारतः लक्ष्मी.** **7. पुनमिया, बी. सी., जैन, ए. के., एवं जैन, ए. के. (2017). *सर्वेक्षण एवं क्षेत्रकार्य* (अष्ट सं., द्वितीय भाग). नई दिल्ली, भारतः लक्ष्मी.**	**Reviewed Learning outcomes, recommended books &** **e-learning materials and rearranged the content.** **Addition of relevant topics for specification and enrichment**.

			~~(1998): Map Work & Practical Geography, Central Book Depot, Allahabad.~~ 9. ~~शर्मा, जे.पी. (2009) प्रायोगिक भूगोल, रस्तोगी प्रकाशन, मेरठ।~~ 10. ~~वर्मा, एल एन.व आर. एम लोढा (1999) प्रयोगात्मक भूगोल, राजस्थान हिन्दी ग्रन्थ अकादमी, जयपुर।~~	**8. शर्मा, जे. पी. (2013). *प्रायोगिक भूगोल* (चतुर्थ सं.). मेरठ, भारतः रस्तोगी.** **Suggested e-learing materials:** **1. Introduction to Surveying** **https://nptel.ac.in/courses/105107122/1** **2. Introduction to Theodolite** **https://nptel.ac.in/courses/105107122/20** **3. Theodolite Measurement** **https://nptel.ac.in/courses/105107122/22** **4. Leveling basics** **https://nptel.ac.in/courses/105107122/13** **5. Profile leveling** **https://nptel.ac.in/courses/105107122/14** **6. Introduction to total station** **https://nptel.ac.in/courses/105107158/17**	

~~Elective I~~

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
1.	GEOG-~~505~~ Population Geography	**After the completion of this course, students should be able to:** • **Map the world in terms of density, distribution and other demographic aspects.** • **Differentiate between demographic characteristics of developing and developed nations and factors posing that difference.** • **Have a theoretical background about population growth and migration** • **Depict the trends of urbanization and demographic structure of India.**	Section - A : Scope of Population Geography & Demographic Characteristics of the World a) Definition and scope of Population Geography and its relation with other sciences. b) Recent trends in Population Geography. c) Factors affecting the distribution and density of the world's population. d) Population growth and distribution in the world. e) Recent demographic characteristics of developed and developing nations. Section - B : Theories of Population Growth and Migration a) Theories of Population Growth - Malthusian theory, Optimum population theory and Theory of demographic transition. b) Factors affecting population change, Population resource regions of the world. c) Migration: Major factors, consequences and types of migration. d) Theories of migration: Lee, Rewensteen and Zelinsky's model. e) Important migration of the world. Section - C : Population Geography in India a) Development of Population Geography in India~~.~~ b) Population change (birth rate and death rate), Population growth and internal migration c) Demographic structure (sex ratio, literacy rate and occupation structure). d) Trends of urbanization in India e) Population policy of India 2000. * Note – Stencils are to be permitted during the examination.	**Discipline Elective** Recommended Books : **1. Ahmad A., Noin, D., & Sharma, H. N. (Ed). (1997). *Demographic Transition- The third World Scenario*. Jaipur, India: Rawat.** **2. Bhende, A. A & Kanitkar, T. (2008). *Principles of Population Studies (19th ed.)*. Mumbai, India: Himalaya** **3. Chaubey, P.K. (2011). *Population Policy for India-prespectives, issues and challenges*. New Delhi, India: Kanishka.** **4. Chandana, R. C. (2014). *A Geography of population* (11th ed.). New Delhi, India: Kalyani.** **5. Chopra, G. (2006). *Population Geography*. New Delhi, India: Commonwealth.** **6. Cox, P. R. (1993). *Demography* (5th ed.). New Delhi, India: Universal Book Stall.** **7. Jay, W., & Pillai, V. K. (2017). *Demography- The Science of Population* (2nded.). Jaipur, India: Rawat.** **8. Jhingon, M. L., Bhatt, B. K., & Desai, J. N. (2011).**	**Shifted to pool of Discipline Electives.**

			Books Recommended: 1. ~~Ahmad A., Noin D., Sharma H.N. (1997): Demographic Transition The third World Scenario (ed.) Rawat Publication~~ 2. ~~Chandana, R. C (2008): A Geography of population, Kalyani Publishers, New Delhi.~~ 3. ~~Chopra, Girish (2006): Population Geography. Commonwealth Publishers.~~ 4. ~~Gary, L., Peters, Robert, P. Larkin (2008): Population Geography: Problems, Concepts and Prospects. Kendall Hunt Publishing.~~ 5. ~~Graham, David (2009): Population Geography. Routledge.~~ 6. ~~Hassan, Mohd Izhar (2005): Population Geography. Rawat Publications.~~ 7. ~~Jhingon M.L., Bhatt B.K., Desai J.N. (2011): Demography, Vrinda Publishers Pvt. Ltd.~~ 8. ~~K. Bruce Newbold (2010): Population Geography: Tools and Issues. Rowman and Littlefield Publishers, Inc.~~ 9. ~~Khullar.D.R. (2012) India A comprehensive Geography, Kalyani Publishers~~ 10. ~~Kumar S. (2014): An introduction to Population Geography, ABD Publishers, New Delhi~~ 11. ~~Kumar S. (2014): Basic Principles of Population Geography, ABD Publishers, New Delhi~~ 12. ~~Kumar S. (2014): Elements of Population Geography, ABD Publishers, New Delhi~~ 13. ~~Qazi, S.A. (2006): Population Geography. APH publishing corporation.~~ 14. ~~Ranade P.S. (1990): Population Dynamics in India, Ashish Publishing House, New Delhi.~~ 15. ~~Tripathi, R.K. (2007): Population Geography. Commonwealth Publishers.~~ 16. ~~Wilson, (1968): Population Geography, Nelsen Publication.~~ 17. ~~Woods (1982/2000): Theoretical Population Geography, Longman Publication, USA.~~	***Demography*** **(2nd ed.). New Delhi, India: Vrinda.** **9. Premi, K. M. & Das, D. N. (2012). *Population of India 2011*. Delhi, India: B.R.** **10. Qazi, S. A. (2010). *Population Geography*. New Delhi, India: APH.** **11. Srivastava S. C. & Srivastava, S. (2004). *Studies in Demography*. New Delhi, India: Anmol.** **12. Tripathi, R. K. (2007). *Population Geography*. New Delhi, India: Commonwealth.** **13. Weinstein, J., Pillai, A., & Vijayan, K. (2017*). Demography-The Science of Population* (2nd ed.). Jaipur, India: Rawat.** **14. पडां, बी. पी. (2007). *जनसंख्या भूगोल.* भोपाल, भारत: मध्यप्रदेश हिन्दी ग्रंन्थ अकादमी.** **15. बंसल, एस. सी. (2015). जनसंख्या भूगोल (द्वितीय सं.). नई दिल्ली, भारतः आर. के.** **Suggested e-learing materials:** **1. Migration http://www.un.org/en/development/desa/population/migration/publications/migrationreport/docs/MigrationReport2017_Highlights.pdf** **2. Demographic Data of India http://censusindia.gov.in/2011-prov results/data_files/india/Final_PPT_2011_chapter3.pdf** **3. National Population Policy 2000 https://mohfw.gov.in/sites/default/files/2695375564141094946 9%20%281%29.pdf**	

			18. Yadav J.P. (2004): Population Geography, Anmol Pub. Pvt. Ltd. पठंग, बी. पी. (2007) जनसंख्या भूगोल, मध्यप्रदेश हिन्दी ग्रंन्थ अकादमी, भोपाल।		

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
2.	GEOG ~~508~~ Social Geography	**After the completion of this course, students should be able to:** • **Develop an approach to study social geography.** • **Describe social processes, social strata's, and organizations.** • **Relate society and culture, understand cultural realms and regions.** • **Analyze the current status of women in India and suggest measures for improvement.**	Section – A : Introduction to Social Geography a) Meaning, Scope and Aims of Social Geography. b) Approaches to the study of social geography: Ecological approach, Regional approach, Historical approach, Welfare approach, System approach and Behavioral approach. c) Society: Definition, Origin and Classification of Society. d) Social Process: Forms of Social Interaction (Cooperation, Accommodation, Assimilation, Competition, and Conflict). e) Social Stratification, Caste and Class. Social Organization and Groups. Section – B : Society and Culture a) Society and Culture. b) Cultural Hearths. c) Cultural Diffusion: Definition, Elements, and causes of diffusion. Barriers of diffusion, Effects and Types of diffusion. Hagerstand's model of diffusion. d) Cultural Realms: Meaning of Cultural Realms ,Basis of delimitation of cultural realms, Modern classification of the cultural realms. e) Cultural Regions of the world: Meaning and Bases of delimitation of cultural regions, Cultural Regions United States, U.K., Mesopotamia and Indian. Section – C : Social Geography in India a) Social Geography of India: Indian Society in Historical Perspective. b) Status of Women in India. c) Social Change in India. d) Human Development in India. e) Social Planning in India: Meaning, Importance and	**Discipline Elective** —— **Recommended Books :** **1. Ahmad, A. (2006). *Social Geography* (Reprint). Jaipur, India: Rawat.** **2. Hamnett, C. (Ed.). (1996). *Social Geography : A Reader*. New York, NY: John Wiley & Sons.** **3. Majid, H. (2006). *Human Geography* (3rd ed.). Jaipur, India: Rawat.** **4. Mehtani, S. & Sinha, A. (2010). *Social Geography*. New**	**Shifted to pool of Discipline Electives**

			Major aspects of Social planning. Social Welfare Programmes in Planned Period (Child Welfare Programme, Women Welfare Programme, Labour Welfare Programme, Family Planning and Family Welfare Programme, Adult Education Programme). * Note – Stencils are to be permitted during the examination. Books Recommended: ~~1. Ahmad, Aijazuddin (1999): Social Geography, Rawat Publications, Jaipur And New Delhi.~~ ~~2. Chris Hamnett (1996): Social Geography (Ed.) : A Reader, Wiley Blackwell, A John Wiley & Sons Lit., Publication, New York.~~ ~~3. Ghurye, B. S. (1957): Caste and Class in India, Popular Book Depot, Bombay.~~ ~~4. Guha, B.S. (1944): Racial Elements in India's Population, Oxford University Press, UK~~ ~~5. Jones, E & Eyles, J. (1979) : An Introduction to Social Geography, Oxford University Press, UK~~ ~~6. Jones, E. (ed.) (1975) : Readings in Social Geography, Oxford University Press, UK~~ ~~7. Mohanty, G. S. (2005): Social & Cultural Geography (Ed.), Isha Books Publication, Adharsh Nagar, Delhi.~~ ~~8. Vincent J. Del Casino Jr (2009): Social Geography – A Critical Introductions, Wiley Blackwell, A John Wiley & Sons Lit., Publication. New York~~ ~~9. डॉ. श्रीकान्त दीक्षित एवं डॉ. सामदेव त्रिपाठी (2008) सांस्कृतिक भूगोल, वसुन्धरा प्रकाशन, गोरखपुर।~~ ~~10. डॉ. एस. डी. मौर्य, सामाजिक भूगोल (2010)शारदा पुस्तक भवन, इलाहाबाद।~~	**Delhi, India: Commonwealth.** **5. Mohanty, G. S. (Ed.). (2005). *Social & Cultural Geography*. Delhi, India: Isha Books.** **6. दीक्षित, एस. एवं त्रिपाठी, आर. (2008). *सांस्कृतिक भूगोल*. गोरखपुर, भारत: वसुन्धरा.** **7. मौर्य, एस. डी. (2010). *सामाजिक भूगोल*. इलाहाबाद, भारत: शारदा पुस्तक भवन.** **Suggested e-learning materials:** **1. Society: Definition, origin and Classification, Society and Culture http://egyankosh.ac.in/bitstream/123456789/41246/1/Unit-1.pdf** **2. Family welfare programmes https://humdo.nhp.gov.in/about/national-fp-programme/**	

