



FYUGP

GEOGRAPHY HONOURS/ RESEARCH

FOR UNDER GRADUATE COURSES UNDER RANCHI UNIVERSITY



Implemented from
Academic Session 2022-2026



**Members of Board of Studies of Four-Year Under-Graduate Programme (FYUGP)
Syllabus as per Guidelines of the Ranchi University, Ranchi**

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HIGHLIGHTS OF REGULATIONS OF FYUGP

PROGRAMME DURATION

- The Full-time, Regular UG programme for a regular student shall be for a period of four years with multiple entry and multiple exit options.
- The session shall commence from **1st of July**.

ELIGIBILITY

- The selection for admission will be primarily based on availability of seats in the Major subject and marks imposed by the institution. Merit point for selection will be based on marks obtained in Major subject at Class 12 (or equivalent level) or the aggregate marks of Class 12 (or equivalent level) if Marks of the Major subject is not available. Reservation norms of The Government of Jharkhand must be followed as amended in times.

ADMISSION PROCEDURE

- The reservation policy of the Government of Jharkhand shall apply in admission and the benefit of the same shall be given to the candidates belonging to the State of Jharkhand only. The candidates of other states in the reserved category shall be treated as General category candidates. Other relaxations or reservations shall be applicable as per the prevailing guidelines of the University for FYUGP.

ACADEMIC CALENDAR

- Each year the University shall draw out a calendar of academic and associated activities, which shall be strictly adhered to. The same is non-negotiable. Further, the Department will make all reasonable endeavors to deliver the programmes of study and other educational services as mentioned in its Information Brochure and website. However, circumstances may change prompting the Department to reserve the right to change the content and delivery of courses, discontinue or combine courses and introduce or withdraw areas of specialization.

PROGRAMME OVERVIEW/ SCHEME OF THE PROGRAMME

- Undergraduate degree programmes of either 3 or 4-year duration, with multiple entries and exit points and re-entry options within this period, with appropriate certifications such as:
 - a Certificate after completing 1 year (2 semesters) of study in the chosen fields of study,
 - a Diploma after 2 years (4 semesters) of study,
 - a Bachelor after a 3-year (6 semesters) programme of study,
 - a Bachelor (with Hons. / Research) after a 4-year (8 semesters) programme of study

VALIDITY OF REGISTRATION

- Validity of a registration for FYUGP will be for maximum for Seven years from the date of registration.

CALCULATION OF MARKS FOR THE PURPOSE OF RESULT

- Student's final marks and the result will be based on the marks obtained in Semester Internal Examination and End Semester Examination organized taken together.
- Passing in a subject will depend on the collective marks obtained in Semester internal and End Semester University Examination both. However, students must pass in Theory and Practical Examinations separately.

PROMOTION AND SPAN PERIOD

- i. The Requisite Marks obtained by a student in a particular subject will be the criteria for promotion to the next Semester.
- ii. No student will be detained in odd Semesters (I, III, V & VII).
- iii. To get promotion from Semester-II to Semester-III a student will be required to pass in at least 75% of Courses in an academic year (a student has to pass in minimum 9 papers out of the total 12 papers. However, it will be necessary to procure pass marks in each of the paper before completion of the course.
- iv. To get promotion from Semester-IV to Semester-V (taken together of Semester I, II, III & IV) a student has to pass in minimum 16 papers out of the total 22 papers.
- v. Eligibility to get entry in Semester VII is to secure a minimum of 7.5 CGPA up to semester VI along with other criteria imposed by the Institution.

PUBLICATION OF RESULT

- The result if the examination shall be notified by the Controller of Examinations of the University in different newspapers and also on University website.
- If a student is found indulged in any kind of malpractice/ unfair means during examination, the examination taken by the student for the semester will be cancelled. The candidate has to reappear in all the papers of the session with the students of next coming session and his one year will be detained. However, marks secured by the candidate in all previous semesters will remain unaffected.
- There shall be no Supplementary or Re-examination for any subject. Students who have failed in any subject in an even semester may appear in the subsequent even semester examination for clearing the backlog. Similarly, the students who have failed in any subject in an odd semester may appear in the subsequent odd semester examination for clearing the backlog.
- Regulation related with any concern not mentioned above shall be guided by the Regulations of the University for FYUGP.

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COURSE STRUCTURE FOR FYUGP 'HONOURS/ RESEARCH'

Table 1: Credit Framework for Four Year Undergraduate Programme (FYUGP) under State Universities of Jharkhand [Total Credits = 176]

Semester	Common Courses (29)									Introductory Courses (15)		Internship/ Project (4)	Major* (54) + Adv. Major (24)	Minor** (32)		Research Courses (18)				Total Credit
	Language and Communication Skills (Modern Indian Language including TRL) (6)	Language and Communication Skills (English) (6)	Environmental Studies (3)	Understanding India (2)	Health & Wellness, Yoga Education, Sports & Fitness (2)	Digital Education (3)	Mathematical & Computational Thinking and Analysis (2)	Value-Based Course/ Global Citizenship Education (2)	Community Engagement/ NCC/ NSS/ (3)	Introductory Courses [Natural Sc./ Humanities/ Social Sc./Commerce] (9)	Introductory Course [Vocational Studies] (6)			Natural Sc./ Humanities/ Social Sc./ Commerce (18)	Vocational Studies (14)	Research Methodology Courses (6)	Research Proposal, Review of literature (4)	Research Internship/ Field Work (4)	Preparation of the Research Project Report (4)	
1	2	3	4	5	6	7	8			9	10	11	14	15	16	17	18	19	20	21
I	6			2	2					3	3		6							22
II		6					2	2		3	3		6							22
Exit Point: Undergraduate Certificate																				
III			3			3			3	3		4	6							22
IV													6+6	6	4					22
Exit Point: Undergraduate Diploma																				
V													6+6	6	4					22
VI													6+6	6	4					22
Exit Point: Bachelor's Degree																				
VII													6+6 (Adv. Topics)			6	4			22
VIII													6+6 (Adv. Topics)		2			4	4	22
Exit Point: Bachelor's Degree with Hons. /Research																				

*There will be four disciplinary areas: A-Natural Science, B-Humanities, C-Social Science, and D-Commerce; each having basket of courses. A student will have to select a 'Major' from any of the four disciplinary areas (out of A, B, C & D). The selection for admission will be primarily based on availability of seats in Major and marks imposed by the institution.

**A student has to select three subjects for 'Introductory Regular Courses' from a pool of subjects associated with the Major offered by the institution. One of the three subjects will continue as 'Minor' from semester IV onwards, based on the academic interest and performance of the student.

Session 2022-26 onwards

COURSES OF STUDY FOR FOUR YEAR UNDERGRADUATE PROGRAMME

Table 2: Course structure for Undergraduate Certificate Programme [May Exit after Sem.-II]

Semester	Common Courses			Introductory Courses		Major	Total Credits
Sem.-I	LCS (MIL/TRL) (6 Credits)	Understanding India (2 Credits)	Health & Wellness, Yoga Education, Sports & Fitness (2 Credits)	IRC-1 (3 Credits)	IVS-1A (3 Credits)	MJ-1 (6 Credits)	(22)
Sem.-II	LCS (English) (6 Credits)	Global Citizenship Education (2 Credits)	Mathematical & Computational Thinking (2 Credits)	IRC-2 (3 Credits)	IVS-1B (3 Credits)	MJ-2 (6 Credits)	(22)

Total = 44 Credits

(LCS: Language and Communication Skills; MIL: Modern Indian Languages; TRL: Tribal Regional Languages;
IRC: Introductory Regular Courses; IVS: Introductory Vocational Studies, MJ: Major)

Table 3: Course structure for Undergraduate Diploma Programme [May Exit after Sem.-IV]

Semester	Common Courses			Introductory	Major Courses Credits	Minor	Internship/ Vocational Project	Total Credits
Sem.-III	Environmental Studies (3 Credits)	Community Engagement/ NCC/ NSS (3 Credits)	Digital Education (3 Credits)	IRC-3 (3 Credits)	MJ-3 (6 Credits)		Internship/ Project (4 Credits)	(22)
Sem.-IV					MJ-4, MJ-5 (6+6=12 Credits)	MN-1 (6 Credits)	VS-1 (4 Credits)	(22)

Total = 88 Credits

(MN: Minor; VS: Vocational Studies)

Table 4: Course structure for Bachelor's Degree Programme [May Exit after Sem.-VI]

Semester	Major Courses	Minor Courses	Vocational	Total Credits
Sem.-V	MJ-6, MJ-7 (6+6 = 12 Credits)	MN-2 (6 Credits)	VS-2 (4 Credits)	(22)
Sem.-VI	MJ-8, MJ-9 (6+6 = 12 Credits)	MN-3 (6 Credits)	VS-3 (4 Credits)	(22)

Total = 132 Credits**Table 5: Course structure for Bachelor's Degree with Hons./Research Programme**

Semester	Advance Courses	Research Courses	Vocational	Total Credit
Sem.-VII	AMJ-1, AMJ-2 (6+6=12 Credits)	Research Methodology (6 Credits)	Research Proposal (4 Credits)	(22)
Sem.-VIII	AMJ-3, AMJ-4 (6+6=12 Credits)	Research Int./Field Work (4 Credits)	Research Report (4 Credits)	VSR (2 Credits) (22)

Total = 176 Credits

(AMJ: Advance Major; VSR: Vocational Studies associated with Research)

Table 6: Semester wise Course Code and Credit Points:

Semester	Common, Introductory, Major, Minor, Vocational & Internship Courses		Credits
	Code	Papers	
I	CC-1	Language and Communication Skills (Modern Indian language including TRL)	6
	CC-2	Understanding India	2
	CC-3	Health & Wellness, Yoga Education, Sports & Fitness	2
	IRC-1	Introductory Regular Course-1	3
	IVS-1A	Introductory Vocational Studies-1	3
	MJ-1	Major paper 1 (Disciplinary/Interdisciplinary Major)	6
II	CC-4	Language and Communication Skills (English)	6
	CC-5	Mathematical & Computation Thinking Analysis	2
	CC-6	Global Citizenship Education & Education for Sustainable Development	2
	IRC-2	Introductory Regular Course-2	3
	IVS-1B	Introductory Vocational Studies-2	3
	MJ-2	Major paper 2 (Disciplinary/Interdisciplinary Major)	6
III	CC-7	Environmental Studies	3
	CC-8	Digital Education (Elementary Computer Applications)	3
	CC-9	Community Engagement & Service (NSS/ NCC/ Adult Education)	3
	IRC-3	Introductory Regular Course-3	3
	IAP	Internship/Apprenticeship/ Project	4
	MJ-3	Major paper 3 (Disciplinary/Interdisciplinary Major)	6
IV	MJ-4	Major paper 4 (Disciplinary/Interdisciplinary Major)	6
	MJ-5	Major paper 5 (Disciplinary/Interdisciplinary Major)	6
	MN-1	Minor Paper 1 (Disciplinary/Interdisciplinary Minor)	6
	VS-1	Vocational Studies-1 (Minor)	4

V	MJ-6	Major paper 6 (Disciplinary/Interdisciplinary Major)	6
	MJ-7	Major paper 7 (Disciplinary/Interdisciplinary Major)	6
	MN-2	Minor Paper 2 (Disciplinary/Interdisciplinary Minor)	6
	VS-2	Vocational Studies 2 (Minor)	4
VI	MJ-8	Major paper 8 (Disciplinary/Interdisciplinary Major)	6
	MJ-9	Major paper 9 (Disciplinary/Interdisciplinary Major)	6
	MN-3	Minor Paper 3 (Disciplinary/Interdisciplinary Minor)	6
	VS-3	Vocational Studies 3 (Minor)	4
VII	AMJ-1	Advance Major paper 1 (Disciplinary/Interdisciplinary Major)	6
	AMJ-2	Advance Major paper 2 (Disciplinary/Interdisciplinary Major)	6
	RC-1	Research Methodology	6
	RC-2	Research Proposal	4
VIII	AMJ-3	Advance Major paper 3 (Disciplinary/Interdisciplinary Major)	6
	AMJ-4	Advance Major paper 4 (Disciplinary/Interdisciplinary Major)	6
	RC-3	Research Internship/Field Work	4
	RC-4	Research Report	4
	VSR	Vocational Studies (Associated with Research)	2
		Total Credit	176

Abbreviations:

CC Common Courses

IRC Introductory Regular Courses

IVS Introductory Vocational Studies

IAP Internship/Apprenticeship/ Project

VS Vocational Studies

MJ Major Disciplinary/Interdisciplinary Courses

MN Minor Disciplinary/Interdisciplinary Courses

AMJ Advance Major Disciplinary/Interdisciplinary Courses

RC Research Courses

VSR Vocational Studies associated with Research

SEMESTER WISE COURSES IN GEOGRAPHY FOR FYUGP

2022 onwards**Table 7: Semester wise Examination Structure in Discipline Courses:**

