



**MODIFIED CBCS CURRICULUM OF
M.A. GEOGRAPHY PROGRAMME**

SUBJECT CODE = GEO

FOR POST GRADUATE COURSES UNDER RANCHI UNIVERSITY




Implemented w.e.f.
Academic Session 2018-2020

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COURSE STRUCTURE FOR M.A. GEOGRAPHY

Table AI-1: Distribution of 80 Credits for Subjects having Practical Papers

[*wherever there is a practical examination there will be no tutorial and vice –versa.]

Course	Papers	Credits Theory + Practical	Credits Theory + Tutorial
I. Foundation Course (FC)			
1. Foundation Course Compulsory Foundation/ Elective Foundation	(FC) 1 Paper	1X5=5	1X5=5
II. Core Course (CC)			
Theory	7 Papers/11 Papers	7X5=35	11X5=55
Practical/ Tutorial*	3 Papers/-----	3X5=15	
Project	1 Paper	1X5=5	1X5=5
III. Elective Course (EC)			
A. Ability Enhancement Course of the Core Course opted			
	(AE/EC 1) 1 Paper	1X5=5	1X5=5
B. Discipline Centric Elective			
Theory + Practical	(DC/EC 2&3) 2 Papers 1 Paper	2X5=10 1x5=5	
OR Theory/Practical/Tutorial*	1Paper + 1 Practical/Dissertation		2X5=10
OR Generic Elective/ Interdisciplinary (GE/EC 2&3)			
Theory OR Theory/Practical/Tutorial*	2 Papers 1 Paper + 1 Practical/Dissertation		
Total Credit = 80			= 80

Table AI-1.1: Course structure for M.Sc Programme with Practical Papers

Semester	Subject (Core Courses) 11 Papers	Allied (Elective Courses) 4 Papers	Foundation Course (Compulsory Course) 1 Paper	Total Credits
Sem-I	C-1, C-2, C-3 (5+5+5=15 Credits)		Foundation Course FC (05 Credits)	20 Credits
Sem-II	C-4, C-5, C-6, C-7 (5+5+5+5=20 Credits)			20 Credits
Sem-III	C-8, C-9, C-10 (5+5+5=15 Credits)	EC1 (05 Credits)		20 Credits
Sem-IV	C-11 (Project) (05 Credits)	EC2, EC3, EP (5+5+5=15Credits)		20 Credits
Total = 80 Credits				

COURSES OF STUDY FOR M.A. GEOGRAPHY

2018 onwards**Table AI-2 Subject Combinations allowed for M. Sc. Programme (80 Credits)**

Foundation Course FC 1 Paper	Core Subject CC 11 Papers	Ability Enhancement Course AE 1 Paper	Discipline Centric Elective/ Generic Elective Course DC/ GE/ EC 3 Papers
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Table AI-2.1 Semester wise Examination Structure for Mid Sem & End Sem Examinations:

Sem	Core, AE/ GE/ DC/ EC & Compulsory FC Courses				Examination Structure		
	Paper	Paper Code	Credit	Name of Paper	Mid Semester Evaluation (F.M.)	End Semester Evaluation (F.M.)	End Semester Practical / Viva (F.M.)
I	Foundation Course	FCGEO101	5	Development of Geographical Thought	30	70	----
	Core Course	CCGEO102	5	Geomorphology	30	70	----
	Core Course	CCGEO103	5	Climatology	30	70	----
	Practical's on Core	CPGEO104	5	Practical-I	----	----	70 + 30
II	Core Course	CCGEO201	5	Geography of India	30	70	----
	Core Course	CCGEO202	5	Oceanography	30	70	----
	Core Course	CCGEO203	5	Population Geography	30	70	----
	Practical's on Core	CPGEO204	5	Practical-II	----	----	70 + 30
III	Ability Enhancement Course	ECGEO301	5	A. Agriculture Geography / B. Settlement Geography / C. Tourism Geography	30	70	----
	Core Course	CCGEO302	5	Economic Geography	30	70	----
	Core Course	CCGEO303	5	Geography of Jharkhand	30	70	----
	Practical's on Core	CPGEO304	5	Practical-III (Physical Survey)	----	----	70 + 30
IV	Elective	ECGEO401	5	A. Hydrology and Water Resources / B. Regional Planning & Develop./ C. Environmental Geography	30	70	----
	Elective	ECGEO402	5	A. Soil Geography / B. Urban Geography / C. Remote Sensing & GIS/GPS	30	70	----
	Practical's on Elective	EPGEO403	5	A. Soil Geography & Hydrology-P / B. Urban Geog. & Reg. Planning-P / C. Remote Sensing & GIS/GPS-P	----	----	70 + 30
	PROJECT	PRGEO404	5	Project Work (Dissertation)	----	----	70 + 30

SEMESTER I
4 Papers**Total 100 x 4 = 400 Marks****I. COMPULSORY FOUNDATION COURSE [FCGEO101]:**

(Credits: Theory-04, Tutorial-01)

Marks: 30 (MSE: 20Th. 1Hr + 5Attd. + 5Assign.) + 70 (ESE: 3Hrs)=100	Pass Marks (MSE:17 + ESE:28)=45
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Instruction to Question Setter:***Mid Semester Examination (MSE):***

There will be **two** groups of questions in written examinations of 20 marks. **Group A is compulsory** and will contain five questions of **very short answer type** consisting of 1 mark each. **Group B will contain descriptive type five** questions of five marks each, out of which any three are to be answered.