FOURTH SEMESTER

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
1.	GEOG 501 Environmental Geography	**After the completion of this course, students should be able to:** • **Describe approaches to study environment** • **Describe several environmental cycles, food chain, pyramids and energy flow.** • **Depict the consequences of pollution and hazards and suggest measures to control them.** • **Create awareness about the need of biodiversity conservation.**	Section - A : Introduction to Environmental Geography a) Definition and scope of Environmental Geography ~~and its relation with environmental science.~~ b) Approaches to study of environment,~~ Types of environment~~. c) Factors of the environment: Physiographic, Climatic, Edaphic, Biotic and Anthropogenic. d) Bio Geochemical Cycles: The Carbon cycle, the Oxygen cycle, the Nitrogen cycle. e) The Hydrological cycle. Section – B : Concept of Ecology and Ecosystem a) Concept of Ecosystem: With special reference to desert, forest and aquatic ecosystem. b) Food chain, Food web & succession. c) Ecological Pyramids and their types. d) Energy flow in ecosystem. e) Concepts of Biomes. Major biomes of the world: Tropical forest, Temperate forest, Grassland and Tundra. Section – C : Environmental Pollution and Hazards a) Environmental Pollution-Pollutants and sources: 1. Water pollution, 2. Soil pollution, 3. Air pollution and, 4. Noise pollution. b) Environmental Hazards : a. Natural hazards: i. Soil erosion, ii. Landslides, iii. Droughts and floods. b.Man-made hazards: i. Technological hazards: Nuclear and Industrial, ii. Green house effects and Global warming,	Section A Introduction to Environmental Geography Definition and scope of Environmental Geography; Approaches to study of environment, **Factors of the environment: Abiotic (Physiographic, Climatic, Edaphic)**; **Factors of the environment: Biotic (Flora & Fauna)**; Bio Geochemical Cycles: The Carbon cycle, the Oxygen cycle, the Nitrogen cycle; The Hydrological cycle. Section B Concept of Ecology and Ecosystem Concept of Ecosystem: With special reference to desert, forest and aquatic ecosystem; Food chain, Food web & succession; Ecological Pyramids and their types; Energy flow in ecosystem; Concepts of Biomes. Major biomes of the world: Tropical forest, Temperate forest, Grassland and Tundra. Section C Environmental Pollution and Hazards Environmental Pollution-Pollutants and sources:Water pollution,Soil pollution,Air pollution and,Noise pollution; Environmental Hazards- Natural hazards:Soil erosion, Landslides,Droughts and floods.Man-made hazards:Technological hazards: Nuclear and Industrial,Green house effects, Global warming and Ozone depletion; Biodiversity : Threats and conservation; Need of Environmental Management and Planning; Major **environmental Movements (Chipko Movement, Silent Movement, Vishnoi Movement) and National Green Tribunal (NGT) Act, 2010;** Concept of Environmental impact assessment (EIA).	**Reviewed Learning outcomes, recommended books &** **e-learning materials and rearranged the content.** **Addition of the relevant topics for specification .**

			iii. Ozone depletion. c) Biodiversity : Threats and conservation d) Need of Environmental Management and Planning e) Concept of Environmental impact assessment (EIA). Stencils are to be permitted during the examination. Recommended Books : ~~1. Anjuneyulu, Y. (2002): Environmental Impact Assessment Methodologies. B. S. Publications, Hyderabad.~~ ~~2. Bharucha, E., (2013) Textbook of Environmental Studies for Undergraduate Courses, Universities Press, Hyderabad~~ ~~3. Desombre, R.E. (2007) The Global Environment and World Politics, Continuum International Publishing Group, New York~~ ~~4. Gautam, A (2007): Environmental Geography, Sharda Pustak Bhawan, Allahabad.~~ ~~5. Gautam, A. (2005): Resource and Environment (in Hindi), Sharda Pushtak Bhawan, Allahabad.~~ ~~6. Hughs, Foreman (2010): Biogeography & Geomorphology. Apple academics.~~ ~~7. Jadhav, S.B., (2012) Environmental Geography,Chandralok Prakashan, Kanpur~~ ~~8. Mathur, H.S.(1998) : Essentials of Biogeography, Pointer Publishers, Jaipur.~~ ~~9. Mehtani, S. & Sinha, A. (2010): Biogeography. Commonwealth Publisher.~~ ~~10. Odum, E.P.(1968) : Fundamentals of Ecology, W.B. Sanders. Company, Philadelphia and London.~~ ~~11. Rajagopalan, R. (2005): Environmental Studies: From Crisis to Cure, Oxford University Press, New Delhi.~~ ~~12. Reddy, M. A. (2004): Geoinformatics for Environmental Management. B. S. Publishers., Hyderabad.~~ ~~13. Sarkar, S., and Chaudhary, S. K., (2014) Textbook of Environmental Science, APH Publishing Corporation, New Delhi.~~	Stencils are to be permitted during the examination. Recommended Books : **1. Bharucha, E. (2013). *Textbook of Environmental Studies for Undergraduate Courses*. Hyderabad, India: Universities Press.** **2. Desombre, R. E. (2007). *The Global Environment and World Politics*. New York, NY: Continuum International Publishing Group.** **3. Gautam, A. (2010). *Environmental Geography*. Allahabad, India: Sharda Pustak Bhawan.** **4. Jadhav, S. B. (2012). *Environmental Geography*. Kanpur, India: Chandralok.** **5. Mehtani, S., & Sinha,A. (2010). *Biogeography*. New Delhi, India: Commonwealth.** **6. Odum, E. P. (2005). *Fundamentals of Ecology* (5th ed.). Philadelphia and London, UK: W.B. Sanders Company.** **7. Rajagopalan, R. (2005). *Environmental Studies: From Crisis to Cure.* New Delhi, India: Oxford University Press.** **8. Saxena, H. M. (2007). *Environmental Geography* (2nd ed.). Jaipur, India: Rawat.** **9. Singh, R. B. (Ed.). (1990). *Environmental Geography*. New Delhi, India: Heritage.** **10. Singh, R. B. (Ed.). (1995). *Studies in Environment and Development.* Varanasi, India: Rakesh.** **11. Singh, S. (2012). *Environmental Geography*. Allahabad, India: Prayag Pustak Bhawan.** **12. William, M.W., & John, G. (2004). *Environmental Geography-Science, Landuse and Earth system* (3rd**	

			14. Saxena, K.K. (2004): Environmental Studies. University Book House Private Ltd., Jaipur. 15. Singh, O., Kumra V. K. and Singh J. (1988): India's Urban Environment. Pollution, Perception and Management. Tara Book Agency, Varanasi. 16. Singh, R. B. (ed) (1995): Studies in Environment and Development. Rakesh Prakashan, Varanasi. 17. Singh, R. B. (ed.) (1990): Environmental Geography. Heritage Publication, New Delhi. 18. Singh, S. (2007): Paryavaran Bhugol. Prayag Pustak Bhawan, Allahabad. 19. Singh, S. N. (1993): Elements of Environmental Geography and Ecology (in Hindi), Tara Book Agency, Varanasi. 20. Singh, S., (2012) Environmental Geography,Prayag Pustak Bhawan, Allahabad 21. Valdiya, K. S. (1987): Environmental Geology: Indian Context. Tata McGraw Hill Publishing Company. Ltd., New Delhi 22. William, M.W. and John, G (1996): Environmental Geography-Science, Landuse and Earth system, John Wiley and sons, New York. 23. बाकरे, बाकरे, वाधवा (2005-06) पर्यावरणीय अध्ययन, रस्तोगी पब्लिकेशन्स, गंगोत्री, शिवाजी रोड़ मेरठ। 24. एस. सी. कलवार (2007) पर्यावरण संरक्षण, पोइन्टर पब्लिशर्स, दिल्ली। 25. बी. सी. जाट (2011) पर्यावरण भूगोल, रावत पब्लिशर्स, जयपूर। 26. वीणा बाना (2002) पर्यावरण शिक्षा, रिसर्च पब्लिशर्स, जयपुर। 27. अवस्थी, एन. एम. और तिवारी आर. पी. एल., (1995) पर्यावरण भूगोल, हिन्दी हिन्दी ग्रन्थ अकादमी, भोपाल। 28. गुर्जर राजकुमार और जाट बी.सी. (2010) संस्थान एवं पर्यावरण, पंचशील प्रकाशन, जयपुर 29. प्रसाद गायत्री और नौटियाल राजेश (2008) पर्यावरण भूगोल, शारदा पुस्तक भवन, इलाहाबाद	**ed.). New York, NY: John Wiley & sons.** **13. नेगी, पी. एस. (2014). *पारिस्थितिकी एवं पर्यावरण भूगोल* (चतुर्थ सं.). मेरठ, भारत: रस्तोगी.** **Suggested e-learning materials:** **1. Ozone depletion https://www.epa.gov/ozone-layer-protection/health-and-environmental-effects-ozone-layer-depletion** **2. Global Warming https://www.nationalgeographic.com/environment/global-warming/global-warming-overview/**	

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
2.	GEOG 506 Remote Sensing and GIS	**After the completion of this course, students should be able to:** • **Describe the concepts of aerial photography, Remote sensing and GIS.** • **Develop a background knowledge of platforms, sensors, thermal and microwave remote sensing.** • **Apply Geospatial techniques in fields of cartography, environmental management, vegetation monitoring, forest cover depletion etc.**	Section-A : Aerial Photograph a) Aerial Photographs: Definition,Basic Terms and Scale and Overlapping in aerial photographs b) Classification of aerial photographs, their utility and Factors affecting the quality of an aerial photo c) Fundamental of aerial photographs- Aerial camera, Time and season of photography, Planning and execution of photographic flight, Completion of photographic task d) Elements of air photo interpretation and interpretation keys e) Difference between aerial photograph and Topogarphical maps; Aerial photo mosaics Section- B : Remote Sensing a) Remote sensing: Definition, process and stages; historical development b) Remote sensing platforms and sensors c) Remote sensing programmes of India d) Electromagnetic Radiation (EMR) - Properties, Interaction of EMR with the earth's surface and atmosphere, Spectral signatures. e) Basic principles and applications of Thermal and Microwave Remote Sensing Section- C : GIS and GPS a) GIS: Meaning and concept, historical development; Components of GIS b) Data Structure and Data Models; Data Base Management System (DBMS), GIS manipulation and analysis c) Basic Principles of GPS; GPS segments:GPS receivers d) Application of GIS and GPS Non – scientific calculators are allowed in the examination. <u>Recommended Books :</u> ~~1. Abbasi, S. A. (2005): 'Application of GIS & Remote Sensing in Environment Managements', Discovery~~	Section A Aerial Photograph Aerial Photographs: Definition,BasicTerms and Scale and Overlapping in aerial photographs; Classification of aerial photographs, their utility and Factors affecting the quality of an aerial photo; Fundamental of aerial photographs- Aerial camera, Time and season of photography, Planning and execution of photographic flight, Completion of photographic task; Elements of air photo interpretation and interpretation keys; Difference between aerial photograph and Topographical maps; Aerial photo mosaics Section B Remote Sensing Remote sensing: Definition, process and stages; historical development; Remote sensing platforms and sensors; Remote sensing programmes of India; Electromagnetic Radiation (EMR) - Properties, Interaction of EMR with the earth's surface and atmosphere, Spectral signatures; Basic principles and applications of Thermal and Microwave Remote Sensing Section C GIS and GPS GIS: Meaning and concept, historical development; Components of GIS; Data Structure and Data Models; Data Base Management System (DBMS), GIS **Data** manipulation and analysis; Basic Principles of GPS; GPS Segments:GPS receivers; Application of GIS and GPS Non – scientific calculators are allowed in the examination.	**Reviewed Learning outcomes, recommended books &** **e-learning materials and rearranged & redefined the content.**