Semester	Common, Introductory, Major, Minor, Vocational & Internship Courses		Examination Structure			
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	MJ-1	Geomorphology	6	15	60	25
II	MJ-2	Climatology and Oceanography	6	15	60	25
III	MJ-3	Human and Settlement Geography	6	15	60	25
IV	MJ-4	Evolution of Geographical Thought	6	15	60	25
	MJ-5	Fundamentals of Remote Sensing & GIS	6	15	60	25
V	MJ-6	Economic Geography	6	15	60	25
	MJ-7	Geography of India & Jharkhand	6	15	60	25
VI	MJ-8	Biogeography	6	15	60	25
	MJ-9	Political Geography	6	15	60	25
VII	AMJ-1	Regional Planning and Development	6	15	60	25
	AMJ-2	Natural Resource Management and Environmental Geography	6	15	60	25
	RC-1	Research Methodology	6	25	75	---
	RC-2	Research Proposal	4	25	75	---
VIII	AMJ-3	Population and Urban Geography	6	15	60	25
	AMJ-4	Agriculture Geography	6	15	60	25
	RC-3	Research Internship/Field Work	4	---	---	100
	RC-4	Research Report	4	---	---	100
	VSR	Vocational Studies (Associated with Research)	2	---	---	100
		Total Credit	98			

Table 8: Semester wise Course Code and Credit Points:

Semester	Common, Introductory, Major, Minor, Vocational & Internship Courses		Examination Structure			
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I/ II/ III	IRC	Introductory Geography	3	---	100	---
IV	MN-1	Geography of India and Jharkhand	6	15	60	25
V	MN-2	Environmental Geography & Sustainable Development	6	15	60	25
VI	MN-3	Climate Change Vulnerability and Adaptation	6	15	60	25
		Total Credit	21			

AIMS OF BACHELOR'S DEGREE PROGRAMME IN GEOGRAPHY

The aim of bachelor's degree programme in Geography is intended to provide:

1. **Basic Concept:** The fundamental concepts and philosophical foundation of each course need to be discussed.
2. **Understanding Landscape:** An understanding of landscape at different levels needs to be discussed and understood for a thorough knowledge of spatial dimensions.
3. **Understanding Ecosystem Structure and Potential:** To comprehend the dynamic dimensions of human and ecosystem relationships.
4. **Human Perception and Behaviour:** Learning human perception and behaviour to acquire the geographical knowledge evolved over time, is essential to improve decision making process.
5. **Identification of Critical Problems and Issues:** Detection and identification of the critical problems and spatial issues are essential for sustainable development.
6. **Field Based Knowledge:** Field based knowledge is essential to understand the ground reality, spatial patterns and processes.
7. **Spatial Tools and Techniques:** The basics and applications of spatial tools and techniques are essential to make the studies more scientific and applicable.
8. **Statistical Techniques:** Use of statistical tools and techniques is essential for precise and objective geographic analysis and interpretation of complex phenomena.
9. **Applied Dimensions:** Identification of the critical problems and spatial issues form the core of the modern geography for various applications and decision making, including
10. **Planning:** Resources, Environment & Disaster Management, Land Use Planning, and Urban and Regional Development together with Climate Change Mitigation and Adaptation, etc.
11. **Case Study based Analysis:** There is a need to understand the specificities of the problems in specific areas for them in depth comprehension and solution. The case studies are essential, especially to find out the solutions to the lagging regions for their solutions based on first-hand information.

PROGRAM LEARNING OUTCOMES

The programme learning outcomes relating to Honours/Research Degree in Geography:

1. Demonstrating the understanding of basic concepts in geography.
2. Demonstrating the coherent and systematic knowledge in the discipline of geography to deal with current issues and their solution.
3. Display an ability to read and understand maps and topographic sheets to look at the various aspects on the space.
4. Cultivate ability to evaluate critically the wider chain of network of spatial aspects from global to local level on various time scales as well.
5. Recognize the skill development in Geographical studies programme as part of career avenues in various fields like teaching, research and administration.
6. It is also suggested that after the completion of FYUGP Hons./Research, students should be able to demonstrate the knowledge obtained in such way so that they can explore the employability options and service to the society.

SEMESTER I

I. MAJOR COURSE –MJ 1:

(Credits: Theory-04, Practicals-02)

Marks: 15 (5 Attd. + 10 SIE: 1Hr) + 60 (ESE: 3Hrs) = 75

Pass Marks: Th (SIE + ESE) = 30

Instruction to Question Setter for

Semester Internal Examination (SIE 10+5=15 marks):

There will be **two** group of questions. **Question No.1** will be **very short answer type in Group A** consisting of five questions of 1 mark each. **Group B will contain descriptive type** two questions of five marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 10 Marks, (b) Class Attendance Score (CAS) of 5 marks. Conversion of Attendance into score may be as follows: (Attendance Upto 45%, 1mark; 45<Attd.<55, 2 marks; 55<Attd.<65, 3 marks; 65<Attd.<75, 4 marks; 75<Attd, 5 marks)

End Semester Examination (ESE 60 marks):

There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** five questions of fifteen marks each, out of which any three are to answer.

Note: There may be subdivisions in each question asked in Theory Examinations.

GEOMORPHOLOGY

Theory: 60 Lectures

Course Learning Outcomes:

After the completion of course, the students will have ability to:

1. Understand the functioning of Earth systems in real time and analyze how the natural and anthropogenic operating factors affects the development of landforms
2. Distinguish between the mechanisms that control these processes
3. Assess the roles of structure, stage and time in shaping the landforms, interpret geomorphological maps and apply the knowledge in geographical research.

Course Content:

1. Geomorphology: Nature and Scope, Earth: Interior Structure and Isostasy.
2. Earth Movements: Plate Tectonics, Types of Folds and Faults, Earthquakes and Volcanoes.
3. Geomorphic Processes: gradation, Mass Wasting, Cycle of Erosion (Davis and Penck).
4. Evolution of Landforms (Erosional and Depositional): Fluvial, Karst, Aeolian, Glacial, and Coastal.
5. Applied Geomorphology- application of geomorphology to urbanization, agriculture, water resource management, regional planning and development

Reference Books:

1. Bloom, A. L., (2003): Geomorphology: A Systematic Analysis of Late Cenozoic Landforms, Prentice-Hall of India, New Delhi.
2. Singh Savindra(2015): Bhuakriti vigyan ka Swarup, Prayag Pustak Bhawan, Allahabad
3. Bridges, E. M., (1990): World Geomorphology, Cambridge University Press, Cambridge.
4. Christopherson, R. W. and Birkeland, G. H., (2012) Geosystems: An Introduction to Physical

- Geography (8th edition), Pearson Education, New Jersey.
5. Das Gupta, A and Kapoor, A.N., (2001) Principles of Physical Geography, S.C. Chand & Company Ltd. New Delhi
 6. Dayal, P., (1996) A Text book of Geomorphology. Shukla Book Depot, Patna.
 7. Huggett, R.J. (2007) Fundamentals of Geomorphology, Routledge, New York.
 8. Kale, V. S. and Gupta A., (2001): Introduction to Geomorphology, Orient Longman, Hyderabad.
 9. Khullar, D.R., (2012) Physical Geography, Kalyani Publishers, New Delhi.
 10. Mal, Suraj, Singh, R.B. and Huggel, Christian (2018): Climate Change, Extreme Events and Disaster Risk Reduction, Springer, Switzerland, pages 309.
 11. Selby, M.J., (2005): Earth's Changing Surface, Indian Edition, OUP
 12. Singh, S (2009): Bhautik Bhugol ka Swaroop (Hindi), Prayag Pustak, Allahabad.
 13. Skinner, Brian J. and Stephen C. Porter (2000), The Dynamic Earth: An Introduction to Physical Geology, 4th Edition, John Wiley and Sons.
 14. Strahler, A. H. and Strahler, A N., (2001): Modern Physical Geography (4/E), John Wiley and Sons, Inc., New York.
 15. Summerfield M. A. (2013): Global Geomorphology, Routledge, New York
 16. Thornbury, W. D., (2004): Principles of Geomorphology, Wiley, New York.
 17. Tikka, R N (1989): Bhautik Bhugol ka Swaroop (Hindi), Kedarnath Ram Nath, Meerut
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GEOGRAPHY PRACTICAL- MJ 1 LAB

Marks : Pr (ESE: 3Hrs) =25

Pass Marks: Pr (ESE) = 10

Instruction to Question Setter for***End Semester Examination (ESE):***

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

<i>Experiment</i>	<i>= 15 marks</i>
<i>Practical record notebook</i>	<i>= 05 marks</i>
<i>Viva-voce</i>	<i>= 05 marks</i>

CARTOGRAPHIC TECHNIQUES-I:**60 Lectures****Course Learning Outcomes:**

After the completion of course, the students will have ability to:

1. Read and prepare maps.
2. Comprehend locational and spatial aspects of the earth surface.
3. Use and importance of maps for regional development and decision making.

Course Content:

1. Scale-Plain, Comparative, Diagonal
2. Cross Profiles- Serial, Superimposed, Projected, Composite.
3. Topographical Map: Introduction, Interpretation, Identification of physical and cultural features

Practical Record: A Project File comprising one exercise each, on scale, profile, and interpretation of topographic sheet.

Reference Books:

1. Misra, R.P.,(2014): Fundamentals of Cartography (Second Revised and Enlarged Edition), Concept Publishing, New Delhi.
2. Monkhouse, F. J. and Wilkinson, H. R.,(1973): Maps and Diagrams, Methuen, London.
3. Robinson, A. H.,(2009): Elements of Cartography (6th Edition), John Wiley and Sons, New York.
4. Sarkar, A.,(2015):Practical geography: A systematic approach, Orient Black Swan Private Ltd., New Delhi
5. Sharma, J. P., (2010): Prayogic Bhugol(Hindi), Rastogi Publishers, Meerut.
6. Singh, R.L. and Singh R.P.B.,(1999): Elements of Practical Geography, Kalyani Publishers, New Delhi.
7. Singh, R.L. &Dutta, P.K., (2012):Prayogtmak Bhugol(Hindi), Central Book Depot, Allahabad
8. Singh,R.L.,& Singh, Rana. P.B.,(1991):Prayogtmak Bhugol ke Mool Tatva (Hindi), Kalyani Publishers, New Delhi
9. Steers, J.A. (1970):An Introduction to the Study of Map Projections, University of London Press, London.

SEMESTER II

I. MAJOR COURSE- MJ 2:

(Credits: Theory-04, Practicals-02)

Marks: 15 (5 Attd. + 10 SIE: 1Hr) + 60 (ESE: 3Hrs) = 75	Pass Marks: Th (SIE + ESE) = 30
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Instruction to Question Setter for

Semester Internal Examination (SIE 10+5=15 marks):

There will be **two** group of questions. **Question No.1** will be **very short answer type in Group A** consisting of five questions of 1 mark each. **Group B will contain descriptive type** two questions of five marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 10 Marks, (b) Class Attendance Score (CAS) of 5 marks. Conversion of Attendance into score may be as follows: (Attendance Upto 45%, 1 mark; 45<Attd.<55, 2 marks; 55<Attd.<65, 3 marks; 65<Attd.<75, 4 marks; 75<Attd, 5 marks)

End Semester Examination (ESE 60 marks):

There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** five questions of fifteen marks each, out of which any three are to answer.

Note: There may be subdivisions in each question asked in Theory Examinations.

CLIMATOLOGY AND OCEANOGRAPHY

Theory: 60 Lectures

Course Learning Outcomes:

After the completion of course, the students will have ability to:

1. Understand the elements of weather and climate and its impacts at different scales.
2. Comprehend the climatic aspects and its bearing on planet earth.
3. Understand the oceanic process and availability of resources.

Course Content:

1. Atmospheric Composition and Structure: Variation with Altitude, Latitude and Season; Insolation and Temperature: Factors and Distribution, Heat Budget, Temperature Inversion.
2. Atmospheric Pressure and Winds: Planetary Winds, Forces affecting Winds, General Circulation of Air, Jet Streams; Atmospheric Moisture: Evaporation, Humidity, Condensation, Fog and Clouds, Precipitation Types, Stability and Instability; Climatic Regions.
3. Cyclones: Tropical Cyclones, Temperate Cyclones, Monsoon - Origin and Mechanism, El-Nino.
4. Ocean Floor Topography and Oceanic water Movements: Waves, Currents and Tides.
5. Ocean Salinity and Temperature: Distribution and Determinants; Coral Reefs and Marine Deposits and Ocean Resources.

Reference Books:

1. Anikouchine, W. A. and Sternberg, R. W., (1973): The World Oceans: An Introduction to Oceanography, Prentice-Hall.
 2. Barry, R. G., and Chorley, R. J., (2009): Atmosphere, Weather and Climate(9th Edition),Routledge, New York.
 3. Bhutani, S., (2000): Our Atmosphere, Kalyani Publishers, Ludhina.
 4. Critchfield, H. J., (1987): General Climatology, Prentice-Hall of India, New Delhi
 5. Gupta, L.S., (2000): Jalvayu Vigyan(Hindi),Madhyam Karyanvay Nidishalya, Delhi Vishwa Vidhyalaya, Delhi
 6. Kershaw, S., (2000): Oceanography: An Earth Science Perspective, Stanley Thornes, UK.
 7. Lal, D. S., (2006): Jalvayu Vigyan(Hindi),, Prayag Pustak Bhavan, Allahabad
 8. Lutgens, F. K., Tarbuck E. J. and Tasa D., (2009): The Atmosphere: An Introduction to Meteorology, Prentice-Hall, Englewood Cliffs, New Jersey.
 9. Oliver, J. E., and Hidore J. J., (2002): Climatology: An Atmospheric Science, Pearson Education, New Delhi.
 10. Pinet, P. R., (2008): Invitation to Oceanography (Fifth Edition), Jones and Barlett Publishers, USA, UK and Canada.
 11. Singh, S., (2009): Jalvayu Vigyan (Hindi),, Prayag Pustak Bhawan, Allahabad
 12. Strahler, A.N., (1987) Modern Physical Geography, John Wiley and Sons, New York, Singapore.
 13. Sverdrup, K. A. and Armbrust, E. V., (2008): An Introduction to the World Ocean, McGraw Hill, Boston.
 14. Trewartha, G. T., and Horne L. H., (1980): An Introduction to Climate, McGraw- Hill.
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GEOGRAPHY PRACTICAL- MJ 2 LAB:

Marks : Pr (ESE: 3Hrs) =25

Pass Marks: Pr (ESE) = 10

Instruction to Question Setter for***End Semester Examination (ESE):***

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

<i>Experiment</i>	<i>= 15 marks</i>
<i>Practical record notebook</i>	<i>= 05 marks</i>
<i>Viva-voce</i>	<i>= 05 marks</i>

CARTOGRAPHIC TECHNIQUES-II:**60 Lectures****Course Learning Outcomes:**

After the completion of course, the students will have ability to:

1. Read and prepare maps.
2. Comprehend locational and spatial aspects of the earth surface.
3. Use and importance of maps for regional development and decision making.