			~~Publishing House, New Delhi.~~ ~~2. American Society of Photogrammtry (1993): Manual of Remote Sensing Publishers', Falls Church Virginia.~~ ~~3. Avery, T. E. & Berlin, G. L. (1985): Interpretation of Aerial photographs, Burgess, Minneapolis.~~ ~~4. Bhatta B. (2014): Remote Sensing and GIS, Oxford University Press~~ ~~5. Burrough P.A. and Rachael A. McDonnell (2010): Principles of Geographic Information Systems', 2nd Ed.~~ ~~6. Ciciarelli John A (1991): A Practical Guide to Aerial Photography with an introduction to surveying, Van Nostrand~~ ~~7. Curran P. J. (1985): 'Principles of Remote Sensing, Longman, London.~~ ~~8. Fazal S., (2008): GIS Basics, New Age international Publishers~~ ~~9. Ganesh A and Narayanakumat R. (2006): GPS Princiles and applications, Satish Serial Publishing House~~ ~~10. George Joseph (2008): Fundamentals of Remote Sensing, Universities Press (India) Pvt Ltd. Hyderabad.~~ ~~11. Heywood I, Cornelius S, Carver S. (2000): Introduction to GIS, Addison Wesley Longman, New York~~ ~~12. Kumar S. (2014): Basics of Remote Sensing and GIS, University Science Press~~ ~~13. Lillesand T.M., Kiefer, R.W. and Chipman J.W., (2011): Remote Sensing and Image interpretation, Wiley and Sons~~ ~~14. Lo CP & Yeung AKW(2004): Concepts and Techniques of GIS, Prentice Hall of India, New Delhi~~ ~~15. Paine David P. and Kiser James D (2012): Aerial Photograph and Image interpretation, John Wiley and Sons~~ ~~16. Palet, A.N, (1992): Remote Sensing Principles & Application, Scientific Publishers, Jodhpur.~~ ~~17. चौनियाल देवी दत्त (2010), सुदूर सर्वेदन एवं भौगोलिक सूचना प्रणाली, शारदा पुस्तक भवन~~	**Recommended Books :** **1. Bhatta, B. (2011). *Remote Sensing and GIS (2nd ed.)*. New Delhi, India: Oxford University Press.** **2. Campbell, J. B., & Wynne, R. H. (2011). *Introduction to Remote Sensing* (5th ed.). New york, NY: Guilford** **3. Ciciarelli, J. A. (1991). *A Practical Guide to Aerial Photography with an introduction to surveying*. New York, NY: Van Nostrand Reinhold.** **4. Cracknell, A. P., & Hayer, L. (2009). *Introduction to Remote Sensing*, New York, NY: Taylor and Francis.** **5. Ganesh, A., & Narayanakumar, R. (2006). *GPS Principles and Applications.* Delhi, India: Satish Serial.** **6. George, J., & Jeganathan, C. 2018). *Fundamentals of Remote Sensing* (3rd ed.). Hyderabad, India: Universities Press.** **7. Gopi, S. (2013). *Global Positioning System-Principles and Applications.* New Delhi , India: McGraw Hill.** **8. Kumar, S. (2014). *Basics of Remote Sensing and GIS*, New Delhi, India: University Science Press Laxmi.** **9. Lillesand, T. M., Kiefer, R. W., & Chipman, J. W. (2008). *Remote Sensing and Image Interpretation* (6th ed.). New York, NY: Wiley & Sons.** **10. Lo, C. P., & Albert, K. W. Y. (2002). *Concepts and Techniques of Geographic Information System* (2nd ed.). New Delhi, India: Prentice-Hall.** **11. Michael, N. D. (2000). *Fundamentals of Geographic information Systems*. New York,**	

				NY: John Wiley & Sons. 12. Nag, P., & Kudrat, M. (1998). *Digital Remote Sensing.* New Delhi, India. Concept 13. Paine, D. P., & Kisher, J. D. (2012). *Aerial Photography and Image Interpretation* (3rd ed.). Victoria, Australia: John Wiley & Sons. 14. Palet, A. N. (1992). *Remote Sensing Principles & Application*. Jodhpur, India: Scientific. 15. चौनियाल, डी. डी. (2010). *सुदूर सर्वेदन एवं भौगोलिक सूचना प्रणाली.* इलाहबाद, भारतः शारदा पुस्तक भवन. **Suggested e-learning materials:** 1. Concept of Aerial Photography https://www.nrcan.gc.ca/earth-sciences/geomatics/satellite-imagery-air-photos/air-photos/about-aerial-photography/9687 2. Principles And applications of GIS https://www.environmentalscience.org/principles-applications-gis	

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
3.	GEOG 506L Remote Sensing and GIS Lab	**After the completion of this course, students should be able to:** • **Perceive the depth through pocket stereoscope.** • **Interpret the aerial photographs and generate Land use and Land cover map with the help of mirror stereoscope.** • **Determine height, scale of aerial photographs.** • **Georeference any map, create thematic maps, generate DEM and slope maps.**	Photogrammetry : a. Stereoscopic Vision Test: Zeiss test for depth perception b. Orientation of Aerial Photographs under mirror Stereoscope. c. Identification of object/features using aerial photograph d. Determination of Scale, Stereoscopic Area, Principal point, Conjugate principal point, Direction of Flight line and Air base. e. Calculation of number of strips and number of photographs f. Height Determination using vertical aerial photographs. ~~g. Preparation of Map~~ GIS : 1. Basic software and ~~operating system~~ Introduction to Arc View's GIS softwareGeorefencing and creation of spatial dataJoining attribute data with spatial data, Creation of thematic maps. 2. Spatial Analysis, Classification, Proximity and Buffer analysis. 3D analysis in GIS: ~~Generation~~ of DEM and Slope * Note – Non- scientific calculators are allowed in the examination. Recommended Books : ~~1. American Society of Photogrammetry, (1993). Manual of Remote Sensing (2nd Edition), ASP, Falls church, Virginia.~~ ~~2. Burnside, C. D., (1979) Mapping from Aerial photographs, Graeda, London.~~	Photogrammetry: 1. Stereoscopic Vision Test: Zeiss test for depth perception 2. Orientation of Aerial Photographs under mirror Stereoscope. 3. Determination of Scale, Stereoscopic Area, Principal point, Conjugate principal point, Direction of Flight line and Air base. **4. Identification and Interpretation of objects/features from aerial photograph through mirror stereoscope** 5. Calculation of number of strips and number of photographs 6. Height Determination using vertical aerial photographs. GIS: Basic software 1. Introduction to GIS software; Georefencing; **Downloading of Satellite Imageries; Mosaicing; Subsetting**; digitization Joining attribute data with spatial data, Creation of thematic maps. 2. Spatial Analysis, Classification **(Supervised, Unsupervised and Accuracy Assessment),** Proximity and Buffer analysis. 3D analysis in GIS: creation of **aspect**, Slope and DEM Non- scientific calculators are allowed in the examination. Recommended Books : **1. Ciciarelli, J. A. (1991).*A Practical Guide to Aerial Photography with an Introduction to Surveying*.(1st ed.). New York, NY: Van Nostrand Reinhold.** **2. Kang-tsung, C. (2007). *Geographic Information System*. (4th ed.).New Delhi, India: Tata-McGraw Hill.**	**Reviewed Learning outcomes, recommended books & e-learning materials and rearranged the content.** **Addition of new content for enrichment and specification.**

			3. Hord, R. M., (1982) Digital Image Processing of Remotely Sensed DAT, Academic Press, New York. 4. Lillisand, T. M. & Kiefer, P. W., (1998) Remote Sensing & Image Interpretation, John Wiley & Sons, New York. 5. Moffit, H. F. & Edword M.M., (1980) Photogrammetry, Harperand Row Publishers, New York. 6. Paine, D. P., (1981) Aerial Photography & Interrelation for Resource Management, Willey, New York. 7. Waag, Bu Chin, (2008) Digital Signal Processing Techniques & Applications in Radar Image Processing, John Willey, New Jersey. 8. Wolf. P. R., (1974) Elements of Photogrammetry McGraw Hill Books Co., London.	**3. Lillisand, T. M., & Kiefer, P. W. (2015). *Remote Sensing & Image Interpretation* (7th ed.).New York, NY: John Wiley & Sons.** **4. Michael N. D. (2001). *Fundamentals of Geographic information Systems* (1st ed.).New York, NY: John Wiley & Sons.** **5. Paine, D. P., & kisher, J.D. (2012). *Aerial Photography and Image Interpretation* (3rd ed.). Victoria, Australia: John Wiley & Sons.** **6. Sarkar, A. (2015). *Practical Geography A Systematic Approach* (3rd ed.). Kolkata, India: Orient Blackswan.** **7. Singh, L. R. (2011), *Fundamentals of Practical Geography*. Allahabad, India: ShardaPustak Bhawan.** **8. Wolf, P. R., Dewitt, B. A., & Wilkinson, B. E. (2014). *Elements of Photogrammetry with Applications in GIS* (4th ed.). New York, NY: Mc. Graw Hill Education.** **Suggested e-learning materials:** **1. Principles of Aerial Photography http://www.sfu.ca/~hickin/Maps/Chapter%208.pdf** **2. Image classification http://www.csre.iitb.ac.in/~avikb/GNR401/DIP/DIP_401_lecture_7.pdf**	

~~**Elective II**~~

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
1.	GEOG ~~502~~ Geography of Rural Settlements	**After the completion of this course, students should be able to:** • **Develop an approach to study rural settlements.** • **Depict the evolution of settlements and relate it to the geographical factors.** • **Describe Rural morphology, its mining and types.** • **Describe house types, hierarchy of rural settlements and rural centers.**	Section - A : Introduction to Geography of Rural settlements a) Meaning, definitions and scope of geography of rural settlements ~~b) Development of the concept of geography of rural settlements with special reference to India~~ c) Approaches to geography of rural settlements. ~~d)~~ The relationship of geography of rural settlements with other branches of geography ~~and social sciences.~~ e) Origin and Evolution of settlemens. Section B – Morphology and Types of rural settlements ~~a)~~ Rural settlements: Types, factors of development ~~and distribution.~~ b) Types of rural settlements in India. ~~c)~~ Rural Morphology: Meaning, definitions and Types ~~of Rural morphology in India~~ d) Process of development of rural morphology and affecting forces. e) Size and Spacing of rural settlements. Section – C : Rural Dwellings and Service Centres a) Houses: Definitions, factors affecting and classification ~~(basis of shape, size & functional use)~~ b) Distribution of houses in India on the basis of building material. ~~c) House types and their characteristics in different regions: Himalayan region, Ganga plain, Peninsular plateau and Coastal regions~~ d) Rural service centres and their identification, periodic markets, characteristics and their types. e) Hierarchy of rural settlements and methods for the determination of hierarchy	**Discipline Elective**	**Shifted to pool of Discipline Electives**

			* Note – Stencils are to be permitted during the examination. Recommended Books : ~~1. Ambrose, P., Settlement Patterns, Longmans, London, 1970.~~ ~~2. Chisholm, M. (1967): Rural Settlements and Land use, john Wiley, New York~~ ~~3. Chisholm, M., Rural Settlement and Land Use, Hutchinson University Library, London, 1962.~~ ~~4. Daniel, P. (2002): Geography of Settlement. Rawat Publications., Jaipur and New Delhi.~~ ~~5. Ghosh, S. (1999): Geography of Settlements. Orient Longman, Kolkata.~~ ~~6. Ghosh, Sumita, Introduction to Settlement Geography, Orient Longman, Calcutta, 1998.~~ ~~7. Hudson, F. S. (1976): A Geography of Settlements. MacDonald and Evans, New York.~~ ~~8. Mandal R.B. (2001): Introduction to Rural Settlement,~~ ~~9. Mosley, M.J. (2005): Rural Development: Principles and Practice. Sage Publication, London.~~ 10. ~~Mukerji, R.K., Man and His Habitation, Popular Prakashan, Bombay, 1968~~. ~~11. Oliver, P. (1987): Dwellings. The House across the World. University of Texas Press, Austin.~~ ~~12. Rykwert, J. (ed.) (2004): Settlements. University of Pennsylvania Press, University Park,~~ ~~13. Sauer, C.O., Land and Life, University of California Press, Berkely, 1963.~~ ~~14. Sing W. L. and Singh, K.N. (ed) (1975): Readings in Rural Settlement Geography, NGSI,~~ ~~15. Singh R. L. Rural Settlements in Monsoon Asia, Varanasi, Banaras Hindu University, 1972~~ ~~16. Singh, R.Y. (2005): Geography of Settlements. Rawat Publications, Jaipur and New Delhi.~~ ~~17. Singh, S.B. (1977): Rural Settlement Geography. U.B.B.P., Publications, Gorakhpur.~~ ~~18. Tiwari, R. C. (2000): Settlement Geography; in Hindi. Prayag Pustak Bhawan Allahabad.~~ ~~19. Wanmali, S. (1983): Service Centres in Rural India. B.R. Publications Corporation, New Delhi.~~	**Recommended Books:** **1. Chishlom, M. (2009). *Rural Settlement and Land Use*. New Jersey, NJ: Transaction.** **2. Daniel, P. (1989). *The Geography of Settlement* (2nd ed.). Edinburg, Scotland: Oliver & Boyd.** **3. Ghosh, S. (1998). *Geography of Settlements*. Kolkata, India: Orient Longman.** **4. Mandal, R. B. (2001). *Introduction to RuralSettlement* (2nd ed.). New Delhi, India: Concept.** **5. Mourya, S. D. (2014). *Settlement Geography*. Allahabad, India: ShardaPustakBhawan.** **6. Oliver, P. (1987). *Dwellings: The House across the World*. Austin, TX: University of Texas Press.** **7. Singh, R. Y. (2015). *Geography of Settlements*. New Delhi, India: Rawat.** **8. Wanmali, S. (1983). *Service Centres in Rural India: policy, theory, and practice*. New Delhi, India: B. R.** **9. तिवारी, आर. सी. (2016). *अधिवासभूगोल*(अष्ट सं.). इलाहबाद, भारतः प्रयागपुस्तकभवन.** **10. बंसल, एस. सी. (2016). *ग्रामीणबस्तीभूगोल*(संशोधित सं.). मेरठ, भारतः मीनाक्षी.** **11. मौर्य, एस. डी. (2017). *अधिवासभूगोल*(षष्ठ सं.).इलाहबाद, भारतः शारदापुस्तकभवन.** **12. सिंह, आई. (2008). *अधिवासभूगोल.*नईदिल्ली, भारतः यूनिवर्सिटी.** **13. सिंह, आर. (2005). *अधिवासभूगोल.* नईदिल्ली, भारतः रावत.** **Suggested e-learning materials:** **1. Introduction to rural settlement** **https://books.google.co.in/books?id=SYQ1yydbDlwC&printsec=frontcover&dq=Introduction+to+rural+settlement&hl=hi&sa=X&ved=0ahUKEwiF1rOw55zhAhUZA3IKHRZpCUAQ6AEIKTAA#v=onepage&q=Introduction%20to%20rural%20settlement&f=false** **2. Settlement patterns** **https://www.britannica.com/place/India/Caste#ref487283**	

			20. ~~मौर्य एस.डी.(2009) : अधिवास भूगोल, शारदा पुस्तक भवन, इलाहबाद।~~ 21. ~~बंसल सुरेश चन्द्र (2009) : ग्रामीण बस्ती भूगोल, मिनाक्षी प्रकाशन, मेरठ।~~ 22. ~~तिवारी आर. सी. (2006) : अधिवास भूगोल, प्रयाग पुस्तक भवन, इलाहबाद।~~ 23. ~~सिंह रामयज्ञ (2005) : अधिवास भूगोल, रावत पब्लिकेशन, जयपुर एव नई दिल्ली~~ 24. ~~सिंह इन्दिरा (2008) : अधिवास भूगोल, यूनिवर्सिटी पब्लिकेशन, नई दिल्ली।~~		

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
2.	GEOG ~~511~~ Tourism Geography	**After the completion of this course, students should be able to:** • **Propagate the idea of ecotourism and sustainable tourism.** • **Depict the social and economic benefits of tourism in any tourist site.** • **Explain tourism potential of deprived places.** • **Describe the tourism on national and state level.**	Section-A : Concept of Tourism Geography a) Concept of Tourism: Definition, Evolution and types of Tourism. b) Tourism Geography: Definition, Key Concepts; Scale, Geographical components and spatial interaction between components. c) Geography of demand and suppy for tourism d) Development of tourism in India Section-B: Geographic Foundation of Tourism a) Introduction of geographic foundation of Tourism. b) Physical geography of Tourism: Resources and barriers c) Human Geography of Tourism: Resources and barriers d) Concept of Eco tourism Section-C: Geographical factors affecting Tourism a) Economic and Social benefits & cost of Tourism. b) Environmental benefits, cost of Tourism and emerging implications. c) Tourism in India: Demand, supply, organization and Tourism Resources d) Ecological and cultural tourism resources of Rajasthan. *Note – Stencils are to be permitted during the examination. <u>Books Recommended:</u> ~~1. Bhatia A.K.(2002): Tourism Development: Principles and Practices. Sterling pub. New Delhi.~~ ~~2. Burkarl, A.J.(1974): Tourism, Past, present and future Heineman London.~~ ~~3. Cooper C., Cooper R.(2012): Worldwide Destinations: The Geography of Trevel and Tourism. Routledge, New~~	**Discipline Elective**	**Shifted to pool of Discipline Electives.**

			~~York.~~ ~~4. Garg Deepa (2009): Geography of Tourism, Mohit Punlication, New Delhi.~~ ~~5. Gearing Charles, E. (1976): planning for Tourism development Praeger Pub, New York~~ ~~6. Jayapalan, N.(2013): An Introduction to Tourism. Atlantic Publishers & Distributors, New Delhi.~~ ~~7. Kamra, K. K. (2104): Tourism An Overview, Kanishka publishers, Distributors New Delhi~~ ~~8. Kaushal, P. & Sharma, S.P.(2011) Ecological and Environmental Impact of Tourism. Kanishka publishers, Distributors New Delhi~~ ~~9. Lawbon, F & Bauet B.(1977): Tourism and recreation Development mass, CBI pub.~~ ~~10. Micheal Hall C. & Page J.S. (2014): Geography of Tourism and Receration, Routledge, New York.~~ ~~11. Ministry of Tourism Govt. of India (1992): Report on National Action Plan on Tourism, New Delhi.~~ ~~12. Ministry of tourism Govt. of India (1996): Report on National strategy for development of tourism New Delhi.~~ ~~13. Ministry of Tourism Govt. of India (1999): Report on National Tourism.~~ ~~14. Nelson V. (2013): An Introduction to the Geography of Tourism. Rawat Publication, Jaipur.~~ ~~15. Pathania Kulwant Singh and Kumar Arun (2008) : Tourism in India, Regal Publication, New Delhi~~ ~~16. Robinson H.(1976): A geography of Tourism. Mac Donald and Evans Ltd; London.~~ ~~17. Sharma, S. P. (2011) : Tourism Education Principales, Theories and Practices. Kanishka publishers, Distributors New Delhi~~ ~~18. Stephen L.J. Smoth (1989): Tourism Analysis : A Handbook Longman Scientific of Technical.~~ ~~19. शुक्ला राजेश एवं शुक्ला रश्मि (2009) : पर्यटन में भूगोल, अर्जुन पब्लिशिंग हाऊस, दिल्ली।~~ ~~20. नेगी जगमोहन (2007) पर्यटन एवं यात्रा के सिद्धान्त, तक्षशिला प्रकाशन, नई दिल्ली।~~ ~~21. नेगी जगमोहन (2006): सम्पूर्ण भारत के सास्कृतिक पर्यटन स्थल, तक्षशिला प्रकाशन, नई दिल्ली।~~ ~~22. दीक्षित एवं गुप्ता (2009) : पर्यटन के विविध आयाम।~~ ~~23. रावत एवं ताज (2002): पर्यटन विकास के विविध आयाम, तक्षशिला प्रकाशन, नई दिल्ली।~~ ~~24. हरिमोहन (2007): सास्कृति, पर्यावरण और पर्यटन, तक्षशिला प्रकाशन, नई दिल्ली।~~	**Recommended Books :** 1. **Bhatia, A. K. (2012). *Tourism Development: Principles and Practices* (2nd ed.). New Delhi, India: Sterling.** 2. **Boniface, B., Cooper, C., & Cooper, R. (2016). *Worldwide Destinations: The Geography of Trevel and Tourism* (7th ed., vol. I). New York, NY: Routledge.** 3. **Garg, D. (2009). *Geography of Tourism*. New Delhi, India: Mohit.** 4. **Jayapalan, N. (2013). *An Introduction to Tourism.* New Delhi, India: Atlantic.** 5. **Kamra, K. K. (2014). *Tourism An Overview*. New Delhi, India: Kanishka.** 6. **Kaushal, P., & Sharma, S. P. (2011). *Ecological and Environmental Impact of Tourism*. New Delhi, India: Kanishka.** 7. **Hall, M. C., & Page, J. S. (2014). *Geography of Tourism and Receration: Environment, Place and Space* (4th ed.). New York, NY: Routledge.** 8. **Nelson, V. (2017). *An Introduction to the Geography of Tourism* (2nd ed.). New York, NY: Rowman & Littlefield.** 9. **Sharma, S. P. (2011). *Tourism Education Principles, Theories and Practices* (2nd ed.). New Delhi, India: Kanishka.** 10. **अग्रवाल, वी. (2012). *भौगोलिक पर्यटन.* नई दिल्ली, भारतः अर्जुन.** 11. **नेगी, जे. (2013). *आधुनिक पर्यटन एवं यात्रा के आधारभूत सिद्धान्त* (चतुर्थ सं.). नई दिल्ली, भारतः तक्षशिला.** 12. **शर्मा, ए. (2012). *पर्यटन भूगोल.* जयपुर, भारतः इशिका.** 13. **शुक्ला, आर., एवं शुक्ला, आर. (2009). *पर्यटन भूगोल.* नई दिल्ली, भारतः अर्जुन.** 14. **सारण, बी. आर. (2008). *पर्यटन उत्पाद एवं प्रबन्ध.* नई दिल्ली, भारतः कनिष्क.** **Suggested e- learning materials:** 1. **Cultural tourism in Rajasthan http://www.tourism.rajasthan.gov.in/** 2. **Economic benefits of Tourism http://pib.nic.in/newsite/PrintRelease.aspx?relid=175628** 3. **Tourist resources of India**	

~~**Elective III**~~

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
1.	GEOG ~~503~~ Medical Geography	**After the completion of this course, students should be able to:** • **Depict spatial and temporal development of medical geography.** • **Relate the course with other social sciences and develop an interdisciplinary approach.** • **Relate natural, social and environmental factors with human health and diseases.** • **Use statistical methods for assessing health.**	Section – A : Introduction to Medical Geography a) Meaning, definitions and scope of Medical Geography b) Spatio-temporal development of Medical Geography with special reference to India c) Relationship of Medical geography with other disciplines – sociology, psychology, economics, political science, law, natural science d) Approaches to study Medical geography e) Meaning of health (physical, mental and social health), health and hygiene, disease cycle, causes of ill health, disease ecology Section – B : Geographical Factors Affecting Human Health and Diseases a) Natural factors – climate, relief, soil, vegetation b) Social factors – population density, literacy, social customs and traditions and poverty c) Economic Factors – occupation, standard of living, food security and nutrition d) Environmental Factors – urbanization and congesting, water, air and noise pollution and solid waste. e) Factors influencing health in India f) WHO classification of diseases and their distribution (major diseases) in world. Section – C: Human Health in India a) Indicators of health - changes in Birth and death rates, Infant mortality rates, life Expectancy, changes in sex ratio, population growth, Population Control b) Food: classification, food stuffs, balanced diet and Basal Metabolic Rate (BMR) c) Nutrition – mal nutrition & under nutrition – causes & consequences, status of food and nutrition in India and personal health d) Heath care delivery system : areas of health	**Discipline Elcective** Recommended Books : **1. Akhtar, R. (1991). *Environment and Health:Themes in Medical Geography*. New Delhi, India: South Asia Books.** **2. Akhtar, R. (Ed). (2016). *Climate Change and Human Health Scenario in South and Southeast Asia.* New Delhi, India: Springer Nature.** **3. Hussain, M. (Ed). (1994). *Medical Geography*. New Delhi, India: Anmol.** **4. May, J. M. (1970). *The World Atlas of Diseases*. New Delhi, India: Nat Book Trust.** **5. Mayer, A. I. (2007). *Medical Geography*. New Delhi, India: APH.** **6. Meade, M. S., & Earickson, R. J. (2006). *Medical Geography* (2nd ed.). New Delhi, India: Rawat** **7. Mishra, R. P. (1969). *The Medical Geography of India.* New Delhi, India: National Book Trust.** **8. Park, J. E., & Park, K. (2014). *Text Book of Community Health for Nurses*. Jabalpur, India: Ansari.**	**Shifted to pool of Discipline Electives**

			education, tools for health education, Health Planning (aim, district level, block level, local level organizations) e) Health Care Programmes, Family Welfare Programmes, Family Planning Association of India (FPAI) * Note – Stencils are to be permitted during the examination. Books Recommended : ~~1. Akhtar, Rais (1991): Environment and Health Themes and Medical Geography, Ashish Publishing House, New Delhi.~~ ~~2 .Bedi Yash Pal and Ram Atma (1979) : Social and Preventive Medicine, Anand Publishing Co. Amritsar.~~ ~~3. Cliff, A. and Haggett, P.: (1989) Atlas of Disease Distribution Basil Blackwell, Oxford.~~ ~~4. Deer S. Basu Mitra Kamal R. (1991): Introduction to health education, Friends Publications, Delhi.~~ ~~5. Hussain Majid (1994): Medical Geography, Anmol pub. New Delhi.~~ ~~6. Learmon, A.T.A. (1976) "So you want to be a Medical Geographer? An open letter to students".In: Prakashan~~ ~~7. Rao, V.L.S.etal.(Eds).The Golden Jubliee Volume.Madras.The Indian Geographical Society. Pp.280-85~~ ~~8. Learmonth A.T.A.: (1978) Patterns of Disease and Hunger: A Study in Medical Geography, David & Charles, Victoria.~~ ~~9. Learmonth, A.T.A. (1976) "Models and Medical Geography"in Mishra, V.C.(Ed)Essays in Applie Geography.Saugor.University of Saugar, pp. 17-38.~~ ~~May J.M.: (1970) The World Atlas of Diseases, Nat Book Trust, New Delhi.~~ ~~10. Mayer, A. Ishtiq (2007) : Medical Geography~~	**9. Park, J. E., & Park, K. (2007). *Preventive and Social Medicine*.(19th ed.).Jabalpur, India: M/s Banarsidas** **10. सिंघई, जी. सी. (2010). *चिकित्सा भूगोल* (द्वितीय सं.). गोरखपुर, भारतः वसुन्धरा.** **Suggested e-learning materials:** **1. Indicators of Health** **https://www.who.int/gho/publications/world_health_statistics/EN_ WHS2015_Part2.pdf** **2. Family Welfare programme in India** **http://planningcommission.nic.in/plans/mta/mta-9702/mta-ch17.pdf**	