Course Content:

1. Projection: Simple Conical (one standard and two standard parallel), Bonne's
2. Projection: Zenithal (Polar Zenithal Stereographic) Mercator's
3. Interpretation of weather maps, drawing of Climograph & Hythergraph

Practical Record: A Project File comprising one exercise each, on scale, profile, and interpretation of topographic sheet.

Reference Books:

1. Misra, R.P.,(2014): Fundamentals of Cartography (Second Revised and Enlarged Edition), Concept Publishing, New Delhi.
2. Monkhouse, F. J. and Wilkinson, H. R.,(1973): Maps and Diagrams, Methuen, London.
3. Robinson, A. H.,(2009): Elements of Cartography (6th Edition), John Wiley and Sons, New York.
4. Sarkar, A.,(2015):Practical geography: A systematic approach, Orient Black Swan Private Ltd., New Delhi
5. Sharma, J. P., (2010): Prayogic Bhugol(Hindi), Rastogi Publishers, Meerut.
6. Singh, R.L. and Singh R.P.B.,(1999): Elements of Practical Geography, Kalyani Publishers, New Delhi.
7. Singh, R.L. & Dutta, P.K., (2012):Prayogatmak Bhugol(Hindi), Central Book Depot, Allahabad
8. Singh, R.L.,& Singh, Rana. P.B.,(1991):Prayogtmak Bhugol ke Mool Tatva (Hindi), Kalyani Publishers, New Delhi
9. Steers, J.A. (1970): An Introduction to the Study of Map Projections, University of London Press, London.

SEMESTER III

I. MAJOR COURSE- MJ 3:

(Credits: Theory-04, Practicals-02)

Marks: 15 (5 Attd. + 10 SIE: 1Hr) + 60 (ESE: 3Hrs) = 75	Pass Marks: Th (SIE + ESE) = 30
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Instruction to Question Setter for***Semester Internal Examination (SIE 10+5=15 marks):***

There will be two group of questions. Question No.1 will be very short answer type in Group A consisting of five questions of 1 mark each. Group B will contain descriptive type two questions of five marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 10 Marks, (b) Class Attendance Score (CAS) of 5 marks. Conversion of Attendance into score may be as follows: (Attendance Upto 45%, 1mark; 45<Attd.<55, 2 marks; 55<Attd.<65, 3 marks; 65<Attd.<75, 4 marks; 75<Attd, 5 marks)

End Semester Examination (ESE 60 marks):

There will be two group of questions. Group A is compulsory which will contain three questions. Question No.1 will be very short answer type consisting of five questions of 1 mark each. Question No.2 & 3 will be short answer type of 5 marks. Group B will contain descriptive type five questions of fifteen marks each, out of which any three are to answer.

Note: There may be subdivisions in each question asked in Theory Examinations.

HUMAN AND SETTLEMENT GEOGRAPHY

Theory: 60 Lectures**Course Learning Outcomes:**

After the completion of course, the students will have ability to:

1. Know the changing human and cultural landscape at different levels.
2. Understand patterns and processes of population growth and its implications.
3. Appreciate the nature and quality of human landscapes

Course Content:

1. Introduction: Defining Human Geography; Major Themes; Contemporary Relevance
2. Space and Society: Cultural Regions; Race; Religion and Language
3. Population: Population Growth and Distribution; Population Composition; Demographic Transition Theory
4. Settlements: Types of Rural Settlements; Classification of Urban Settlements; Trends and Patterns of World Urbanization
5. Population-Resource Relationship

Reference Books:

1. Chandna, R.C., (2017):Population Geography, Kalyani Publishers, New Delhi.
2. Roy D (2022): Population Geography, 2nd Edition, Books & Allied, Kolkata
3. Daniel, P.A. and Hopkinson, M.F. (1989):The Geography of Settlement, Oliver & Boyd, London.
4. Hassan, M.I. (2005):Population Geography, Rawat Publications, Jaipur
5. Hussain, Majid., (2012):Manav Bhugol, Rawat Publications, Jaipur.
6. Johnston, R., Gregory, D.,& Pratt, G., et al. (2008):The Dictionary of Human Geography, Blackwell Publication.
7. Jordan-Bychkov., et al., (2006):The Human Mosaic: A Thematic Introduction to Cultural Geography, W. H. Freeman and Company, New York.

8. Kaushik, S.D., (2010):Manav Bhugol, Rastogi Publication, Meerut.
9. Maurya, S.D., (2012):Manav Bhugol, Sharda Pustak Bhawan, Allahabad.
10. Rozenblat., Celine., Pumain., Denise and Velasquez., Elkin Eds. (2018): International and Transnational Perspectives on Urban Systems, Springer, Japan, pages 393.
11. Singh, R.B., Ed. (2015): Urban Development Challenges, Risk and Resilience in Asian Mega Cities- Sustainable Urban Future of Emerging Asian Mega Region, Springer, Tokyo, Pages 488, 2015.

GEOGRAPHY PRACTICAL- MJ 3 LAB:

Marks : Pr (ESE: 3Hrs) =25

Pass Marks: Pr (ESE) = 10

Instruction to Question Setter for

End Semester Examination (ESE):

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment	= 15 marks
Practical record notebook	= 05 marks
Viva-voce	= 05 marks

THEMATIC ATLAS/MAP MAKING:

60 Lectures

1. Maps – Classification and Types; Principles of Map Design, Enlargement and reduction of maps by square method
2. Diagrammatic Data Presentation –Choropleth, Dot, Proportional Circles; Point Data – Isopleths.
3. Thematic Maps – Preparation and Interpretation.

Practical Record: A Thematic Atlas should be prepared on a specific theme with at least five plates for any state in India.

Reference Books:

1. Singh, R. L, and Dutta, P. K., (2012): Prayogatama Bhugol, Central Book Depot, Allahabad
2. Cuff, J. D. and Mattson, M. T., (1982): Thematic Maps: Their Design and Production, Methuen Young Books
3. Dent, B. D., Torguson, J. S., and Holder, T. W., (2008): Cartography: Thematic Map Design (6th Edition), McGraw Hill Higher Education
4. Gupta, K. K. and Tyagi, V. C., (1992): Working with Maps, Survey of India, DST, New Delhi.
5. Kraak, M.J. and Ormeling, F., (2003): Cartography: Visualization of Geo-Spatial Data, Prentice-Hall.
6. Mishra, R. P. and Ramesh, A., (1989): Fundamentals of Cartography, Concept, New Delhi.
7. Sarkar, A., (2015):Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi
8. Sharma, J. P., (2010): Prayogic Bhugol (Hindi), Rastogi Publishers, Meerut.
9. Singh, R. L. and Singh, Rana, P. B., (1999): Elements of Practical Geography, Kalyani Publishers.
10. Singh, L. R, & Singh. R., (1977): Manchitra or Prayogatamek Bhugol (Hindi), Central Book Depot, Allahabad
11. Singh, R.L. and Dutt, P.K. (1979) Elements of Practical Geography, Kalyani Publishers, New Delhi
12. Slocum, T. A., McMaster, R. B. and Kessler, F. C., (2008): Thematic Cartography and Geovisualization (3rd Edition), Prentice Hall.
13. Tyner, J. A., (2010): Principles of Map Design, The Guilford Press.

SEMESTER IV

I. MAJOR COURSE- MJ 4:

(Credits: Theory-04, Practicals-02)

Marks: 15 (5 Attd. + 10 SIE: 1Hr) + 60 (ESE: 3Hrs) = 75	Pass Marks: Th (SIE + ESE) = 30
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Instruction to Question Setter for***Semester Internal Examination (SIE 10+5=15 marks):***

There will be **two** group of questions. **Question No.1** will be **very short answer type in Group A** consisting of five questions of 1 mark each. **Group B will contain descriptive type** two questions of five marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 10 Marks, (b) Class Attendance Score (CAS) of 5 marks. Conversion of Attendance into score may be as follows: (Attendance Upto 45%, 1mark; 45<Attd.<55, 2 marks; 55<Attd.<65, 3 marks; 65<Attd.<75, 4 marks; 75<Attd, 5 marks)

End Semester Examination (ESE 60 marks):

There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** five questions of fifteen marks each, out of which any three are to answer.

Note: There may be subdivisions in each question asked in Theory Examinations.

EVOLUTION OF GEOGRAPHICAL THOUGHT

Theory: 60 Lectures**Course Learning Outcomes:**

After the completion of course, the students will have ability to:

1. Distinguish the paradigms in geography discipline through time
2. Understand the geographical thinking in different regions of world
3. Appreciate the past and future trends of world geography in general and Indian geography in particular

Course Content:

1. Paradigms in Geography
2. Pre-Modern- Early Origins of Geographical Thinking with reference to the Classical and Medieval Philosophies.
3. Modern -Evolution of Geographical Thinking and Disciplinary Trends in Germany, France, Britain, United States of America.
4. Debates - Environmental Determinism and Possibilism, Systematic and Regional, Ideographic and Nomothetic.
5. Trends - Quantitative Revolution and its Impact, Behaviouralism, Systems Approach, Radicalism, Feminism; Towards Post-Modernism - Changing Concept of Space in Geography, Future of Geography.

Reference Books:

1. Bhat, L.S., (2009): Geography in India (Selected Themes). Pearson
2. Bonnett, A., (2008): What is Geography? Sage.
3. Dikshit, R. D., (1997): Geographical Thought: A Contextual History of Ideas, Prentice Hall India.
4. Freeman, R., (1970): Hundred year of Geography, Hutchinson. London.
5. Hartshorn, R., (1959): Perspectives of Nature of Geography, Rand MacNally and Co.
6. Harvey, David., (1969): Explanation in Geography, London: Arnold

7. Holt-Jensen, A., (2011): Geography: History and Its Concepts: A Students Guide, SAGE.
8. Hussain, M., (2005): Bhogolik Chintan Ka Itihas, Rawat Publications
9. Johnston, R. J., (1997): Geography and Geographers, Anglo-American Human Geography since (1945), Arnold, London.
10. Johnston, R. J., (Ed.): Dictionary of Human Geography, Routledge.
11. Kapur, A., (2001): Indian Geography Voice of Concern, Concept Publications.
12. Martin Geoffrey J., (2005): All Possible Worlds: A History of Geographical Ideas, Oxford.
13. Singh, R.B. (2016): Progress in Indian Geography, Indian National Science Academy, New Delhi.
14. Soja, Edward (1989): Post-modern Geographies, Verso, London. Reprinted 1997: Rawat Publ., Jaipur and New Delhi.
15. Sudepta, Adhikari., (2015): Fundamentals of Geographical Thought, Orient Black Swan Pvt Ltd, Hyderabad

GEOGRAPHY PRACTICAL- MJ 4 LAB:

Marks : Pr (ESE: 3Hrs) =25

Pass Marks: Pr (ESE) = 10

Instruction to Question Setter for End Semester Examination (ESE):

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

<i>Experiment</i>	<i>= 15 marks</i>
<i>Practical record notebook</i>	<i>= 05 marks</i>
<i>Viva-voce</i>	<i>= 05 marks</i>

INSTRUMENTAL SURVEY:

60 Lectures

1. Plane Table: Radiation, Intersection Method.
2. Prismatic Compass: Open & Closed Traverse.
3. GPS- Principal and working methods, IRNSS (NavIC), collecting waypoint using GPS or smart phone (Geotagged image)

Reference Books:

1. Misra, R.P & Ramesh A: (1986): Fundamentals of Cartography, McMillan Co.New Delhi
2. Robinson A.H (1995) Elements of Cartography John Wiley & Sons USA
3. Sarkar A.K.(1997): Practical Geography :A Systematic Approach, Oriental Longman Calcutta
4. Sharma J.P.(2010): Prayogatmak Bhugol,(Hindi) Sahitya Bhawan, Agra

II. MAJOR COURSE- MJ 5:

(Credits: Theory-04, Practicals-02)

Marks: 15 (5 Attd. + 10 SIE: 1Hr) + 60 (ESE: 3Hrs) = 75**Pass Marks: Th (SIE + ESE) = 30*****Instruction to Question Setter for******Semester Internal Examination (SIE 10+5=15 marks):***

There will be **two** group of questions. Question No.1 will be **very short answer type in Group A** consisting of five questions of 1 mark each. **Group B will contain descriptive type** two questions of five marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 10 Marks, (b) Class Attendance Score (CAS) of 5 marks. Conversion of Attendance into score may be as follows: (Attendance Upto 45%, 1mark; 45<Attd.<55, 2 marks; 55<Attd.<65, 3 marks; 65<Attd.<75, 4 marks; 75<Attd, 5 marks)

End Semester Examination (ESE 60 marks):

There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** five questions of fifteen marks each, out of which any three are to answer.