			APH Publishing Corporation, New Delhi. 11. Mc Glashan,N.D.(Ed) (1972) Medical Geography Techniques and Field studies.London Methuen. 12. Meade M. S., Earickson R. J. (2006) : Medical Geography, Rawat Publications, Jaipur, New Delhi, Bangalore, Mumbai. 13. Mishra,R.P. (1969) The Medical Geography of India,New Delhi National Book Trust. 14. Park, J.E. and Park, K. (1979) Text Book of Community Health for Nurses, Ansari Publishers, Jabalpur 15. Park, J.E. and Park.,K.(2007) Preventive and Social Medicine M/s Banarsidas Bhanot Publisher, Jabalpur 16. Pyle G.F. (1979): Applied Medical Geography John wifey 53ashington. 17. Pyle, G.: (1979) Applied Medical Geography, Winston Halsted Press, Silver Springs, Md. U.S.A. 18. Pyle.G.W.and Alan Dever,G.E.(1974)Health care Delivery:Spatialperspectives,NewYork,McGraw 19. Shannon G.W. & Dever G.E.A.(1974): Health care Delivery McGraw Hill New York 20. Stamp,L.D. (1964) Some Aspects of Medical Geography.Oxford,University press,1964. 21. Stamp,L.D. (1964) The Geography of Life and Death London,Fontana. 22. Vashist S. R. (1997) : A Textbook of Health education and child development Book Enclave, Jaipur. 23. Woods E.J. (1983): Social Geography of Medicine & health, Croon Helm, London 24. सिंघई, जी. टी. (2010) : चिकित्सा भूगोल, वसुन्धरा प्रकाशन, गोरखपुर।		

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
2.	GEOG ~~512~~ Urban Geography	**After the completion of this course, students will be able to:** • **Depict the development of cities and relate with the classical theories of growth of cities.** • **Describe the evolution and origin of cities.** • **Classify cities functionally into different zones.** • **Describe models in Urban geography with special reference to the work of Christaller and Losch.**	Section – A: Introduction to Urban Geography a) Meaning and scope of Urban Geography. Approaches to the study of Urban Geography. b) Development of Urban Geography. c) Stages of Evolution of Cities. d) Origin and evolution of towns: Origin, and growth of Ancient, Medieval and Modern towns (one example from each). e) Urbanization: Trends of Urbanization in World and India. Section – B: Urban Morphology a) Urban Morphology: Meaning, affecting factors and stages of Development of Urban Morphology. b) Theories of Urban growth: Concentric zone theory of Burgess, Sector theory of Homer Hoyt and Multiple Nuclei theory of Harris& Ullman. c) Morphology of Indian Cities (one example.) d) Urban land use and functional zones of a city (CBD). e) Functional Classification of Cities according to C.D. Harris. Section – C: Models of Urban Geography a) Concept of Urban Hierarchy: ~~Base and~~ Methods of determination (on the basis of numbers and level of work). b) Rank size rule and the law of the Primate City. c) Central place theory of Walter Christaller and August losch. d) Rural urban fringe: Conceptual explanation, internal structure, characteristic features. e) Introduction of Conurbation and umland, methods of delimitation of umland (breaking point theory). * Note – Stencils are to be permitted during the	**Discipline Elcective**	**Shifted to pool of Discipline Electives**

			examination. Recommended Books : ~~1. Alam, S.M., (1965)Hyderabad – Secundrabad Twin Cities, Asia Publishing House, Bombay.~~ ~~2. Barry. B.J.L and Horton, F.F., (1970) Geographic perspectives on Urban Systems, Petrentice Hall, Englewood Cliff, New Jersy.~~ ~~3. Beaujeu-Garnier, J., Chabot, G., (1969) Urban Geography, London.~~ ~~4. Carter, Harold, (1995)The study of Urban Geography, Edward Arnold Publishers, London.~~ ~~5. Dickinson, R.E., (1964) City and Region, Routledge, London.~~ ~~6. Gibbs, J.P., (1961) Urban Research Methods, New Jersy.~~ ~~7. Hall, T., (1988) Urban Geography, London.~~ ~~8. Johnson, J.H., (1967) An Introductory Analysis, London~~ ~~9. Mayer, H.M. & Kohn, C.F., (1967) Reading in Urban Geography, Allahabad.~~ ~~10. Murphy, R.E., (1966) The American city : An Urban Geography, Macgra Hill Book Co., New York.~~ ~~11. Rao, V.L.S.P. (1984) Urbanization in India: Spatial Dimensions, Concept Publishing Company, New Delhi.~~ ~~12. Smailes, A. E. (1953) The Geography of Towns, London.~~ 13. ~~Singh, K. and Steinberg, F. (eds.), (1996)Urban India in Crisis, New Age Interns, New Delhi.~~	Recommended Books : **1. Bansal, S. C. (2015). *Urban Geography* (2nd ed.). Meerut, India: Meenakshi.** **2. Daniel, P. (2002). *Geography of Settlement.* Jaipur, India: Rawat.** **3. Ghosh, S. (1999). *Geography of Settlements*. Kolkata, India: Orient Longman.** **4. Hussain, M. (2003). *Urban Geography*. New Delhi, India: Anmol.** **5. Mandal, R. B. (2000). *Urban Geography* (2nd ed.). New Delhi, India: Concept.** **6. Singh, R.Y. (2014). *Geography of Settlements* (2nd ed.). Jaipur, India: Rawat.** **7. तिवारी, आर. सी. (2016). *अधिवास भूगोल* (अष्ट सं.). इलाहबाद, भारतः प्रयाग पुस्तक भवन.** **8. बंसल, एस. सी. (2009). *नगरीय भूगोल.* मेरठ, भारतः मीनाक्षी.** **9. मौर्य, एस. डी., एवं सिंह, आर.एन. (2013). *नगरीय भूगोल* (द्वितीय सं.). इलाहबाद, भारतः शारदा पुस्तक भवन.** **10. सिंह, आई. (2008). *अधिवास भूगोल.* नई दिल्ली, भारतः यूनिवर्सिटी.** **11. सिंह, आर. (2005). *अधिवास भूगोल.* जयपुर, भारतः रावत.** **Suggested e-learning materials:** **1. Origin and evolution of towns http://www4.brandonu.ca/ebertsd/281/281f17unit02.pdf** **2. Functional Zones of a city http://egyankosh.ac.in/bitstream/123456789/27649/1/Unit-11.pdf**	

List of Discipline Electives

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
1.	GEOG 502 Geography of Rural Settlements	**After the completion of this course, students should be able to:** • **Develop an approach to study rural settlements.** • **Depict the evolution of settlements and relate it to the geographical factors.** • **Describe Rural morphology, its mining and types.** • **Describe house types, hierarchy of rural settlements and rural centers.**		Section A Introduction to Geography of Rural settlements Meaning, definitions and scope of geography of rural settlements; The relationship of geography of rural settlements with other branches of geography, Approaches to geography of rural settlements; **Factors affecting** origin and evolution of settlements; **Principles of Settlement Formation** Section B Morphology and Types of rural settlements Rural settlements: Types and factors of development; Types of rural settlements in India **and their Distribution**; Rural Morphology: Meaning, definitions and Types; Process of development of rural morphology and affecting forces; Size, **Density**, Spacing and **Dispersion** of rural settlements. Section C Rural Dwellings and Service Centres Houses: Definitions, factors affecting, classification and **morphology**; Distribution of houses in India on the basis of building material; Rural service centres: **Definition**, Identification and methods for the determination of hierarchy; Periodic markets: **Definition**, Characteristics and types.	**Reviewed Learning outcomes, recommended books &** **e-learning materials and rearranged the content.** **Addition of new topics, reshuffling of topics for enrichment and specification and Shifted from elective I to pool of discipline electives**

				Stencils & Non-Scientific calculators are to be permitted during the examination. Recommended Books : **Recommended Books:** **14. Chishlom, M. (2009). *Rural Settlement and Land Use*. New Jersey, NJ: Transaction.** **15. Daniel, P. (1989). *The Geography of Settlement* (2nd ed.). Edinburg, Scotland: Oliver & Boyd.** **16. Ghosh, S. (1998). *Geography of Settlements*. Kolkata, India: Orient Longman.** **17. Mandal, R. B. (2001). *Introduction to RuralSettlement* (2nd ed.). New Delhi, India: Concept.** **18. Mourya, S. D. (2014). *Settlement Geography*. Allahabad, India: ShardaPustakBhawan.** **19. Oliver, P. (1987). *Dwellings: The House across the World*. Austin, TX: University of Texas Press.** **20. Singh, R. Y. (2015). *Geography of Settlements*. New Delhi, India: Rawat.** **21. Wanmali, S. (1983). *Service Centres in Rural India*: *policy, theory, and practice*. New Delhi, India: B. R.** **22. तिवारी, आर. सी. (2016). *अधिवासभूगोल*(अष्ट सं.). इलाहबाद, भारतः प्रयागपुस्तकभवन.** **23. बंसल, एस. सी. (2016). *ग्रामीणबस्तीभूगोल*(संशोधित सं.). मेरठ, भारतः मीनाक्षी.** **24. मौर्य, एस. डी. (2017). *अधिवासभूगोल*(षष्ठ सं.).इलाहबाद, भारतः शारदापुस्तकभवन.** **25. सिंह, आई. (2008). *अधिवासभूगोल*.नईदिल्ली, भारतः यूनिवर्सिटी.** **26. सिंह, आर. (2005). *अधिवासभूगोल*. नईदिल्ली, भारतः रावत.** **Suggested e-learning materials:** **3. Introduction to rural settlement** **https://books.google.co.in/books?id=SYQ1yydbDlwC&printsec=frontcover&dq=Introduction+to+rural+settlement&hl=hi&sa=X&ved=0ahUKEwiF1rOw55zhAhUZA3IKHRZpCUAQ6AEIKTAA#v=onepage&q=Introduction%20to%20rural%20settlement&f=false** **4. Settlement patterns** **https://www.britannica.com/place/India/Caste#ref487283**	

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
2.	GEOG 503 Medical Geography	**After the completion of this course, students should be able to:** • **Depict spatial and temporal development of medical geography.** • **Relate the course with other social sciences and develop an interdisciplinary approach.** • **Relate natural, social and environmental factors with human health and diseases.** • **Use statistical methods for assessing health.**	----	**Section A** **Introduction to Medical Geography** Meaning, definitions and scope of Medical Geography; Spatio-temporal development of Medical Geography with special reference to India; Relationship of Medical geography with other disciplines – sociology, psychology, economics, political science, law, natural science; Approaches to study Medical geography; Meaning of health (physical, mental and social health), health and hygiene, disease cycle, causes of ill health, disease ecology **Section B** **Geographical Factors Affecting Human Health and Diseases** Natural factors – climate, relief, soil, vegetation; Social factors – population density, literacy, social customs and traditions and poverty; Economic Factors – occupation, standard of living, food security and nutrition; Environmental Factors – urbanization and congesting, water, air and noise pollution and solid waste; Factors influencing health in India; WHO classification of diseases and their distribution (major diseases) in world. **Section C** **Human Health in India** Indicators of health - changes in Birth and death rates, Infant mortality rates, life Expectancy, changes in sex ratio, population growth, Population Control; Food: classification, food stuffs, balanced diet and Basal Metabolic Rate (BMR); Nutrition – mal nutrition & under nutrition – causes & consequences, status of food and nutrition in India and personal health; Heath care delivery system : areas of health education, tools for health education, Health Planning (aim, district level, block level, local	**Reviewed Learning outcomes, recommended books &** **e-learning materials and rearranged the content and Shifted from elective III to pool of discipline electives**

				level organizations); Health Care Programmes, Family Welfare Programmes, Family Planning Association of India (FPAI) Stencils are to be permitted during the examination. Recommended Books : **1. Akhtar, R. (1991). *Environment and Health:Themes in Medical Geography*. New Delhi, India: South Asia Books.** **2. Akhtar, R. (Ed). (2016). C*limate Change and Human Health Scenario in South and Southeast Asia.* New Delhi, India: Springer Nature.** **3. Hussain, M. (Ed). (1994). *Medical Geography*. New Delhi, India: Anmol.** **4. May, J. M. (1970). *The World Atlas of Diseases*. New Delhi, India: Nat Book Trust.** **5. Mayer, A. I. (2007). *Medical Geography*. New Delhi, India: APH.** **6. Meade, M. S., & Earickson, R. J. (2006). *Medical Geography* (2nd ed.). New Delhi, India: Rawat** **7. Mishra, R. P. (1969). *The Medical Geography of India*. New Delhi, India: National Book Trust.** **8. Park, J. E., & Park, K. (2014). *Text Book of Community Health for Nurses*. Jabalpur, India: Ansari.** **9. Park, J. E., & Park, K. (2007). *Preventive and Social Medicine*.(19th ed.).Jabalpur, India: M/s Banarsidas** **10. सिंघई, जी. सी. (2010). *चिकित्सा भूगोल* (द्वितीय सं.). गोरखपुर, भारतः वसुन्धरा.** **Suggested e-learning materials:** **1. Indicators of Health** **https://www.who.int/gho/publications/world_health_statistics/EN_ WHS2015_Part2.pdf** **2. Family Welfare programme in India** **http://planningcommission.nic.in/plans/mta/mta-9702/mta-ch17.pdf**	

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
3.	GEOG 505 Population Geography	**After the completion of this course, students should be able to:** • **Map the world in terms of density, distribution and other demographic aspects.** • **Differentiate between demographic characteristics of developing and developed nations and factors posing that difference.** • **Have a theoretical background about population growth and migration** • **Depict the trends of urbanization and demographic structure of India.**	—	**Section A** **Scope of Population Geography & Demographic Characteristics of the World** Definition and scope of Population Geography and its relation with other sciences; Recent trends in Population Geography; Factors affecting the distribution and density of the world's population; Population growth and distribution in the world; Recent demographic characteristics of developed and developing nations. **Section B** **Theories of Population Growth and Migration** Theories of Population Growth - Malthusian theory, Optimum population theory and Theory of demographic transition; Factors affecting population change, Population resource regions of the world; Migration: Major factors, consequences and types of migration; Theories of migration: Lee, Rewenstein and Zelinsky's model; Important migration of the world. **Section C** **Population Geography in India** Development of Population Geography in India; Population change (birth rate and death rate), Population growth and internal migration; Demographic structure (sex ratio, literacy rate and occupation structure); Trends of urbanization in India; Population policy of India 2000. Stencils are to be permitted during the examination. Recommended Books : **1. Ahmad A., Noin, D., & Sharma, H. N. (Ed). (1997). *Demographic Transition- The third World Scenario.* Jaipur, India: Rawat.** **2. Bhende, A. A & Kanitkar, T. (2008). *Principles of Population***	**Reviewed Learning outcomes, recommended books & e-learning materials and rearranged the content and Shifted from elective I to pool of discipline electives**

				Studies (19th ed.). Mumbai, India: Himalaya 3. Chaubey, P.K. (2011). *Population Policy for India- prespectives, issues and challenges*. New Delhi, India: Kanishka. 4. Chandana, R. C. (2014). *A Geography of population* (11th ed.). New Delhi, India: Kalyani. 5. Chopra, G. (2006). *Population Geography*. New Delhi, India: Commonwealth. 6. Cox, P. R. (1993). *Demography* (5th ed.). New Delhi, India: Universal Book Stall. 7. Jay, W., & Pillai, V. K. (2017). *Demography- The Science of Population* (2nded.). Jaipur, India: Rawat. 8. Jhingon, M. L., Bhatt, B. K., & Desai, J. N. (2011). *Demography* (2nded.). New Delhi, India: Vrinda. 9. Premi, K. M. & Das, D. N. (2012). *Population of India 2011*. Delhi, India: B.R. 10. Qazi, S. A. (2010). *Population Geography*. New Delhi, India: APH. 11. Srivastava S. C. & Srivastava, S. (2004). *Studies in Demography*. New Delhi, India: Anmol. 12. Tripathi, R. K. (2007). *Population Geography*. New Delhi, India: Commonwealth. 13. Weinstein, J., Pillai, A., & Vijayan, K. (2017). *Demography- The Science of Population* (2nd ed.). Jaipur, India: Rawat. 14. पंडा, बी. पी. (2007). *जनसंख्या भूगोल*. भोपाल, भारत: मध्यप्रदेश हिन्दी ग्रंन्थ अकादमी. 15. बंसल, एस. सी. (2015). जनसंख्या भूगोल (द्वितीय सं.). नई दिल्ली, भारतः आर. के. **Suggested e-learing materials**: 1. Migration http://www.un.org/en/development/desa/population/migration/publications/migrationreport/docs/MigrationReport2017_Highlights.pdf 2. Demographic Data of India http://censusindia.gov.in/2011-prov results/data_files/india/Final_PPT_2011_chapter3.pdf 3. National Population Policy 2000 https://mohfw.gov.in/sites/default/files/26953755641410949469%20%281%29.pdf	

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
4.	GEOG 508 Social Geography	**After the completion of this course, students should be able to:** • **Develop an approach to study social geography.** • **Describe social processes, social strata's, and organizations.** • **Relate society and culture, understand cultural realms and regions.** • **Analyze the current status of women in India and suggest measures for improvement.**	____	**Section A** **Introduction to Social Geography** Meaning, Scope and Aims of Social Geography; Approaches to the study of social geography: Ecological approach, Regional approach, Historical approach, Welfare approach, System approach and Behavioral approach; Society: Definition, Origin and Classification of Society; Social Process: Forms of Social Interaction (Cooperation, Accommodation, Assimilation, Competition and Conflict); Social Stratification, Caste and Class; Social Organization and Groups. **Section B** **Society and Culture** Society and Culture; Cultural Hearths; Cultural Diffusion: Definition, Elements and causes of diffusion. Barriers of diffusion, Effects and Types of diffusion.Hagerstand model of diffusion; Cultural Realms: Meaning of Cultural Realms, Basis of delimitation of cultural realms, Modern classification of the cultural realms; Cultural Regions of the world: Meaning and Bases of delimitation of cultural regions, Cultural Regions United States, U.K., Mesopotamia and Indian. **Section C** **Social Geography in India** Social Geography of India: Indian Society in Historical Perspective; Status of Women in India; Social Change in India; Human Development in India; Social Planning in India: Meaning, Importance and Major Aspects of social planning; Social Welfare Programmes in Planned Period (Child Welfare Programme, Women Welfare Programme, Labour Welfare Programme, Family Planning	**Reviewed Learning outcomes, recommended books & e-learning materials and rearranged the content and Shifted from elective I to pool of discipline electives**

				and Family Welfare Programme, Adult Education Programme). Stencils are to be permitted during the examination. **Recommended Books :** 1. **Ahmad, A. (2006). *Social Geography* (Reprint). Jaipur, India: Rawat.** 2. **Hamnett, C. (Ed.). (1996). *Social Geography : A Reader*. New York, NY: John Wiley & Sons.** 3. **Majid, H. (2006). *Human Geography* (3rd ed.). Jaipur, India: Rawat.** 4. **Mehtani, S. & Sinha, A. (2010). *Social Geography*. New Delhi, India: Commonwealth.** 5. **Mohanty, G. S. (Ed.). (2005). *Social & Cultural Geography*. Delhi, India: Isha Books.** 6. **दीक्षित, एस. एवं त्रिपाठी, आर. (2008). *सांस्कृतिक भूगोल*. गोरखपुर, भारत: वसुन्धरा.** 7. **मौर्य, एस. डी. (2010). *सामाजिक भूगोल*. इलाहाबाद, भारत: शारदा पुस्तक भवन.** **Suggested e-learning materials:** 1. **Society: Definition, origin and Classification, Society and Culture http://egyankosh.ac.in/bitstream/123456789/41246/1/Unit-1.pdf** 2. **Family welfare programmes https://humdo.nhp.gov.in/about/national-fp-programme/**	

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
5.	GEOG 511 Tourism Geography	**After the completion of this course, students should be able to:** • **Propagate the idea of ecotourism and sustainable tourism.** • **Depict the social and economic benefits of tourism in any tourist sight.** • **Explain tourism potential of deprived places.** • **Describe the tourism on national and state level.**	—	**Section A** **Concept of Tourism Geography** Concept of Tourism: Definition, Evolution and types of Tourism; Tourism Geography: Definition, Key Concepts; Scale, Geographical components and spatial interaction between components; Geography of demand and supply for tourism; Development of tourism in India. **Section B** **Geographic Foundation of Tourism** Introduction of geographic foundation of Tourism; Physical geography of Tourism: Resources and barriers; Human Geography of Tourism: Resources and barriers; Concept of Ecotourism. **Section C** **Geographical factors affecting Tourism** Economic and Social benefits & cost of Tourism; Environmental benefits, cost of Tourism and emerging implications; Tourism in India: Demand, supply, organization and Tourism Resources; Ecological and cultural tourism resources of Rajasthan. Stencils are to be permitted during the examination.	**Reviewed Learning outcomes, recommended books &** **e-learning materials and rearranged the content and Shifted from elective II to pool of discipline electives**

Recommended Books :

1. **Bhatia, A. K. (2012). *Tourism Development: Principles and Practices* (2nd ed.). New Delhi, India: Sterling.**
2. **Boniface, B., Cooper, C., & Cooper, R. (2016). *Worldwide Destinations: The Geography of Trevel and Tourism* (7th ed., vol. I). New York, NY: Routledge.**
3. **Garg, D. (2009). *Geography of Tourism*. New Delhi, India: Mohit.**
4. **Jayapalan, N. (2013). *An Introduction to Tourism*. New Delhi, India: Atlantic.**
5. **Kamra, K. K. (2104). *Tourism An Overview*. New Delhi, India: Kanishka.**
6. **Kaushal, P., & Sharma, S. P. (2011). *Ecological and Environmental Impact of Tourism*. New Delhi, India: Kanishka.**
7. **Hall, M. C., & Page, J. S. (2014). *Geography of Tourism and Receration: Environment, Place and Space* (4th ed.). New York, NY: Routledge.**
8. **Nelson, V. (2017). *An Introduction to the Geography of Tourism* (2nd ed.). New York, NY: Rowman & Littlefield.**
9. **Sharma, S. P. (2011). *Tourism Education Principales, Theories and Practices* (2nd ed.). New Delhi, India: Kanishka.**
10. अग्रवाल, वी. (2012). *भौगोलिक पर्यटन.* नई दिल्ली, भारतः अर्जुन.
11. नेगी, जे. (2013). *आधुनिक पर्यटन एवं यात्रा के आधारभूत सिद्धान्त* (चतुर्थ सं.). नई दिल्ली, भारतः तक्षशिला.
12. शर्मा, ए. (2012). *पर्यटन भूगोल.* जयपुर, भारतः इशिका.
13. शुक्ला, आर., एवं शुक्ला, आर. (2009). *पर्यटन भूगोल.* नई दिल्ली, भारतः अर्जुन.
14. सारण, बी. आर. (2008). *पर्यटन उत्पाद एवं प्रबन्ध.* नई दिल्ली, भारतः कनिष्क.

Suggested e- learning materials:

1. **Cultural tourism in Rajasthan**
   http://www.tourism.rajasthan.gov.in/
2. **Economic benefits of Tourism**
   http://pib.nic.in/newsite/PrintRelease.aspx?relid=175628
4. **Tourist resources of India**

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
6.	GEOG 512 Urban Geography	**After the completion of this course, students will be able to:** • **Depict the development of cities and relate with the classical theories of growth of cities.** • **Describe the evolution and origin of cities.** • **Classify cities functionally into different zones.** • **Describe models in Urban geography with special reference to the work of Christaller and Losch.**		Section – A: Introduction to Urban Geography Meaning and scope of Urban Geography. Approaches to the study of Urban Geography, Development of Urban Geography; Stages of Evolution of Cities; Origin and evolution of towns: Origin, and growth of Ancient, Medieval and Modern towns (one example from each); Urbanization: Trends of Urbanization in World and India. Section – B: Urban Morphology Urban Morphology: Meaning, affecting factors and stages of Development of Urban Morphology; Theories of Urban growth: Concentric zone theory of Burgess, Sector theory of Homer Hoyt and Multiple Nuclei theory of Harris& Ullman, Morphology of Indian Cities (one example.); Urban land use and functional zones of a city; **Central Business District** (CBD); Functional Classification of Cities according to C.D. Harris. Section – C: Models of Urban Geography Concept of Urban Hierarchy: Methods of determination (on the basis of numbers and level of work); Rank size rule and the law of the Primate City; Central place theory of Walter Christaller and August losch; Rural urban fringe: Conceptual explanation, internal structure, characteristic features, Introduction of Conurbation and umland, methods of delimitation of umland (breaking point theory). Stencils are to be permitted during the examination. Recommended Books : **12. Bansal, S. C. (2015). *Urban Geography* (2nd ed.).**	**Reviewed Learning outcomes, recommended books &** **e-learning materials and rearranged & redefined the content and Shifted from elective III to pool of discipline electives**