Note: There may be subdivisions in each question asked in Theory Examinations.

FUNDAMENTALS OF REMOTE SENSING & GIS**Theory: 60 Lectures****Course Learning Outcomes:**

After the completion of course, the students will have ability to:

1. Appreciate the strength and application of remote sensing and GIS
2. Map the resources, their location and availability
3. Apply this knowledge for sustainable development

Course Content:

1. Remote Sensing: Meaning, Definition & Scope; Development of Remote Sensing; Components and Process of Remote Sensing; EMR Interaction with Atmosphere and Earth Surface; Remote Sensing Platforms & Sensors.
2. Satellite Imagery Interpretation: Visual & Digital Interpretation Techniques; Elements and Interpretation Keys for Visual Interpretation. (Shape, Size, Colour, Tone, Texture, Association), Image Enhancement Techniques; Supervised & Unsupervised Classification; Application of Remote Sensing
3. Geography & Geographic Information System: Definition & Development of GIS; Elements and components of GIS, Spatial Data: Elements & Types of Spatial Data; Raster & Vector Data Structures;
4. Coordinate Systems, Geo- Referencing of Spatial Data, GIS Database: Creation of Spatial & Non-Spatial Data Base; Digital Elevation Models (DEM);
5. Global Positioning System (GPS)– Principles and Uses. Basic Principles of Computer Assisted Cartography. Integration of GIS with Remote Sensing & Global Positioning System (GPS), Application of GIS & Modern trends in GIS

Reference Books:

1. Anji Reddy, M. (2008): Textbook of Remote Sensing and Geographic Information System, B.S. Publication, Hyderabad
2. Campbell, J. B., (2007): Introduction to Remote Sensing, Guildford Press.
3. Chauniyal, D.D., (2010): Sudur Samvedan evam Bhogolik Suchana Pranali (Hindi), Sharda Pustak

- Bhawan, Allahabad.
4. Jensen, J. R., (2004): Introductory Digital Image Processing: A Remote Sensing Perspective, Prentice Hall Inc., New Jersey.
 5. Jensen, J.R. (2007): Remote Sensing of the Environment: An Earth Resource Perspective, Prentice-Hall Inc., New Jersey.
 6. Joseph, G. (2005): Fundamentals of Remote Sensing, United Press India.
 7. Kumar, Dilip, Singh, R.B. and Kaur, Ranjeet (2019): Spatial Information Technology for Sustainable Development Goals, Springer.
 8. Lillisand, T.M., and Kiefer, P.W., (2007): Remote Sensing and Image Interpretation, 6th Edition, John Wiley & Sons, New York.
 9. Nag, P. and Kudra, M., (1998): Digital Remote Sensing, Concept, New Delhi.
 10. Rees, W. G., (2001): Physical Principles of Remote Sensing, Cambridge University Press.
 11. Sarkar, A. (2015): Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi
 12. Singh, R. B. and Murai, S., (1998): Space-informatics for Sustainable Development, Oxford and IBH Pub.
 13. Wolf, P. R. and Dewitt, B. A., (2000): Elements of Photogrammetry: With Applications in GIS, McGraw-Hill
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GEOGRAPHY PRACTICAL- MJ 5 LAB:

Marks : Pr (ESE: 3Hrs) =25

Pass Marks: Pr (ESE) = 10

Instruction to Question Setter for***End Semester Examination (ESE):***

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

<i>Experiment</i>	<i>= 15 marks</i>
<i>Practical record notebook</i>	<i>= 05 marks</i>
<i>Viva-voce</i>	<i>= 05 marks</i>

REMOTE SENSING & GIS:**60 Lectures**

1. Aerial Photography: Study of Aerial Photographs. Principles, Types and Geometry of Aerial Photograph.
2. Satellite Image Display: Image Import, Layer Stack, Metadata, TCC, FCC
3. Image Enhancement (Filtering), Image Classification (Supervised and Un-supervised)
4. Practical Record: A project file consisting of 5 exercises on using any method on above mentioned themes.

Reference Books:

1. Bhatta , B., (2008): Remote Sensing and GIS, Oxford University Press, New Delhi.
2. Campbell, J. B., (2007): Introduction to Remote Sensing, Guildford Press
3. Chauniyal, D., (2010): Sudur Samvedana Avam Bhaugolik Suchna Pranali (Hindi), Sharda Pustak Bhawan, Allahabad.
4. Hord R.M.,(1989): Digital Image Processing of Remotely Sensed Data, Academic, New York.
5. Jensen, J. R., (2005): Introductory Digital Image Processing: A Remote Sensing Perspective, Pearson Prentice-Hall.
6. Jensen, J. R.,(2007): Remote Sensing of the Environment: An Earth Resource Perspective, Prentice-Hall Inc, New Jersey.
7. Joseph, G.,(2005): Fundamentals of Remote Sensing, United Press India.
8. Kumar, Dilip, Singh, R.B and Kaur, Ranjeet (2019)"Spatial Information Technology for Sustainable Development Goals, Springer
9. Li, Z., Chen, J. and Batsavias, E., (2008): Advances in Photogrammetry, Remote Sensing and Spatial Information Sciences, CRC Press, Taylor and Francis, London
10. Lillesand, T. M., Kiefer R. W. and Chipman, J. W., (2004): Remote Sensing and Image Interpretation, Wiley. (Wiley Student Edition).
11. Mukherjee, S. (2004): Textbook of Environmental Remote Sensing, Macmillan, Delhi.
12. Nag, P. and Kudra, M., (1998): Digital Remote Sensing, Concept, New Delhi.
13. Richards, J. A. and JiaXiuping., (2005): Remote Sensing Digital Image Analysis: An introduction, 4th Edition, Springer, Verlag, Berlin

SEMESTER V

I. MAJOR COURSE- MJ 6:

(Credits: Theory-04, Practicals-02)

Marks: 15 (5 Attd. + 10 SIE: 1Hr) + 60 (ESE: 3Hrs) = 75	Pass Marks: Th (SIE + ESE) = 30
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Instruction to Question Setter forSemester Internal Examination (SIE 10+5=15 marks):

There will be **two** group of questions. **Question No.1** will be **very short answer type in Group A** consisting of five questions of 1 mark each. **Group B will contain descriptive type** two questions of five marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 10 Marks, (b) Class Attendance Score (CAS) of 5 marks. Conversion of Attendance into score may be as follows: (Attendance Upto 45%, 1mark; 45<Attd.<55, 2 marks; 55<Attd.<65, 3 marks; 65<Attd.<75, 4 marks; 75<Attd, 5 marks)

End Semester Examination (ESE 60 marks):

There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1** will be **very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3** will be **short answer type** of 5 marks. **Group B will contain descriptive type** five questions of fifteen marks each, out of which any three are to answer.

Note: There may be subdivisions in each question asked in Theory Examinations.

ECONOMIC GEOGRAPHY

Theory: 60 Lectures**Course Learning Outcomes:**

After the completion of course, the students will have ability to:

1. Distinguish different types of economic activities and their utilities.
2. Appreciate the factors responsible for the location and distribution of activities.
3. Examine the significance and relevance of theories in relation to the location of different economic activities.

Course Content:

1. Introduction: Concept and classification of economic activity
2. Factors Affecting location of Economic Activity with special reference to Agriculture, Industry and Services (Weber's theory)
3. Primary Activities: Subsistence and Commercial Agriculture, Forestry, Fishing and Mining.
4. Secondary Activities: Manufacturing (Cotton Textile, Iron and Steel), Concept of Manufacturing Regions, Special Economic Zones and Technology Parks.
5. Tertiary Activities: Transport (Land, Air, Water and Pipelines), Trade (National and International) and Services.

Reference Books:

1. Alexander, J. W., (1963): Economic Geography, Prentice-Hall Inc., Englewood Cliffs, New Jersey.
2. Bagchi-Sen, S. and Smith, H. L., (2006): Economic Geography: Past, Present and Future, Taylor and Francis.
3. Clark, Gordon L.; Feldman, M.P. and Gertler, M.S., eds. (2000): The New Oxford Handbook of Economic Geography, Oxford Press.
4. Coe, N. M., Kelly P. F. and Yeung H. W., (2007): Economic Geography: A Contemporary Introduction, Wiley-Blackwell.

5. Combes, P., Mayer T. and Thisse, J. F., (2008): Economic Geography: The Integration of Regions and Nations, Princeton University Press.
 6. Durand, L., (1961): Economic Geography, Crowell.
 7. Hodder, B. W. and Lee, Roger, (1974): Economic Geography, Taylor and Francis
 8. Knowles, R. & Wareing, J., (2004): Economic and Social Geography Made Simple, Rupa & Co., Kolkata.
 9. Knox, P. & Marston, S., (2013): Human Geography: Places and Regions in Global Context, 6th Edition, Pearson Education, New Delhi
 10. Prithwish, Roy (2014): Economic Geography - A study of Resources, New Central Book Agency, Kolkata.
 11. Saxena, H.M., (2013): Economic Geography, Rawat Publications, Jaipur.
 12. Siddhartha, K., (2013): Economic Geography, Kosalaya Publications Pvt. Ltd., New Delhi.
 13. Wheeler, J. O., (1998): Economic Geography, Wiley.
 14. Willington, D. E., (2008): Economic Geography, Husband Press
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GEOGRAPHY PRACTICAL- MJ 6 LAB:

Marks : Pr (ESE: 3Hrs) =25

Pass Marks: Pr (ESE) = 10

Instruction to Question Setter for

End Semester Examination (ESE):

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Tour Report = 20 marks

Viva-voce = 05 marks

PHYSICAL SURVEY:

60 Lectures

Physical survey for Environmental studies in any part of India. The report should be completed/ prepared and submitted as per the applicability under the following broad themes

1. Landforms and settlement
 2. Landforms and landuse
 3. Social and Cultural Aspects
 4. Urban and rural environment
 5. Environmental Degradation
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II. MAJOR COURSE- MJ 7:

(Credits: Theory-04, Practicals-02)

Marks: 15 (5 Attd. + 10 SIE: 1Hr) + 60 (ESE: 3Hrs) = 75**Pass Marks: Th (SIE + ESE) = 30*****Instruction to Question Setter for******Semester Internal Examination (SIE 10+5=15 marks):***

There will be **two** group of questions. **Question No.1** will be **very short answer type in Group A** consisting of five questions of 1 mark each. **Group B will contain descriptive type** two questions of five marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 10 Marks, (b) Class Attendance Score (CAS) of 5 marks. Conversion of Attendance into score may be as follows: (Attendance Upto 45%, 1mark; 45<Attd.<55, 2 marks; 55<Attd.<65, 3 marks; 65<Attd.<75, 4 marks; 75<Attd, 5 marks)

End Semester Examination (ESE 60 marks):

There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** five questions of fifteen marks each, out of which any three are to answer.

Note: There may be subdivisions in each question asked in Theory Examinations.

GEOGRAPHY OF INDIA & JHARKHAND**Theory: 60 Lectures****Course Learning Outcomes:**

After the completion of course, the students will have ability to:

1. Understand the physical profile of the country
2. Study the resource endowment and its spatial distribution and utilization for sustainable development
3. Synthesis and develop the idea of regional dimensions.

Course Content:

1. Physical: Location, Physiographic Divisions, Climate: characteristics and classification; Soil and Natural vegetation
2. Population: Distribution and Growth, Structure; Social: Distribution of Population by Race, Caste, Religion, Language, Tribes and their Correlation.
3. Regionalisation of India: Physiographic (R. L. Singh), Socio-Cultural (Sopher), Economic (Sengupta)
4. Economic: Mineral and Power Resources: Distribution and Utilization of Iron Ore, Coal, Petroleum, Gas; Agricultural Production of Rice, Wheat, Cotton and Sugarcane; Industrial Development: Industrial Corridors and Industrial Regions.
5. Regional Account of Jharkhand: Geological structure, Physiography, Drainage, Climate, Natural vegetation, Population and Tribes (Santhal, Oraon, Munda); Economic features: Agriculture, Minerals and Industry -Iron and Steel Industry, Silk, Tourism

Reference Books:

1. Deshpande, C. D., (1992): India: A Regional Interpretation, ICSSR, New Delhi.
2. Douglas, L. Johnson.,(2009): World Regional Geography, Tenth edition, Pearson Education Inc, New Jersey.
3. Johnson, B. L. C., ed. (2001): Geographical Dictionary of India. Vision Books, New Delhi.
4. Khullar, D.R. (2014): India: A Comprehensive Geography, Kalyani Publishers, New Delhi.
5. Majid Husain (2009): Geography of India, Tata McGraw hill Education Private Ltd, New Delhi.
6. Mandal, R. B. (ed.), (1990): Patterns of Regional Geography±An International Perspective. Vol. 3±Indian Perspective.
7. Pathak, C. R. (2003): Spatial Structure and Processes of Development in India. Regional Science Assoc., Kolkata.
8. Sdyasuk, Galina and P, Sengupta., (1967): Economic Regionalisation of India, Census of India.

9. Sharma, T.C. (2013): Economic Geography of India. Rawat Publication, Jaipur.
10. Singh R. L., (1971): India: A Regional Geography, National Geographical Society of India.
11. Singh, Jagdish.,(2003): India - A Comprehensive & Systematic Geography, Gyanodaya Prakashan, Gorakhpur.
12. Singh, R. B. and Prokop, Pawel.,(2016): Environmental Geography of South Asia, Springer, Japan.
13. Spate O. H. K. and Learmonth A. T. A., (1967): India and Pakistan: A General and Regional Geography, Methuen.
14. Tirtha, Ranjit (2002): Geography of India, Rawat Publs., Jaipur & New Delhi.
15. Tiwari, R.C. (2007): Geography of India. Prayag Pustak Bhawan, Allahabad
16. Govt of India: (1965) The Gazetteer of India Vol I & III Publication Division, New Delhi
17. Mandal R. B. (ed.), 1990: Patterns of Regional Geography – An International Perspective. Vol. 3 – Indian Perspective.
18. Roy D (2018): Geography of Jharkhand; Land Economy and People, Kalyani Publication, New Delhi
19. Tiwari Ram Kumar: Jharkhand ki Rooprekha, Shivangan Publication Ranchi
20. Singh R. L., 1971: India: A Regional Geography, National Geographical Society of India.
21. Singh, Jagdish 2003: India - A Comprehensive & Systematic Geography, Gyanodaya Prakashan, Gorakhpur.
22. Spate O. H. K. and Learmonth A. T. A., 1967: India and Pakistan: A General and Regional Geography, Methuen.
23. Tirtha, Ranjit 2002: Geography of India, Rawat Publs., Jaipur & New Delhi.
24. Pathak, C.R.2003: Spatial Structure and Processes of Development in India. Reg. Sc. Assoc, Kolkata
25. Tiwari, R.C. (2007) Geography of India. Prayag Pustak Bhawan, Allahabad

GEOGRAPHY PRACTICAL- MJ 7 LAB:

Marks : Pr (ESE: 3Hrs) =25

Pass Marks: Pr (ESE) = 10

Instruction to Question Setter for

End Semester Examination (ESE):

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Field Survey Report = 20 marks

Viva-voce = 05 marks

FIELD REPORT WRITING:

60 Lectures

1. Selection of research problem and study area.
2. Using field tool, making field, notes, photographs, sketches, etc
3. The report should be completed/ prepared and submitted as per the applicability under the following broad theme-
 - a. Landforms and settlement
 - b. Landforms and landuse
 - c. Social and Cultural Aspects
 - d. Urban and rural environment
 - e. Environmental Degradation

Based on the observation of the above characteristics, prepare a field survey report. The report needs to be supplemented with maps, sketches, diagrams, and photographs etc.

The practical exercises should aim at identification of micro-geomorphic features on the ground and their relationship to landuse/settlement pattern. Without participation in the field survey the report will not be entertained.

SEMESTER VI

I. MAJOR COURSE- MJ 8:

(Credits: Theory-04, Practicals-02)

Marks: 15 (5 Attd. + 10 SIE: 1Hr) + 60 (ESE: 3Hrs) = 75	Pass Marks: Th (SIE + ESE) = 30
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Instruction to Question Setter forSemester Internal Examination (SIE 10+5=15 marks):

There will be **two** group of questions. **Question No.1** will be **very short answer type in Group A** consisting of five questions of 1 mark each. **Group B will contain descriptive type** two questions of five marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 10 Marks, (b) Class Attendance Score (CAS) of 5 marks. Conversion of Attendance into score may be as follows: (Attendance Upto 45%, 1mark; 45<Attd.<55, 2 marks; 55<Attd.<65, 3 marks; 65<Attd.<75, 4 marks; 75<Attd, 5 marks)

End Semester Examination (ESE 60 marks):

There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** five questions of fifteen marks each, out of which any three are to answer.

Note: There may be subdivisions in each question asked in Theory Examinations.

BIOGEOGRAPHY

Theory: 60 Lectures**Course Learning Outcomes:**

After the completion of course, the students will have ability to:

1. Familiarize the dynamics of climate and related theories.
2. Understand of Vegetation as an index of climate.
3. Assess of different aspects of floral and faunal provinces.

Course Content:

1. Introduction to Bio-geography: Nature, scope, and components.
2. World Climatic Patterns (Koppen) vis-à-vis biogeographical regions
3. Evolution of major groups of floral and faunal provinces.
4. Ecological successions: stages and climax.
5. Biodiversity; bio-diversity hotspots, biodiversity conservation.

Reference Books:

1. Bhattacharyya, N.N.(2003): Biogeography, Rajesh Publications, New Delhi.
2. Clarke, G. L. (1967): Elements of ecology, New York: John Wiley Pub.
3. Haden-Guest, S., Wright, J. K. and Teclaff, E. M. (1956): World Geography of Forest Resources, New York: Ronald Press Co.
4. Hoyt, J.B. (1992): Man, and the Earth, Prentice Hall, U.S.A.
5. Huggett, R.J. (1998): Fundamentals of Biogeography, Routledge, U.S.A.
6. Lal, D. S. 2003. Climatology, Allahabad: Sharda Pustak Bhawan.
7. Lapedes, D.N. (1974): Encyclopaedia of Environmental Science (eds.), McGraw Hill.
8. Mal, Suraj., and Singh, R.B. (Eds.) (2009): Biogeography and Biodiversity, Rawat Publication, Jaipur
9. Mathur, H.S. (1998): Essentials of Biogeography, Anuj Printers, Jaipur.

10. Mountain and Tree cover in Mountain Regions Report - 2002, UNEP-WCMC.
11. Parmesan, C., Yohe, G. (2003): A globally coherent fingerprint of climate change impacts across natural systems. *Nature*, 421 (6918), 37–42
12. Singh, Savindra (2015): *Paryawaran Bhoogol (Hindi)*, Prayag Pushtak Bhawan, Allahabad (Hindi).
13. Sivaperuman, Chandrakasan et al., (2018): *Biodiversity and Climate Change Adaptation in Tropical Islands*, Academic Press, London.

GEOGRAPHY PRACTICAL- MJ 8 LAB:

Marks : Pr (ESE: 3Hrs) =25

Pass Marks: Pr (ESE) = 10

Instruction to Question Setter for

End Semester Examination (ESE):

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment	= 15 marks
Practical record notebook	= 05 marks
Viva-voce	= 05 marks

STATISTICAL METHOD IN GEOGRAPHY:

60 Lectures

1. Use of Data in Geography: Significance of Statistical Methods in Geography; Sources of Data, Scales of Measurement (Nominal, Ordinal, Interval and Ratio). Graphic representation - Histogram, polygons, frequency curve (O give), Scatter diagram, Block pile diagram, Method of population projection
2. Tabulation and Descriptive Statistics: Frequencies (Deciles, Quartiles), Cross Tabulation, Central Tendency (Mean, Median and Mode, Centro-graphic Techniques, Dispersion (Standard Deviation, Variance and Coefficient of Variation).
3. Association and Correlation: Rank Correlation and Simple Regression

Class Record: Each student will submit a record containing three exercises:

1. Construct a data matrix (of about 10 x 10) with each row representing an areal unit (districts or villages or towns) and about 10 columns of relevant attributes of the areal units.
2. Based on the above table, a frequency table, measures of central tendency and dispersion would be computed and interpreted for any two attributes.
3. Histograms and frequency curve would be prepared for the entire data set and attempt to fit a normal curve and interpreted for one or two variables.
4. From the data matrix a sample set (20 per cent) would be drawn using random systematic and/or stratified methods of sampling and locate the samples on a map with a short note on method used.
5. Based on the sample set and using two relevant attributes, a scatter and regression line would be plotted and residual from regression would be mapped with a short interpretation.

Reference Books:

1. Ajai, S. G. and Sanjaya, S.G. (2009) Statistical Methods for Practice and Research, Sage Publications, New Delhi.
 2. Berry, B. J. L. and Marble, D. F. (eds.): Spatial Analysis A Reader in Geography.
 3. Ebdon, D., (1977): Statistics in Geography: A Practical Approach.
 4. Hammond, P. and McCullagh, P. S., (1978): Quantitative Techniques in Geography: An Introduction, Oxford University Press.
 5. King, L. S., (1969): Statistical Analysis in Geography, Prentice-Hall.
 6. Mahmood, A., 1977: Statistical Methods in Geographical Studies, Concept.
 7. Pal, S. K., (1998): Statistics for Geoscientists, Tata McGraw Hill, New Delhi.
 8. Rogerson, P. A., (2001) Statistical Methods for Geography, Sage Publications, New Delhi.
 9. Sarkar, A. (2013): Quantitative geography: techniques and presentations. Orient Black Swan Private Ltd., New Delhi
 10. Sinha, Indira., (2007): Sankhyiki Bhugol(Hindi). Discovery Publishing House, New Delhi.
 11. Silk, J., (1979): Statistical Concepts in Geography, Allen and Unwin, London.
 12. Taylor P.J., (1983) Quantitative Methods in Geography: An Introduction to Spatial Analysis, Waveland Press, Boston Publishers.
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II. MAJOR COURSE- MJ 9:

(Credits: Theory-04, Practicals-02)

Marks: 15 (5 Attd. + 10 SIE: 1Hr) + 60 (ESE: 3Hrs) = 75**Pass Marks: Th (SIE + ESE) = 30*****Instruction to Question Setter for******Semester Internal Examination (SIE 10+5=15 marks):***

There will be two group of questions. Question No.1 will be very short answer type in Group A consisting of five questions of 1 mark each. Group B will contain descriptive type two questions of five marks each, out of which one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 10 Marks, (b) Class Attendance Score (CAS) of 5 marks. Conversion of Attendance into score may be as follows: (Attendance Upto 45%, 1mark; 45<Attd.<55, 2 marks; 55<Attd.<65, 3 marks; 65<Attd.<75, 4 marks; 75<Attd, 5 marks)

End Semester Examination (ESE 60 marks):

There will be two group of questions. Group A is compulsory which will contain three questions. Question No.1 will be very short answer type consisting of five questions of 1 mark each. Question No.2 & 3 will be short answer type of 5 marks. Group B will contain descriptive type five questions of fifteen marks each, out of which any three are to answer.

Note: There may be subdivisions in each question asked in Theory Examinations.

POLITICAL GEOGRAPHY**Theory: 60 Lectures****Course Learning Outcomes:**

After the completion of course, the students will have ability to:

1. Learn the concept of nation and state and geopolitical theories
2. Understand the different dimensions of electoral geography and resource conflicts
3. Have sound knowledge of politics of displacement, focusing on dams and SEZ

Course Content:

1. Introduction: Concepts, Nature and Scope.
2. State, Nation and Nation State – Concept of Nation and State, Attributes of State – Frontiers, Boundaries, Shape, Size, Territory and Sovereignty, Concept of Nation State; Geopolitics; Theories (Heartland and Rimland)
3. Electoral Geography – Geography of Voting, Geographic Influences on Voting pattern, Geography of Representation, Gerrymandering.
4. Political Geography of Resource Conflicts – Water Sharing Disputes, Disputes and Conflicts Related to Forest Rights and Minerals.
5. Politics of Displacement: Issues of relief, compensation and rehabilitation: with reference to Dams, Highways and Special Economic Zones

Reference Books:

1. Adhikari, S. (2007): Political Geography, Rawat Publication, New Delhi.
2. Adhikari, S. (2013): Political Geography of India –Sharda Pustak Bhawan, Allahabad.
3. Agnew, J., (2002): Making Political Geography, Arnold.
4. Agnew, J., Mitchell K. and Total G., (2003): A Companion to Political Geography, Blackwell.
5. Cox, K. R., Low M. and Robinson J., (2008): The Sage Handbook of Political Geography, Sage Publications.
6. Cox, K., (2002): Political Geography: Territory, State and Society, Wiley-Blackwell
7. Gallaher, C., et al, (2009): Key Concepts in Political Geography, Sage Publications.
8. Glassner, M., (1993): Political Geography, Wiley.
9. Hodder, Dick, Sarah, J, Llyod and Keith, S, McLachlan., (1998): Land Locked States of Africa and Asia (vo.2), Frank Cass

GEOGRAPHY PRACTICAL- MJ 9 LAB:**Marks : Pr (ESE: 3Hrs) =25****Pass Marks: Pr (ESE) = 10*****Instruction to Question Setter for******End Semester Examination (ESE):***

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Survey Report = 20 marks

Viva-voce = 05 marks

SOCIO-ECONOMIC SURVEY REPORT:**60 Lectures**

1. Area of physical survey will be allotted by the department.
 2. A sample of not more than 50 households will be surveyed through primary survey and a proper questionnaire.
 3. The primary survey should bring out the socio-economic characteristics of the area.
 4. A report of the major findings, problems identified and conclusion drawn should be presented with adequate diagrammatic representation
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SEMESTER VII

I. ADVANCE MAJOR COURSE- AMJ 1: (Credits: Theory-04, Practicals-02)

Marks: 15 (5 Attd. + 10 SIE: 1Hr) + 60 (ESE: 3Hrs) = 75	Pass Marks: Th (SIE + ESE) = 30
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Instruction to Question Setter for

Semester Internal Examination (SIE 10+5=15 marks):

There will be two group of questions. Question No.1 will be very short answer type in Group A consisting of five questions of 1 mark each. Group B will contain descriptive type two questions of five marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 10 Marks, (b) Class Attendance Score (CAS) of 5 marks. Conversion of Attendance into score may be as follows: (Attendance Upto 45%, 1mark; 45<Attd.<55, 2 marks; 55<Attd.<65, 3 marks; 65<Attd.<75, 4 marks; 75<Attd, 5 marks)

End Semester Examination (ESE 60 marks):

There will be two group of questions. Group A is compulsory which will contain three questions. Question No.1 will be very short answer type consisting of five questions of 1 mark each. Question No.2 & 3 will be short answer type of 5 marks. Group B will contain descriptive type five questions of fifteen marks each, out of which any three are to answer

Note: *There may be subdivisions in each question asked in Theory Examinations.*

REGIONAL PLANNING AND DEVELOPMENT

Theory: 60 Lectures

Course Objectives:

After the completion of course, the students will have ability to:

1. Identify notable lagging regions and solutions for their overall development
2. Have comprehensive understanding regarding the different regions and application of different models and theories for integrated regional development.
3. Select appropriate indicators for the measurement of socio-economic regional development

Course Content:

1. Definition of Region, Evolution and Types of Regional planning: Formal, Functional, and Planning Regions and Regional Planning; Need and types of Regional Planning.
2. Choice of a Region for Planning: Characteristics of an Ideal Planning Region; Delineation of Planning Region; Regionalization of India for Planning (Agro Ecological Zones)
3. Theories and Models for Regional Planning: Growth Pole Model of Perroux; Growth Centre Model in Indian Context; Myrdal, Hirschman, Rostow and Friedmann; Village Cluster.
4. Sustainable Development: Concept of Development and Underdevelopment; Efficiency-Equity Debate: Definition, Components and Sustainability for Development. Indicators (Economic, Social and Environmental).
5. Sustainable Development Policies and Programmes: Rio+20; Goal-Based Development; Financing for Sustainable Development; Principles of Good Governance.