				Meerut, India: Meenakshi. 13. Daniel, P. (2002). *Geography of Settlement.* Jaipur, India: Rawat. 14. Ghosh, S. (1999). *Geography of Settlements*. Kolkata, India: Orient Longman. 15. Hussain, M. (2003). *Urban Geography*. New Delhi, India: Anmol. 16. Mandal, R. B. (2000). *Urban Geography* (2nd ed.). New Delhi, India: Concept. 17. Singh, R.Y. (2014). *Geography of Settlements* (2nd ed.). Jaipur, India: Rawat. 18. तिवारी, आर. सी. (2016). *अधिवास भूगोल* (अष्ट सं.). इलाहबाद, भारतः प्रयाग पुस्तक भवन. 19. बंसल, एस. सी. (2009). *नगरीय भूगोल.* मेरठ, भारतः मीनाक्षी. 20. मौर्य, एस. डी., एवं सिंह, आर.एन. (2013). *नगरीय भूगोल* (द्वितीय सं.). इलाहबाद, भारतः शारदा पुस्तक भवन. 21. सिंह, आई. (2008). *अधिवास भूगोल.* नई दिल्ली, भारतः यूनिवर्सिटी. 22. सिंह, आर. (2005). *अधिवास भूगोल.* जयपुर, भारतः रावत. **Suggested e-learning materials:** 3. Origin and evolution of towns http://www4.brandonu.ca/ebertsd/281/281f17unit02.pdf 4. Functional Zones of a city http://egyankosh.ac.in/bitstream/123456789/27649/1/Unit-11.pdf	

List of Reading Electives

S. No.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
1.	ENVS___R Agroforestry	After going through this course students will be able to: • Describe agroforestry and agroforestry interventions. • Assess the role of Agroforestry as a sustainable land-use activity. • Describe Nutrient cycling and role of agroforestry in soil and water conservation • Describe various energy plantation methods.		Agroforestry - definition and scope. Tropical deforestation, rising demands of fuel wood, fodder and timber, social, ecological and economic reasons for agroforestry. Traditional agroforestry systems: shifting cultivation, taungya, homegardens. Recent trends in Silvicultureand Energy plantations. Trees in agricultural fields and farm boundaries. Commercial crops under shade of planted trees as well as natural forests. Agroforestry for wasteland development and temperate agroforestry practices. Nutrient cycling and role of agroforestry in soil and water conservation, Nitrogen fixation, improvement in soil physico-chemical properties. Soil organic matter status and soil organic matter, Soil fertility considerations in agroforestry nutrient needs of trees and crops. Recommended Books : 1. Chundawat, B. S., & Gautam, S. K. (2016). *Textbook of Agroforestry*. New Delhi, India: Oxford &Ibh. 2. Jose, S. (2009). *Agroforestry for Ecosystem Services and Environmental Benefits (Advances in Agroforestry)*. Dordrecht, Netherlands: Springer. 3. Mukherjee, A. (2016). *Agroforestry and Watershed Management: An Interlocked System*. New Delhi, India: Random. 4. Raj, A. J. (2017). *Agroforestry Theory and Practices*. Jodhpur, India: Scientific. Suggested e-learning materials: 1. Introductory Agroforestry http://ecoursesonline.iasri.res.in/course/view.php?id=157 2. Forestry Technologies http://agritech.tnau.ac.in/forestry/agroforestry_index.html	Introduction of New Course

S. No.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
2.	ENVS___R Energy Resources and Conservation	After completion of this course students will be able to: • Describe the non-conventional sources of energy. • Explain concepts on energy utilization and conservation. • Emphasize energy conservation strategies in residential, industrial and transportation sector. • Describe National Energy Policy.		Introduction: Energy, work and power. Classification of energy resources, An overview of the current global and National Energy Scenario. Fossil Fuels: Sources, exploration of oil, coal, natural gas, shale; Exploitation of Fossil fuels and their Environmental consequences. Nuclear Energy: Nuclear fission and Fusion; Nuclear fuel cycle, Nuclear reactor and nuclear power, Renewable and Alternative Energy Sources, Solar energy, Solar power, Photovoltaic cells; Wind power; Geothermal energy; Ocean energy. Environmental consequences of biomass resource harnessing, Energy Conservation: National Energy Policy, Energy efficient appliances, BEE Label, Modes of Energy Conservation in residential, industrial and transportation sector. Recommended Books : 1. Agarwal, S. K. (2003). *Nuclear Energy: Principles Practice and Prospects.* New Delhi, India: APH. 2. Chaturvedi, P. (1995). *Bio-Energy Resources.* New Delhi, India: Concept. 3. Dayal, M. (1997). *Renewable Energy: Environment and Development*. New Delhi, India: Konark. 4. Mahajan, V. S. (1991). *National Energy: policy, crisis and growth*. New Delhi, India: Ashish. 5. Markuszewski, R., & Blaustein, B. D. (1986). *Fossil fuels utilization. Environmental concerns*. Washington, DC: American Chemical Society. 6. Vandana, S. (2002). *Alternative Energy.* New Delhi, India: APH. Suggested e-learning materials: 1. Biodiesel production https://nptel.ac.in/courses/102105058/52 2. Sustainability through Green Manufacturing Systems: An Applied Approach https://nptel.ac.in/courses/112104225/22	Introduction of New Course

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
3.	ENVS___R Man and Environment	After the completion of this course, students will be able to: • Describe the complex interactions of humans and ecological systems in the natural world. • Synthesize, and apply a wide range of scientific literature in the ecological and environmental science. • Interpret a wide range of scientific literature in ecology and environmental science. • Apply the information in the realms of environmental sciences and sustainability.		Human Population, its Growth and Distribution, Environmental Deterioration associated with population growth, Man Induced Environmental Changes, Types of Human Activities, Impact of Human Activities such as Deforestation, Mining and Industrialization. Environmental Awareness- Need and Role in Betterment of Environment Concept and Significance of Environmental Movements, Environmental Movements in India with special reference to The Bishnoi Movement, Chipko Movement, Appiko Movement, Narmada BachaoAndolan, Silent Valley Movement. Components of natural and built environment: Resources and human settlements, modifications in natural environment, causes and consequences. Recommended Books : 1. BalAnand, S. (2005). *An Introductiion to Environmental Management*. Mumbai, India : Himalaya. 2. Chandana, R. (2008). *A Geography of population*. New Delhi, India: Kalyani. 3. Chopra, G. (2006). *Population Geography*. New Delhi, India: Commonwealth. 4. Chorley, R. J., Schumm, S. A., & Sugden, D. E. (1984). *Geomorphology*. London, UK: Methuen and Company. 5. Dayal, P. (1994). *A Text Book of Geomorphology*. New Delhi, India:Kalyani. 6. Rapoport, A. (2016). *Human aspects of urban form: towards a man—environment approach to urban form and design*. Oxford, UK: Elsevier Pergamon Press. Suggested e-learning materials: 1. Environment and Ecology https://nptel.ac.in/courses/122102006/ 2. Ecological Degradation and Environmental Protection https://nptel.ac.in/courses/109104045/35#	Introduction of New Course

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
4.	ENVS___R Water and Sustainable Development	After the completion of this course, students will be able to: • Classify major causes of exploitation of water resources, particularly in the Indian and Asian context. • Summarize rainwater harvesting and water conservation measures. • Describe methods of Irrigation management. • Describe importance of Wetlands and its conservation		Water and sustainable development. Water and human health – Access to safe drinking water and sanitation; public health issues. Water and food production – Role of irrigation in food security. Shifts in cropping patterns, Rain-fed agriculture, increasing use of groundwater. Environmental, economic and social implications of exploitation of ground water resources. Water and human amenities – Urban water supplies; exploitation, conservation and rainwater harvesting. Wetland, its use and abuse with Ramsar Convention. Urban floods, storm water drainage and integrated urban water management (IUWM). Irrigation management – canals and micro-irrigation. Recommended Books : 1. Asawa, G. L. (2005). *Irrigation and Water Resources Engineering*, New Delhi, India: New Age. 2. Biswas, A. K., Jellau, M., & Stout, G. (1993). *Water for sustainable development in 21st century – A Global perspective*. New Delhi, Inida: Oxford University Press. 3. David, L. F. (2007). *Water Policy for Sustainable Development*. Baltimore, Maryland: Johns Hopkins University Press. 4. Jain, S. K., & Singh, V. P. (2003). *Water Resources Systems Planning and Management*. Amsterdam, Netherlands: Elsevier. Suggested e-learning materials: 1. Water, Society and Sustainability https://onlinecourses.nptel.ac.in/noc18_hs36/preview 2. Irrigation Efficiencies - II and Irrigation Methods and their Suitability https://nptel.ac.in/courses/105102159/15	Introduction of New Course

S. No.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
5.	GEOG ___ R Environmental Challenges and Disaster Management	After the completion of this course, students should be able to: • Explain approaches to study environmental development and crisis. • Describe world energy crisis with its causes and suggested measures for improvement. • Describe several environmental problems their causes, consequences and mitigation. • Depict the major disasters and their management with the help of case studies.		Environment:- Definition and types of Environment; Environmental Development Crisis:-Introduction and its causes; Energy Crisis:- Concept, Causes and Remedies; Environmental issues associated with Green Revolution; Impact of Urbanization on Environment. Deforestation:- Concept, Causes, Effects and Conservation; Desertification:- Concept, Causes, Impacts and Preventions; Water Scarcity:- Causes ; Methods of Rain Water Harvesting (special reference to Traditional Methods); Acid Rain:- Causes, Consequences and Mitigation Measures; Solid Waste:- Introduction, Types and Management. Disaster:- Definition and Classification; Natural Disaster:- Nature and Types; Flood:- Causes, Impacts and Methods of Management; Earthquake:- Introduction, Types, Causes, Effects and Mitigation; Case Studies:- Bhuj Earthquake-2001,Tsunami (Southern India)-2004 and Kedarnath Disaster-2013. * Note – Stencils are to be permitted during the examination. Recommended Books : 1. Gautam, A. (2010). *Environmental Geography*. Allahabad, India:ShardaPustakBhawan. 2. Ghosh,G.K. (2015). *Disaster Management*.New Delhi, India:A.P.H. 3. Singh, S. (2002). *Physical Geography*.Gorakhpur, India: Vasundhara. Suggested e-learning materials: 1. Deforestation:- Concept, Causes, Effects https://www.livescience.com/27692-deforestation.html 2. Acid Rain:- Causes, Consequences and mitigation measures https://www.conserve-energy-future.com/causes-and-effects-of-acid-rain.php 3. Solid Waste:- Introduction, Types and Management https://www.indiawaterportal.org/topics/solid-waste	Introduction of New Course

S. N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
6.	GEOG ___R India: Socio-Political and Environmental Scenario	After the completion of this course, students will be able to: • Understand the current issues related with boundaries, water sharing, agricultural disparities, food security in India. • Describe problems in Agricultural Development. • Discuss Gender Issues and women Safety. • Find the role of non – conventional energy resources for solving energy crisis.		Relation of India with neighbouring countries and border disputes with China and Pakistan. Drought problems, Interlinking of rivers as a solution of water crises and disputes of river water sharing with reference to Narmada, Krishna, Cauvery and Sutlej Yamuna Link (SYL). Problems and disparities in agricultural development, food security and farmer suicides in India. Energy crisis in India and its solution with the help of nuclear, solar, hydro and wind power. Gender issues and women safety, poverty and unemployment. Recommended Books : 1. Deshpande, C.D. (1992).*India,A Regional Interpretation*. New Delhi, India:ICSSR& Northern Book Centre. 2. Gallaher, C. et al. (2012). *Key Concepts in Political Geography* (Reprint). New Delhi, India: Sage. 3. Hussain, A. (2007). *Political Geography*. New Delhi, India: Vishvabharti. 4. Singh, R. L. (Ed.).(1971). *India - A Regional Geography*. Varanasi, India: National Geographical Society. 5. Tirtha, R.,&Gopal, K.(1996).*Emerging India.* Jaipur. India: Rawat. 6. बंसल, एस. सी. (2011). *भारत का भूगोल.* मेरठ, भारत: मीनाक्षी. Suggested e-learning materials: 1. Interlinking of rivers, https://www.geoecomar.ro/website/publicatii/Nr.192013/12_mehta_web_2013.pdf 2. Farmer suicides, http://www.ipcinfo.org/fileadmin/user_upload/fsn/docs/Agriculture%20and%20rural%20development%20in%20India.pdf 3. Food Security, https://dfpd.nic.in/LwB3AHIAaQB0AGUAcgBlAGEAZABkAGEAdABhAC8AUABvAHIAdABhAGwALwBNAGEAZwBhAHoAaQBuAGUALwBEAG8AYwB1AG0AZQBuAHQALwA=1_93_1_Original.pdf 4. Gender Issues in India, https://www.indiacelebrating.com/social-issues/gender-inequality-in-india/	Introduction of New Course