Reference Books:

1. Agyeman, Julian, Robert, D. Bullard and Bob, Evans., (Eds.) (2003): Just Sustainabilities: Development in an Unequal World. London: Earth scan. (Introduction and conclusion.).
2. Anand, Subhash., (2011): Ecodevelopment : Glocal Perspectives, Research India Press, New Delhi.
3. Ayers, Jessica and David Dodman, (2010): "Climate Change adaptation and Development: the state of debate" Progress in Development Studies 10(2): 161-168
4. Baker, Susan., (2006): Sustainable Development. Milton Park, Abingdon, Oxon; New York, NY: Routledge (Chapter2," The concept of sustainable development"
5. Blij, H. J. De., (1971): Geography: Regions and Concepts, John Wiley and Sons.
6. Friedmann, J. and Alonso W. (1975): Regional Policy - Readings in Theory and Applications, MIT Press, Massachusetts.
7. Gore C. G., (1984): Regions in Question: Space, Development Theory and Regional Policy, Methuen, London.
8. Haynes J., (2008): Development Studies, Polity Short Introduction Series.
9. Johnson E. A. J., (1970): The Organization of Space in Developing Countries, MIT Press, Massachusetts.
10. Misra, R. P., Sundaram, K.V. and V.L.S. Prakasa Rao, (1974): Regional Development planning in India, Vikas Publishing House Delhi.
11. Peet, R., (1999): Theories of Development, The Guilford Press, New York.
12. Singh, R.B. (2002): Human Dimensions of Sustainable Development, Rawat Pub., Jaipur, pages
13. UNDP (2001-04): Human Development Report, Oxford University
14. Shukla, J (2016) Regional Planning and Development, Disha Publication, Delhi

GEOGRAPHY PRACTICAL- AMJ 1 LAB:

Marks : Pr (ESE: 3Hrs) =25

Pass Marks: Pr (ESE) = 10

Instruction to Question Setter for***End Semester Examination (ESE):***

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

<i>Experiment</i>	<i>= 15 marks</i>
<i>Practical record notebook</i>	<i>= 05 marks</i>
<i>Viva-voce</i>	<i>= 05 marks</i>

REGIONAL PLANNING:**60 Lectures**

1. Delimitation of planning regions proposing growth foci, Preparation of distribution maps, Industrial concentration map
2. Regional pattern of urbanization in Jharkhand, Regional pattern of agricultural laborers
3. Calculation of Human Development Index, Gender Parity Index (According to UNDP)

II. ADVANCE MAJOR COURSE- AMJ 2: (Credits: Theory-04, Practicals-02)

Marks: 15 (5 Attd. + 10 SIE: 1Hr) + 60 (ESE: 3Hrs) = 75

Pass Marks: Th (SIE + ESE) = 30

Instruction to Question Setter for

Semester Internal Examination (SIE 10+5=15 marks):

There will be two group of questions. Question No.1 will be very short answer type in Group A consisting of five questions of 1 mark each. Group B will contain descriptive type two questions of five marks each, out of which one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 10 Marks, (b) Class Attendance Score (CAS) of 5 marks. Conversion of Attendance into score may be as follows: (Attendance Upto 45%, 1mark; 45<Attd.<55, 2 marks; 55<Attd.<65, 3 marks; 65<Attd.<75, 4 marks; 75<Attd, 5 marks)

End Semester Examination (ESE 60 marks):

There will be two group of questions. Group A is compulsory which will contain three questions. Question No.1 will be very short answer type consisting of five questions of 1 mark each. Question No.2 & 3 will be short answer type of 5 marks. Group B will contain descriptive type five questions of fifteen marks each, out of which any three are to answer

Note: *There may be subdivisions in each question asked in Theory Examinations.*

NATURAL RESOURCE MANAGEMENT AND ENVIRONMENTAL GEOGRAPHY

Theory: 60 Lectures

Course Learning Outcomes:

After the completion of course, the students will have ability to:

1. Understand the dynamic interactive relationship between man and environment.
2. Have sound understanding on distribution, utilization and proper management of natural resources at global level.
3. Make assessment and review of planning and policies related to environment and natural resources.

Course Content:

1. Environment and Natural Resource Management: Concept, Human-Environment Relationships;
2. Ecosystem: Concept, Structure and Functions.
3. Environmental Issues in Tropical, Temperate and Polar Ecosystems.
4. Natural Resource: Concept, Classification; Distribution, Utilization, Problems and Management of Land, Water Forests and Energy.
5. Appraisal and Conservation of Environment and Natural Resources and Sustainable Resource Development.
6. Environmental Programmes and Policies – Global, National and Local levels

Reference Books:

1. Chandna, R. C., (2002): Environmental Geography, Kalyani, Ludhiana.
2. Cunningham, W. P. and Cunningham, M. A., (2004): Principals of Environmental Science: Inquiry and Applications, Tata Macgraw Hill, New Delhi.
3. Goudie, A., (2001): The Nature of the Environment, Blackwell, Oxford.
4. Holechek, J. L. C., Richard, A., Fisher, J. T. and Valdez, R., (2003): Natural Resources: Ecology, Economics and Policy, Prentice Hall, New Jersey.
5. Jones, G. and Hollier, G., (1997): Resources, Society and Environmental Management, Paul Chapman, London.
6. Kumaraswamy, K., Alagappa Moses., A & Vasanthy, M. (2004) Environmental Studies, Bharathidasan University, Tiruchirappalli.

7. Miller, G. T., (2004): Environmental Science: Working with the Earth, Thomson Brooks Cole, Singapore.
 8. Mitchell, B., (1997): Resource and Environmental Management, Longman Harlow, England.
 9. MoEF, (2006): National Environmental Policy-2006, Ministry of Environment and Forests, Government of India.
 10. Odum, E. P. et al, (2005): Fundamentals of Ecology, Ceneage Learning India.
 11. Saxena, H.M., 2012: Environmental Studies, Rawat Publications, Jaipur.
 12. Singh, R.B., and Hietala, R. (Eds.) (2014): Livelihood security in Northwestern Himalaya: Case studies from changing socio-economic environments in Himachal Pradesh, India. Advances in Geographical and Environmental Studies, Springer
 13. Singh, Savindra., (2001): Paryavaran Bhugol (Hindi), Prayag Pustak Bhawan, Allahabad. (in Hindi)
 14. Singh, R.B., Prokop, Pawel (Eds.) (2016): Environmental Geography of South Asia, Springer Japan
 15. UNEP, (2007): Global Environment Outlook: GEO4: Environment for Development, United Nations Environment Programme.
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GEOGRAPHY PRACTICAL- AMJ 2 LAB:

Marks : Pr (ESE: 3Hrs) =25

Pass Marks: Pr (ESE) = 10

Instruction to Question Setter for

End Semester Examination (ESE):

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Project Report = 20 marks
Viva-voce = 05 marks

DISASTER MANAGEMENT PROJECT WORK:

60 Lectures

1. The Project Report based on any case study of any one field among following disasters and one disaster preparedness plan of respective college/locality and district:
2. Drought, Cyclone and Hailstorms.
3. Lightning. Forest fire and thunderstorms.
4. Human Induced Disasters: Mining and Industrial Hazards, Chemical Hazards

Reference Books:

1. Carter, N., (1991): Disaster Management: A Disaster Manager's Handbook. Asian Development Bank, Manila.
 2. Government of India (2011): Disaster Management in India. Ministry of Home Affairs, New Delhi.
 3. Government of India (2008): Vulnerability Atlas of India. New Delhi, Building Materials & Technology Promotion Council, Ministry of Urban Development, Government of India
 4. Kapur, A., (2010): Vulnerable India: A Geographical Study of Disasters, Sage Publication, New Delhi.
 5. Modh, S., (2010): Managing Natural Disaster: Hydrological, Marine and Geological Disasters, Macmillan, Delhi
 6. Ramkumar, M., (2009): Geological Hazards: Causes, Consequences and Methods of Containment, New India Publishing Agency, New Delhi.
 7. Savindra, Singh and Jeetendra, S., (2013): Disaster Management, Pravalika Publications, Allahabad
 8. Singh Jagbir,(2007): "Disaster Management Future Challenges and Opportunities, I K International Pvt Ltd, New Delhi, India
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SEMESTER VIII

I. ADVANCE MAJOR COURSE- AMJ 3: (Credits: Theory-04, Practicals-02)

Marks: 15 (5 Attd. + 10 SIE: 1Hr) + 60 (ESE: 3Hrs) = 75	Pass Marks: Th (SIE + ESE) = 30
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Instruction to Question Setter for

Semester Internal Examination (SIE 10+5=15 marks):

There will be two group of questions. Question No.1 will be very short answer type in Group A consisting of five questions of 1 mark each. Group B will contain descriptive type two questions of five marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 10 Marks, (b) Class Attendance Score (CAS) of 5 marks. Conversion of Attendance into score may be as follows: (Attendance Upto 45%, 1mark; 45<Attd.<55, 2 marks; 55<Attd.<65, 3 marks; 65<Attd.<75, 4 marks; 75<Attd, 5 marks)

End Semester Examination (ESE 60 marks):

There will be two group of questions. Group A is compulsory which will contain three questions. Question No.1 will be very short answer type consisting of five questions of 1 mark each. Question No.2 & 3 will be short answer type of 5 marks. Group B will contain descriptive type five questions of fifteen marks each, out of which any three are to answer

Note: *There may be subdivisions in each question asked in Theory Examinations.*

POPULATION AND URBAN GEOGRAPHY

Theory: 60 Lectures

Course Learning Outcomes:

After the completion of course, the students will have ability to:

1. Learn the role of population studies as a distinct fields of human geography
2. Understand the fundamentals and patterns of urbanization process
3. Learn the functional classification of cities and Central Place Theory

Course Content:

1. Introduction, nature, scope and sources of data of population and urban geography
2. Population Size, Distribution and Growth – Determinants and Patterns; Theories of Growth – Malthusian Theory and Demographic Transition Theory.
3. Population Dynamics: Fertility, Mortality and Migration – Measures, Determinants and Implications.
4. Population Composition and Characteristics – Age-Sex Composition; Rural and Urban Composition; Literacy.
5. Functional classification of cities: Quantitative and Qualitative Methods, Cities and Central Place Theory: Christaller and Losch

Reference Books:

1. Chandna, R.C., (2017): Population Geography, Kalyani Publishers, New Delhi.
2. Roy D (2022): Population Geography, 2nd Edition, Books & Allied, Kolkata
3. Hassan, M.I. (2005): Population Geography, Rawat Publications, Jaipur
4. Carter, H., (1972): The study of Urban Geography, Edward Arnold, London.
5. Fyfe, N. R. and Kenny, J. T., (2005): The Urban Geography Reader, Routledge.
6. Graham, S. and Marvin, S., (2001): Splintering Urbanism: Networked Infrastructures, Technological Mobilities and the Urban Condition, Routledge.

7. Hall, T., (2006): Urban Geography, Taylor and Francis.
 8. Kaplan, D. H., Wheeler, J. O. and Holloway, S. R., (2008): Urban Geography, John Wiley.
 9. Knox, P. L., and McCarthy, L., (2005): Urbanization: An Introduction to Urban Geography, Pearson Prentice Hall New York.
 10. Ramachandran, R., (1989): Urbanisation and Urban Systems of India, Oxford University Press, New Delhi
 11. Ramachandran, R., (1992): The Study of Urbanisation, Oxford University Press, Delhi
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GEOGRAPHY PRACTICAL- AMJ 3 LAB:

Marks : Pr (ESE: 3Hrs) =25	Pass Marks: Pr (ESE) = 10
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Instruction to Question Setter for

End Semester Examination (ESE):

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

<i>Experiment</i>	= 15 marks
<i>Practical record notebook</i>	= 05 marks
<i>Viva-voce</i>	= 05 marks

LAB AND PROJECT WORK:

60 Lectures

1. Spherical diagram, volumetric or sten de Geer's method, Traffic flow diagram
2. Index of intercensal population change and its representation through maps, preparation of age-sex pyramid, Ternary diagram.
3. Calculation of rate and speed of urbanization, Lorenz curve

Reference Books:

1. Carter, H., (1972): The study of Urban Geography, Edward Arnold, London.
 2. Fyfe, N. R. and Kenny, J. T., (2005): The Urban Geography Reader, Routledge.
 3. Graham, S. and Marvin, S., (2001): Splintering Urbanism: Networked Infrastructures, Technological Mobilities and the Urban Condition, Routledge.
 4. Hall, T., (2006): Urban Geography, Taylor and Francis.
 5. Kaplan, D. H., Wheeler, J. O. and Holloway, S. R., (2008): Urban Geography, John Wiley.
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II. ADVANCE MAJOR COURSE- AMJ 4:

(Credits: Theory-04, Practicals-02)

Marks: 15 (5 Attd. + 10 SIE: 1Hr) + 60 (ESE: 3Hrs) = 75**Pass Marks: Th (SIE + ESE) = 30*****Instruction to Question Setter for******Semester Internal Examination (SIE 10+5=15 marks):***

There will be two group of questions. Question No.1 will be very short answer type in Group A consisting of five questions of 1 mark each. Group B will contain descriptive type two questions of five marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 10 Marks, (b) Class Attendance Score (CAS) of 5 marks. Conversion of Attendance into score may be as follows: (Attendance Upto 45%, 1mark; 45<Attd.<55, 2 marks; 55<Attd.<65, 3 marks; 65<Attd.<75, 4 marks; 75<Attd, 5 marks)

End Semester Examination (ESE 60 marks):

There will be two group of questions. Group A is compulsory which will contain three questions. Question No.1 will be very short answer type consisting of five questions of 1 mark each. Question No.2 & 3 will be short answer type of 5 marks. Group B will contain descriptive type five questions of fifteen marks each, out of which any three are to answer.

Note: There may be subdivisions in each question asked in Theory Examinations.

AGRICULTURE GEOGRAPHY**Theory: 60 Lectures****Course Learning Outcomes:**

After the completion of course, the students will have ability to:

1. Conceptualize the agriculture and its determinants.
2. Get the overview of Indian and World agriculture regions and systems.
3. Have sound knowledge of agriculture revolutions and food security.

Course Content:

1. Defining the field: Introduction, nature and scope; Land use/ land cover definition and classification.
2. Determinants of Agriculture: Physical, Technological and Institutional
3. Agricultural Regions of India: Agro-climatic, Agro-ecological & Crop Combination Regions.
4. Agricultural Systems of the world (Whittlesey's classification) and Agricultural Land Use Model (Von Thunen, modification and relevance)
5. Food Security: Concept, approaches, pattern, Indian revolution and government policies.

Reference Books:

1. Basu, D.N., and Guha, G.S., (1996): Agro-Climatic Regional Planning in India, Vol.I& II, Concept Publication, New Delhi.
2. Bryant, C.R., Johnston, T.R, (1992): Agriculture in the City Countryside, Belhaven Press, London.
3. Burger, A., (1994): Agriculture of the World, Aldershot, Avebury.
4. Grigg, D.B., (1984): Introduction to Agricultural Geography, Hutchinson, London.
5. Hussain, M. (1996): Systematic Agricultural Geography, Rawat Publications, Jaipur.
6. Ilbery, B. W., (1985): Agricultural Geography: A Social and Economic Analysis, Oxford Univ. Press.
7. Mohammad, N., (1992): New Dimension in Agriculture Geography, Vol. I to VIII, Concept Pub., New Delhi
8. Roling, N.G., and Wageruters, M.A.E., (ed.) (1998): Facilitating Sustainable Agriculture, Cambridge University Press, Cambridge.
9. Shafi, M., (2006): Agricultural Geography, Doring Kindersley India Pvt. Ltd., New Delhi
10. Singh, J., and Dhillon, S.S., (1984): Agricultural Geography, Tata McGraw Hill, New Delhi.
11. Tarrant, J. R., (1973): Agricultural Geography, David and Charles, Devon.

GEOGRAPHY PRACTICAL- AMJ 4 LAB:**Marks : Pr (ESE: 3Hrs) =25****Pass Marks: Pr (ESE) = 10*****Instruction to Question Setter for******End Semester Examination (ESE):***

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment = 15 marks

Practical record notebook = 05 marks

Viva-voce = 05 marks

AGRICULTURE GEOGRAPHY PRACTICALS:**60 Lectures**

1. Determination of crop combination method by Weaver and Rafiullah method
 2. Determination of crop intensity
 3. Agricultural crop efficiency
-

COURSES OF STUDY FOR **INTRODUCTORY/ MINOR ELECTIVE** FYUGP IN
“GEOGRAPHY”

SEMESTER I/ II/ III

INTRODUCTORY REGULAR COURSE

1 Paper

I. INTRODUCTORY REGULAR COURSE (IRC)

(Credits: Theory-02, Practicals-01)

- All Four Introductory & Minor Papers of Geography to be studied by the Students of **Other than Geography Honours**.
- Students of **Geography Honours** must Refer Content from the **Syllabus of Opted Introductory & Minor Elective Subject**.

Marks: 15 (5 Attd. + 10 SIE: 1Hr) + 60 (ESE: 3Hrs) = 75	Pass Marks: Th (SIE + ESE) = 30
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Instruction to Question Setter for***Semester Internal Examination (SIE 10+5=15 marks):***

There will be two group of questions. Question No.1 will be very short answer type in Group A consisting of five questions of 1 mark each. Group B will contain descriptive type two questions of five marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 10 Marks, (b) Class Attendance Score (CAS) of 5 marks. Conversion of Attendance into score may be as follows: (Attendance Upto 45%, 1mark; 45<Attd.<55, 2 marks; 55<Attd.<65, 3 marks; 65<Attd.<75, 4 marks; 75<Attd, 5 marks)

End Semester Examination (ESE 60 marks):

There will be two group of questions. Group A is compulsory which will contain three questions. Question No.1 will be very short answer type consisting of five questions of 1 mark each. Question No.2 & 3 will be short answer type of 5 marks. Group B will contain descriptive type five questions of fifteen marks each, out of which any three are to answer.

Note: There may be subdivisions in each question asked in Theory Examinations.

INTRODUCTORY GEOGRAPHY**Theory: 30 Lectures****Course Content:**

1. Origin of the Earth, Interior structure of the earth, Earthquake and volcanoes
2. Evolution of landforms- Fluvial, glacial, Aeolian, coastal
3. Structure and composition of atmosphere, pressure belt and planetary winds and climatic regions
4. Distribution of human races, religion, language
5. Distribution, density, and growth of World population

Reference Books;

1. Bloom, A. L., (2003): Geomorphology: A Systematic Analysis of Late Cenozoic Landforms, Prentice-Hall of India, New Delhi.
2. Bridges, E. M., (1990): World Geomorphology, Cambridge University Press, Cambridge.
3. Christopherson, R. W. and Birkeland, G. H., (2012) Geosystems: An Introduction to Physical Geography (8th edition), Pearson Education, New Jersey.
4. Das Gupta, A and Kapoor, A.N., (2001) Principles of Physical Geography, S.C. Chand & Company Ltd. New Delhi.

GEOGRAPHY PRACTICAL- IRC LAB:**Marks : Pr (ESE: 3Hrs) =25****Pass Marks: Pr (ESE) = 10*****Instruction to Question Setter for******End Semester Examination (ESE):***

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

<i>Experiment</i>	<i>= 15 marks</i>
<i>Practical record notebook</i>	<i>= 05 marks</i>
<i>Viva-voce</i>	<i>= 05 marks</i>

TOOLS AND TECHNIQUES OF GEOGRAPHY:**60 Lectures**

Scale- simple linear scale and RF

Study of Topographical Maps- Conventional signs and Interpretation (one each- hilly/plain area)

Practical Record:

A Project File comprising one exercise each, on scale and interpretation of topographic sheet

Reference Books;

1. Anson, R., and Ormelling F. J., (1994): International Cartographic Association: Basic Cartographic, Vol.Pregmen Press.
 2. Singh, Gopal., (1998): Map Work and Practical Geography (4th Edition), Vikas Publishing House, Ahmedabad.
 3. Gupta, K.K. and Tyagi V.C., (1992): Working with Map, Survey of India, DST, New Delhi.
 4. Kraak, M.J., (2010):Cartography: Visualization of Geospatial Data (3rd edition), Pearson Education Ltd., London.
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SEMESTER IV**MINOR ELECTIVE-1****1 Paper****I. MINOR ELECTIVE (MN 1)**

(Credits: Theory-04, Practicals-02)

Marks: 15 (5 Attd. + 10 SIE: 1Hr) + 60 (ESE: 3Hrs) = 75**Pass Marks: Th (SIE + ESE) = 30*****Instruction to Question Setter for******Semester Internal Examination (SIE 10+5=15 marks):***

There will be **two** group of questions. **Question No.1** will be **very short answer type in Group A** consisting of five questions of 1 mark each. **Group B** will contain **descriptive type** two questions of five marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 10 Marks, (b) Class Attendance Score (CAS) of 5 marks. Conversion of Attendance into score may be as follows: (Attendance Upto 45%, 1mark; 45<Attd.<55, 2 marks; 55<Attd.<65, 3 marks; 65<Attd.<75, 4 marks; 75<Attd, 5 marks)

End Semester Examination (ESE 60 marks):

There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1** will be **very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3** will be **short answer type** of 5 marks. **Group B** will contain **descriptive type** five questions of fifteen marks each, out of which any three are to answer.

Note: There may be subdivisions in each question asked in Theory Examinations.

GEOGRAPHY OF INDIA AND JHARKHAND**Theory: 60 Lectures****Course Objectives:**

After the completion of course, the students will have ability to:

1. Understand the physical profile of the India and Jharkhand
2. Study the resource endowment and its spatial distribution and utilization for sustainable development
3. Synthesize and develop the idea of regional dimensions.

Course Content:

1. India: Physiographic Divisions, seasons, drainage, Soil and Natural vegetation
2. Distribution of Population by Race, and Language of India.
3. Economic features of India: Mineral and Power Resources: Distribution and Utilization of Iron Ore, Coal, Petroleum, Gas; Agricultural Production of Rice, Wheat; Industrial Corridors and Industrial Regions of India
4. Regional Account of Jharkhand: Physiography, Drainage, Climate, natural vegetation, Population and tribes (Santhal, Oraon, Munda);
5. Economic features of Jharkhand: Agriculture, minerals and industry -iron and steel industry, silk; Tourism

Reference Books:

1. Deshpande, C. D., (1992): India: A Regional Interpretation, ICSSR, New Delhi.
2. Douglas, L. Johnson., (2009): World Regional Geography, Tenth edition, Pearson Education Inc, New Jersey.
3. Johnson, B. L. C., ed. (2001): Geographical Dictionary of India. Vision Books, New Delhi.
4. Khullar, D.R. (2014): India: A Comprehensive Geography, Kalyani Publishers, New Delhi.

5. Majid Husain (2009): Geography of India, Tata McGraw hill Education Private Ltd, New Delhi.
6. Mandal, R. B. (ed.), (1990): Patterns of Regional Geography An International Per.. Vol. 3 Indian Perspective.
7. Pathak, C. R. (2003): Spatial Structure and Processes of Development in India. Regional Science Ass., Kolkata.
8. Sdyasuk, Galina and P, Sengupta., (1967): Economic Regionalisation of India, Census of India.
9. Sharma, T.C. (2013): Economic Geography of India. Rawat Publication, Jaipur.
10. Singh R. L., (1971): India: A Regional Geography, National Geographical Society of India.
11. Singh, Jagdish., (2003): India - A Comprehensive & Systematic Geography, Gyanodaya Praka, Gorakhpur.
12. Singh, R. B. and Prokop, Pawel.,(2016): Environmental Geography of South Asia,

GEOGRAPHY PRACTICAL- MN 1 LAB:

Marks : Pr (ESE: 3Hrs) =25

Pass Marks: Pr (ESE) = 10

Instruction to Question Setter for

End Semester Examination (ESE):

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment	= 15 marks
Practical record notebook	= 05 marks
Viva-voce	= 05 marks

CATOGRAPHIC TECHNIQUE 1:

60 Lectures

1. Map Projections – Classification, Properties and Uses; Graphical Construction of Polar Zenithal Stereographic Projection, Simple Conical Projection with One standard parallel and Two standard parallel, Bonne’s Projections
2. Type and Sources of Data; Methods of geographical data Collection
3. Field Techniques- Observation (Participant / Non-Participant), Questionnaires (Open/ Closed / Structured / Non-Structured)

Reference Books

1. Anson R. and Ormelling F. J., 1994: International Cartographic Association: Basic Cartographic Vol. Pregmen Press.
2. Gupta K.K. and Tyagi, V. C., 1992: Working with Map, Survey of India, DST, New Delhi.
3. Mishra R.P. and Ramesh, A., 1989: Fundamentals of Cartography, Concept, New Delhi.
4. Monkhouse F. J. and Wilkinson H. R., 1973: Maps and Diagrams, Methuen, London.
5. Rhind D. W. and Taylor D. R. F., (eds.), 1989: Cartography: Past, Present and Future, Elsevier, International Cartographic Association.
6. Robinson A. H., 2009: Elements of Cartography, John Wiley and Sons, New York.
7. Sharma J. P., 2010: Prayogic Bhugol, Rastogi Publishers, Meerut.
8. Singh R. L. and Singh R. P. B., 1999: Elements of Practical Geography, Kalyani Publishers.