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
7.	**GEOG __ R Rajasthan: Challenges and Prospects**	**After the completion of this course, students will be able to:** • **Describe the major environmental, socio economic problems of Rajasthan.** • **Explain desertification, Aravalli development, agriculture and tourism of Rajasthan.** • **Analyze existing state and national policies in terms of socio economic conditions.** • **Aware society regarding existing policies related to child marriage, Female feticide and other Social problems.**		**Major Canal Irrigation Project and Its impact; Desertification and Desert Development programmes; Identification of drought prone areas and mitigation, problem of mining and Aravalli Development Programme, Problems and measures of Agricultural development; Programmes for forest conservation; Poultry farming, Planning for livestock development; Role of Tourism in the economy.** **Socio- economic issues and Government policies and programmes: child marriage, female feticide, female education, gender discrimination and caste; unemployment and poverty .** **Recommended Books :** 1. **Singh, G. (2010). *Geography of India*(9th ed.). Delhi, India: Atma Ram.** 2. शर्मा, आर. (2010). *राजस्थानकाभूगोल.* उदयपुर, भारत: हिमाशुं. 3. शर्मा एच. एस.,एवंशर्मा, एम. एल. (2015). *राजस्थानकाभूगोल.*जयपुर, भारत:पचंशील. 4. सक्सैना, एच. (2014). *राजस्थानकाभूगोल.*जयपुर, भारत:राजस्थानहिन्दीग्रंथअकादमी. **Suggested e-learning materials:** 1. **Indira Gandhi Canal https://www.rajras.in/index.php/indira-gandhi-canal/** 2. **tourist spots in Rajasthan http://www.transindiatravels.com/rajasthan/tourist-places-to-visit-in-rajasthan/** 3. **Problem of Desertification http://www.cazri.res.in/annals/1993/1993JA-1.pdf.**	**Introduction of New Course**

S. No.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
8.	GEOG___R Transforming India	After the completion of this course, students will be able to: • Assess the ongoing governmental policies applicable to socio-economic and health sectors. • Aware society about the injustice caused to women in terms of Triple Talaq. • Explain current livelihood struggle in the society and the role of skill development in enhancing quality of life. • Suggest the measures of improvement in the policies.		Transforming India into a digitally empowered society and development through digitalization, its effects and problems. Demonetization- a step to less cash to cash less economy. Indian youth as a change agent and quality of education for empowering Indian youth, Skill development and empowering youth, Population pressure in job sector and creating livelihood opportunities. SwachhBharatMission and Sanitation revolution for clean and healthy society, Ayushman Bharat Yojana- a step towards Health for all. BetiBachao BetiPadhao- a step for girl's development and Triple Talaq in India- an injustice for women or religious issue. Recommended Books : 1. Ghosh, J., Chandrashekra, C.P.,&Patnaik, P.(2017).*Demonetisation Decoded*. NewYork, NY:Routledge. 2. Panigrahi, R.L.(2005). *Population problems in India*. New Delhi, India: DPH. 3. Sinha,M., &Sinha, R.K.(Ed). (2008). *Swachh Bharat, A clean India*. New Delhi, India:Prabhat. Suggested e-learning materials: 1.Transforming India http://transformingindia.in/ 2.Digital India https://www.indianeconomy.net/splclassroom/what-is-digital-india/ 3.Demonetization http://www.mbauniverse.com/group-discussion/topic/business-economy/demonetisation 4.Skill Development in India https://www.indiainfoline.com/article/article-latest/skill development-in-india-gaps-and-opportunities 118092700366_1.html 5.Swachh Bharat Mission https://www.mapsofindia.com/my-india/society/swachh-bharat-abhiyan-making-india-clean-more 6.Beti Bachao and BetiPadhao http://www.mbauniverse.com/group-discussion/topic/social-issues/beti-bachao-beti-padhao	Introduction of New Course

S. N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
9.	GEOL___ R Geo Tourism	After the completion of this course, students will be able to: • Elucidate the criterion require for designating geotour sites. • Explore the geological and geographical attributes of the geosites. • Develop a geo-conservation plan for geotour sites. • Evaluate the potential of geosites for revenue generation.		Definition and scope of Geotourism. Principles of Geotourism. Geoconservation Plans. Introduction to geodiversity and Geopark. UNESCO's Global Geopark development program. Overview of GSI monuments and geotour sites-Sendra Granite of Pali District Rajasthan, Lonar Lake of Buldana District Maharastra, Peninsular Gneiss at LalbaghBangalore Karnataka, Natural Arch in Tirumala hills Chitoor District, Barr Conglomerate, Pali District Rajasthan, Marine Gondwana Fossil Park, Fossil Wood Parks, Siwalik Fossil Park, Stromatolite Parks, Columnar Basalt, Pillow Lava, Pyroclastic Rocks, NephelineSyenite, Welded Tuff, Charnockite, Great Boundary Fault, Eparchaean Unconformity, Tirumala hills. World's major geotour sites. Recommended Books : 1. Chen, A. (2015). *The Principles of Geotourism.* Beijing, China: Springer-Verlag. 2. Dowling, R.,& Newsome, D. (Eds.). (2018). *Handbook of Geotourism*. Gloucestershire, UK:Edward Elgar. 3. Dowling, R., & Newsome, D. (Eds.). (2005). *Geotourism*. Oxford, UK: Elsevier. 4. Newsome, D.,& Dowling, R. (Eds.). (2010). *Geotourism: The Tourism of Geology and Landscape*. Oxford, UK: Goodfellow. Suggested e-learning materials 1. UNESCO geological heritage and geo-tourism in Peruhttp://www.unesco.org/new/en/media-services/single view/news/unesco_geoparks_geological_heritage_and_geo_tourism_in_peru/ 2. Geotourism https://link.springer.com/referenceworkentry/10.1007%2F978-3-319-01669-6_93-1 3. Geotourism in India https://www.gsi.gov.in	Introduction of New Course

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
10.	GEOL___R Indian Mineral Deposits, Economics and Mining Ethics	After the completion of this course, students will be able to: • Explain the distribution of mineral resources in India. • Evaluate the mineral resources and reserves in Indian and global perspective. • Familiarize with the concept of mineral legislation and policies. • Delineate the different environmental issues associated with mining activities.		Introduction to types and distribution of various mineral deposits in India. Occurrences of important metallic, non-metallic/industrial and fuel mineral deposits of India. Mineral economics and its major concept. Introduction for Global mineral resources. Conservation and substitution of minerals; changing pattern of mineral consumption, Growth of mineral industry and economy, Mineral industry and its adverse effect to the environment. Environmental baseline data needed for mine planning-Its acquisition and documentation during different stages of exploration. Nature and extent of environmental problems due to surface and underground mining. Legislation and control measures for mining. Mineral legislation in Indian context (The Mines and Minerals Regulation and Development Act, 1957). Reclamation and restoration of mined land. Recommended Books : 1. Arogyaswamy, R.N.P. (1995). *Courses in Mining Geology*(4th ed.). New Delhi, India: Oxford and IBH. 2. Banerjee, D. K. (1998). *Mineral Resources of India*(2nd ed.). Kolkata, India: The World Press. 3. Chatterjee, K.K. (1993). *An Introduction to Mineral Economics* (2nd ed.).Bangalore, India: New Age International. 4. Sharma, N.L.,& Ram, K.S.V. (1964). *Introduction to India's economic minerals*. Dhanbad, India: Dhanbad.. 5. Sinha, R.K.,& Sharma, N.L. (1988). *Mineral Economics* (4th ed.).New Delhi, India: Oxford & IBH. Suggested e-learning materials: 1. Mineral and energy resources http://ncert.nic.in/ncerts/l/legy207.pdf 2. Economic Minerals of India: https://www.researchgate.net/publication/315831629_Economic_Minerals_of_India.	Introduction of New Course

S. No.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark
11.	GEOL____R Innovation and Entrepreneurship in Earth sciences	After the completion of this course, students will be able to: • Understand necessary steps to open a new venture. • Gain an understanding of creating products or services, launching innovative projects and making R&D investments in a start-up context. • Develop marketing strategies for tools and technical products used in earth sciences. • Familiarize with the legal concepts and financial planning for a successful new venture.		An overview of Entrepreneurs and Entrepreneurship. Evolution and Growth of Earth Science. Entrepreneurship in India, Starting small business. Planning-Organization and Management. Basic layout of Proposal for seeking loan from financial institution, Legal requirements, Basic Financial Planning and problems. Case study of successful Earth Science Entrepreneurs in India. Earth Science component in Government of India. PSU (MECL, NHPC Mini Ratna, ONGC, NTPC, CIL Maharatna) and in MNC (Larsen and Toubro, Tata, Reliance, Vedanta, Dalmiya groups, Aditya Birla). Entrepreneurs Skills and Competencies. Earth Science technology for harnessing Innovation. Challenges of new startups, Marketing Strategies development, Tools and techniques for market Assessments, Methods and sources for market survey and Market Information. Presentation of Market Survey Report. Recommended Books : 1. Clarysse, B. (2011). *The Smart Entrepreneur: How to Build for a Successful Business*. London, UK: Elliott & Thompson. 2. Sethi, A. (2016). *From Science to Startup: The Inside Track of Technology. Entrepreneurship*.Göttingen, Germany: Copernicus & Springer. 3. Westhead, P.,& Wright, M.(2013). *Entrepreneurship. A very short introduction*. Oxford, UK: Oxford University Press. Suggested e-learning materials: 1. Sustainability, Innovation and Entrepreneurship https://nptel.ac.in/courses/110107094/26 2. New Enterprises https://ocw.mit.edu/courses/sloan-school-of-management/15-390-new-enterprises-spring	Introduction of New Course

S.N.	Course List	Learning Outcomes	Existing Syllabus	Suggested Syllabus	Remark

12.	**GEOL____R** **Natural Hazards and Disasters**	**After the completion of this course, students will be able to:** • **Explain the key concepts, definitions, perspectives of all hazards and management.** • **Describe prevention and mitigation of natural hazards.** • **Depict the preparedness response and recovery management of natural disasters.** • **Elucidate the sustainable development methods in disaster mitigation.** Verified Offg. Secretary Banasthali Vidyapith P.O. Banasthali Vidyapith Distt. Tonk (Raj.)-304022		**Introduction to Disasters and Hazards, Processes (Internal and External), Types of Hazards: causes and consequences, Prediction and Indicators of Natural Disasters, Socio-economic and Health impacts of Natural Disasters.** **Natural Disasters – Earthquake: Processes, Magnitude, Intensity and Impact. Volcanism: Types, Risks and Impact. Tsunami and Cyclone: Types, Causes, processes and Impact. Floods: Introduction, Magnitude, Frequency, Zonation and Impact. Mass Wasting: Classification, causes and Impact. Disaster Management: Prevention, Preparedness and Mitigation, Planning and control of Natural Disaster. Case Studies: Nepal Earthquake, Kedarnath Disaster, Bhuj Earthquake 2001.** **Recommended Books :** 1. **Bolt, B.A. (1988). *Earthquakes*. New York, NY: WH Freeman & Company.** 2. **Decker, R. W. & Decker, B. B. (2005). *Volcanoes* (4th ed.). New York, NY: WH Freeman & Company.** 3. **Dowrick, D. (2003). *Earthquake Risk Reduction Zone*. England, UK: John Wiley & Sons.** 4. **Gere, J.M.,& Shah, H.C. (1984). *Terra Non Firme Understanding and Preparing for Earthquakes.* New York, NY: WH Freeman & Company.** 5. **IGNOU (2005). *Understanding Natural Disasters*. eGyanKosh, Noida, India: Shagun Offset Press.** 6. **Keller, E.A.,& Devecchio, E.D. (2015). Natural Hazards (4th ed.). New York, NY: Pearson.** 7. **Keller, E.A. (1978). *Environmental Geology*(9th ed.). North Carolina, NC: Bell & Howell.** 8. **Montgomery, C.W. (2013). *Environmental Geology* (10th ed.). New York, NY: Mc-Graw-Hill.** 9. **Prakash, I. (1994). *Disaster Management*. Ghaziabad,India:RastriyaPrahari.** 10. **Sharma, V.K. (1995). *Disaster Management*. New Delhi, India: Indian Institute of Public Administration (*IIPA*).** 11. **Singh, S. (2015). *Environmental Geography*. Allahabad, India: Pravalika.** **Suggested e-learning materials:** 1. **Introduction to Natural hazards** **https://epgp.inflibnet.ac.in/ahl.php?csrno=17** **https://onlinecourses.nptel.ac.in/noc19_ce14/preview** 2. **Disasters and Hazards**	**Introduction of New Course**