SEMESTER V**MINOR ELECTIVE-2****1 Paper****I. MINOR ELECTIVE (MN 2)**

(Credits: Theory-04, Practicals-02)

Marks: 15 (5 Attd. + 10 SIE: 1Hr) + 60 (ESE: 3Hrs) = 75**Pass Marks: Th (SIE + ESE) = 30*****Instruction to Question Setter for******Semester Internal Examination (SIE 10+5=15 marks):***

There will be **two** group of questions. Question No.1 will be **very short answer type in Group A** consisting of five questions of 1 mark each. **Group B will contain descriptive type** two questions of five marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 10 Marks, (b) Class Attendance Score (CAS) of 5 marks. Conversion of Attendance into score may be as follows: (Attendance Upto 45%, 1mark; 45<Attd.<55, 2 marks; 55<Attd.<65, 3 marks; 65<Attd.<75, 4 marks; 75<Attd, 5 marks)

End Semester Examination (ESE 60 marks):

There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** five questions of fifteen marks each, out of which any three are to answer.

Note: There may be subdivisions in each question asked in Theory Examinations.

ENVIRONMENTAL GEOGRAPHY & SUSTAINABLE DEVELOPMENT**Theory: 60 Lectures****Course Learning Outcomes:**

After the completion of course, the students will have ability to:

1. Appreciate the structure and functions of ecosystems with examples
2. Understand the environmental problems and relevant management strategies
3. Understand difficulties in defining the components of sustainable development
4. Distinguish the patterns of regional development of the world and the need for sustainable development plan

Course Content:

1. Environmental Geography: Concepts and Approaches; Ecosystem – Concept and Structure; Ecosystem Functions.
2. Environmental Problems and Management: Air Pollution; Solid and Liquid Waste; Biodiversity Loss
3. Sustainable Resource Development: Definition, Components and Limitations
4. The Millennium Development Goals: National Strategies and International Experiences
5. Sustainable Development Policies and Programmes: The proposal for SDGs at Rio+20; SDGs; Principles of Good Governance; National Environmental Policy

Reference Books:

1. Anand, Subhash (2010) Solid Waste Management, Mittal Publication, New Delhi.
2. Casper, J.K. (2010) Changing Ecosystems: Effects of Global Warming. Info base Pub. New York.
3. Hudson, T. (2011) Living with Earth: An Introduction to Environmental Geology, PHI Learning Private Limited, New Delhi.
4. Kumaraswamy K., Alagappa Moses A., and M. Vasanthi (2018) Glimpses of Environmental Sciences, Notion Press, Chennai.

5. Miller, G.T. (2007) Living in the Environment: Principles, Connections, and Solutions, Brooks/ Cole Cengage Learning, Belmont.
6. Agyeman, Julian, Robert D. Bullard and Bob, Evans., (Eds.) (2003): Just Sustainabilities: Development in an Unequal World. London: Earthscan. (Introduction and conclusion.).
7. Ayers, Jessica and David, Dodman., (2010): "Climate change adaptation and development I: the state of the debate". Progress in Development Studies 10(2): 161-168.
8. Baker, Susan., (2006): Sustainable Development. Milton Park, Abingdon, Oxon; New York, N.Y.: Routledge.
9. Brosius, Peter., (1997): "Endangered forest, endangered people: Environmentalist representations of indigenous knowledge", Human Ecology 25: 47-69.
10. Lohman, Larry., (2003): Re-imagining the population debate, Corner House Briefing.

GEOGRAPHY PRACTICAL- MN 2 LAB:

Marks : Pr (ESE: 3Hrs) =25

Pass Marks: Pr (ESE) = 10

Instruction to Question Setter for

End Semester Examination (ESE):

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment	= 15 marks
Practical record notebook	= 05 marks
Viva-voce	= 05 marks

CARTOGRAPHIC TECHNIQUE 2:

60 Lectures

1. Diagrammatic Data Presentation – Line, Bar and Circle.
2. Thematic Mapping Techniques – Properties, Uses and Limitations; Areal Data -- Choropleth, Dot, Proportional Circles; Point Data – Isopleths.
3. Cartographic Overlays – Point, Line and Areal Data. Thematic Maps – Preparation

Reference Books

1. Cuff J. D. and Mattson M. T., 1982: Thematic Maps: Their Design and Production, Methuen Young Books
2. Dent B. D., Torguson J. S., and Holder T. W., 2008: Cartography: Thematic Map Design (6th Edition), Mcgraw-Hill Higher Education
3. Gupta K. K. and Tyagi V. C., 1992: Working with Maps, Survey of India, DST, New Delhi. Kraak M.-J. and Ormeling F., 2003: Cartography: Visualization of Geo-Spatial Data, Prentice- Hall.
4. Mishra R. P. and Ramesh A., 1989: Fundamentals of Cartography, Concept, New Delhi. Sharma J. P., 2010: Prayogic Bhugol, Rastogi Publishers, Meerut.
5. Singh R. L. and Singh R. P. B., 1999: Elements of Practical Geography, Kalyani Publishers. Slocum T. A., McMaster R. B. and Kessler F. C., 2008: Thematic Cartography and Geovisualization (3rd Edition), Prentice Hall.
6. Tyner J. A., 2010: Principles of Map Design, The Guilford Press

SEMESTER VI**MINOR ELECTIVE-3****1 Paper****I. MINOR ELECTIVE (MN 3)**

(Credits: Theory-04, Practicals-02)

Marks: 15 (5 Attd. + 10 SIE: 1Hr) + 60 (ESE: 3Hrs) = 75**Pass Marks: Th (SIE + ESE) = 30*****Instruction to Question Setter for******Semester Internal Examination (SIE 10+5=15 marks):***

There will be **two** group of questions. Question No.1 will be **very short answer type in Group A** consisting of five questions of 1 mark each. **Group B will contain descriptive type** two questions of five marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 10 Marks, (b) Class Attendance Score (CAS) of 5 marks. Conversion of Attendance into score may be as follows: (Attendance Upto 45%, 1mark; 45<Attd.<55, 2 marks; 55<Attd.<65, 3 marks; 65<Attd.<75, 4 marks; 75<Attd, 5 marks)

End Semester Examination (ESE 60 marks):

There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** five questions of fifteen marks each, out of which any three are to answer.

Note: There may be subdivisions in each question asked in Theory Examinations.

CLIMATE CHANGE VULNERABILITY AND ADAPTATION**Theory: 60 Lectures****Course Learning Outcomes:**

After the completion of course, the students will have ability to:

1. Understand the foundational concepts of climate change and its impacts.
2. Assess the human and environmental vulnerability to climate change.
3. Learn the various adaptation and mitigation for reducing the impacts of climate change and national action plan.

Course Content:

1. Climate Change: Understanding Climate Change; Greenhouse Gases and Global Warming; Global Climatic Assessment- IPCC
2. Climate Change and Vulnerability: Physical Vulnerability; Economic Vulnerability; Social Vulnerability
3. Impact of Climate Change: Agriculture and Water; Flora and Fauna; Human Health
4. Adaptation and Mitigation: Global Initiatives with Particular Reference to South Asia.
5. National Action Plan on Climate Change; Local Institutions (Urban Local Bodies, Panchayats)

Reference Books:

1. IPCC (2014): Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.
2. IPCC (2007): Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change.

3. OECD (2008): Climate Change Mitigation: "What do we do?" (Organisation and Economic Co-operation and Development).
 4. Sen, Roy, S., and Singh, R.B., (2002): Climate Variability, Extreme Events and Agricultural Productivity in Mountain Regions, Oxford & IBH Pub., New Delhi.
 5. Singh, M., Singh, R.B., and Hassan, M.I., (Eds.) (2014): Climate change and biodiversity, Proceedings of IGU Rohtak Conference, Volume 1. Advances in Geographical and Environmental Studies, Springer
 6. Singh, R.B., Mal, Suraj, and Huggel, Christian (2018): Climate Change, Extreme Events and Disaster Risk Reduction, Springer, Switzerland, pages 309.
 7. UNEP (2007): Global Environment Outlook: GEO4: Environment for Development, United Nations Environment Programme.
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GEOGRAPHY PRACTICAL- MN 3 LAB:

Marks : Pr (ESE: 3Hrs) =25

Pass Marks: Pr (ESE) = 10

Instruction to Question Setter for

End Semester Examination (ESE):

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment	= 15 marks
Practical record notebook	= 05 marks
Viva-voce	= 05 marks

STATISTICAL METHODS IN GEORAPHY:

60 Lectures

1. Sources of Data- primary, secondary
2. Measures of central tendency- Mean, median and mode
3. Graphic representation- histogram, Ogive, polygons

Reference Books:

1. Mahmood A., 1977: Statistical Methods in Geographical Studies, Concept. Pal S. K., 1998: Statistics for Geoscientists, Tata McGraw Hill, New Delhi.
 2. Sarkar, A. (2013) Quantitative geography: techniques and presentations. Orient Black Swan Private Ltd., New Delhi
 3. Silk J., 1979: Statistical Concepts in Geography, Allen and Unwin, London. Spiegel M. R.: Statistics, Schaum's Outline Series.
 4. Yeates M., 1974: An Introduction to Quantitative Analysis in Human Geography, McGraw Hill, New York.
 5. Shinha, Indira (2007) Sankhyiki bhugol. Discovery Publishing House, New Delhi
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FORMAT OF QUESTION PAPER FOR SEMESTER INTERNAL EXAMINATION

Question format for 10 Marks:

Subject/ Code		Exam Year
F.M. =10	Time=1Hr.	
General Instructions:		
i. Group A carries very short answer type compulsory questions.		
ii. Answer 1 out of 2 subjective/ descriptive questions given in Group B .		
iii. Answer in your own words as far as practicable.		
iv. Answer all sub parts of a question at one place.		
v. Numbers in right indicate full marks of the question.		
Group A		
1.		[5x1=5]
i.	.....
ii.	.....
iii.	.....
iv.	.....
v.	.....
Group B		
2.	.....	[5]
3.	.....	[5]
Note: There may be subdivisions in each question asked in Theory Examination.		

Question format for 20 Marks:

Subject/ Code		Exam Year
F.M. =20	Time=1Hr.	
General Instructions:		
i. Group A carries very short answer type compulsory questions.		
ii. Answer 1 out of 2 subjective/ descriptive questions given in Group B .		
iii. Answer in your own words as far as practicable.		
iv. Answer all sub parts of a question at one place.		
v. Numbers in right indicate full marks of the question.		
Group A		
1.		[5x1=5]
i.	.....
ii.	.....
iii.	.....
iv.	.....
v.	.....
2.	.....	[5]
Group B		
3.	.....	[10]
4.	.....	[10]
Note: There may be subdivisions in each question asked in Theory Examination.		

FORMAT OF QUESTION PAPER FOR END SEMESTER UNIVERSITY EXAMINATION

Question format for 50 Marks:

F.M. =50	Subject/ Code Time=3Hrs.	Exam Year
General Instructions:		
i. Group A carries very short answer type compulsory questions. ii. Answer 3 out of 5 subjective/ descriptive questions given in Group B . iii. Answer in your own words as far as practicable. iv. Answer all sub parts of a question at one place. v. Numbers in right indicate full marks of the question.		
<u>Group A</u>		
1.		[5x1=5]
i.	
ii.	
iii.	
iv.	
v.	
<u>Group B</u>		
2.	[15]
3.	[15]
4.	[15]
5.	[15]
6.	[15]
Note: There may be subdivisions in each question asked in Theory Examination.		

Question format for 60 Marks:

F.M. =60	Subject/ Code Time=3Hrs.	Exam Year
General Instructions:		
i. Group A carries very short answer type compulsory questions. ii. Answer 3 out of 5 subjective/ descriptive questions given in Group B . iii. Answer in your own words as far as practicable. iv. Answer all sub parts of a question at one place. v. Numbers in right indicate full marks of the question.		
<u>Group A</u>		
1.		[5x1=5]
i.	
ii.	
iii.	
iv.	
v.	
2.	[5]
3.	[5]
<u>Group B</u>		
4.	[15]
5.	[15]
6.	[15]
7.	[15]
8.	[15]
Note: There may be subdivisions in each question asked in Theory Examination.		

Question format for 75 Marks:

F.M. = 75	Subject/ Code	Exam Year
Time=3Hrs.		
General Instructions:		
i. Group A carries very short answer type compulsory questions. ii. Answer 4 out of 6 subjective/ descriptive questions given in Group B . iii. Answer in your own words as far as practicable. iv. Answer all sub parts of a question at one place. v. Numbers in right indicate full marks of the question.		
Group A		
1.		[5x1=5]
i.	
ii.	
iii.	
iv.	
v.	
2.	[5]
3.	[5]
Group B		
4.	[15]
5.	[15]
6.	[15]
7.	[15]
8.	[15]
9.	[15]
Note: There may be subdivisions in each question asked in Theory Examination.		

Question format for 100 Marks:

F.M. = 100	Subject/ Code	Exam Year
Time=3Hrs.		
General Instructions:		
i. Group A carries very short answer type compulsory questions. ii. Answer 4 out of 6 subjective/ descriptive questions given in Group B . iii. Answer in your own words as far as practicable. iv. Answer all sub parts of a question at one place. v. Numbers in right indicate full marks of the question.		
Group A		
1.		[10x1=10]
i.	
ii.	
iii.	
iv.	
v.	
vi.	
vii.	
viii.	
ix.	
x.	
2.	[5]
3.	[5]
Group B		
4.	[20]
5.	[20]
6.	[20]
7.	[20]
8.	[20]
9.	[20]
Note: There may be subdivisions in each question asked in Theory Examination.		