End Semester Examination (ESE):

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

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

The Mid Semester Examination shall have three components. (a) Two Semester Internal Assessment Test (SIA) of 20 Marks each, (b) Class Attendance Score (CAS) of 5 marks and (c) Class Performance Score (CPS) of 5 marks. "**Better of Two**" shall be applicable for computation of marks for SIA.

(Attendance Upto75%, 1mark; 75<Attd.<80, 2 marks; 80<Attd.<85, 3 marks; 85<Attd.<90, 4 marks; 90<Attd, 5 marks).

DEVELOPMENT OF GEOGRAPHICAL THOUGHT**Theory: 60 Hours; Tutorial: 15 Hours****Unit 1:**

The Field of Geography: Definition and Meaning of Geography, Nature and Scope of Geography, Geography as a Social and Natural Science, Limits in Geography, Traditions in Geography, Inter-disciplinary and Intra-disciplinary approaches in Geography.

Unit 2:

Pioneers and their contributions to Geography: Ancient period – Greek, Romans, Indians and Chinese. Medieval period - Arabs and Geographical Discoveries. Modern period – French, British, American and Russian.

Unit 3:

Determinism, Possibilism: Neo-Determinism and Social Determinism, Quantitative Revolution. Geographical Models – need, features, types and classification. Geographical Paradigms.

Unit 4:

Explanations in Geography - Cognitive, Cause & Effect, Temporal & Functional, System Analysis and Regional Concepts, Modern Themes in Geographical Thought – Positivism, Existentialism, Realism, Radicalism, Behaviouralism.

References:

- Adhikari S. (2004) Fundamentals of Geographic thought, Concept Publishers, New Delhi.
- Dikshit R.D. (2001). Geographical Thought: A Conceptual History of Ideas, Prentice Hall Publishing Company, New Delhi-2
- Harvey ME (2002) Theme in Geographical Thought, R.K. Publications and Distributors, Ansari Road, N. Delhi
- Majid Hussain (2001) Evolution of Geographic Thought, Rawat Publications, New Delhi-02
- David Harvey (2000) Explanations in Geography, Macmillan, New York.
- Peter Hagget (1972): Geography: A Modern Synthesis
- Frazier J.W. (1982); Applied Geography, Prentice Hall, New Delhi.
- Singh. I (2006): Diverse Aspect of Geographical Thought: ALFA Publications, New Delhi.

II. CORE COURSE [CCGEO102]:

(Credits: Theory-04, Tutorial-01)

Marks: 30 (MSE: 20Th. 1Hr + 5Attd. + 5Assign.) + 70 (ESE: 3Hrs)=100**Pass Marks (MSE:17 + ESE:28)=45*****Instruction to Question Setter:******Mid Semester Examination (MSE):***

There will be **two** groups of questions in written examinations of 20 marks. **Group A is compulsory** and will contain five questions of **very short answer type** consisting of 1 mark each. **Group B will contain descriptive type five** questions of five marks each, out of which any three are to be answered.

End Semester Examination (ESE):

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

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

The Mid Semester Examination shall have three components. (a) Two Semester Internal Assessment Test (SIA) of 20 Marks each, (b) Class Attendance Score (CAS) of 5 marks and (c) Class Performance Score (CPS) of 5 marks. “**Better of Two**” shall be applicable for computation of marks for SIA.

(Attendance Upto 75%, 1 mark; 75 < Attd. < 80, 2 marks; 80 < Attd. < 85, 3 marks; 85 < Attd. < 90, 4 marks; 90 < Attd., 5 marks).

GEOMORPHOLOGY**Theory: 60 Hours; Tutorial: 15 Hours****Unit 1:**

Geomorphology: Definition and Scope of Geomorphology, Fundamental concepts – Geological structure and land forms, Uniformitarianism, Multi cyclic and Poly cyclic evolution of landforms, Theories of landscape development

Unit 2:

Earth Movements: Orogenic, Epirogenic Movements and resultant landforms, Forces of instability, Isostasy, Plate Tectonics, Seismicity, Vulcanicity, Orogenic structures with reference to the evolution of the Himalayas.

Unit 3:

Exogenic Processes: Concept of gradation, Agents and processes of gradation, Process of Weathering and Mass Wasting, Landforms produced by – Drainage system and Drainage patterns, Slope evolution.

Unit 4:

Geomorphic Processes: Dynamics of Aeolian, Marine, Glacial, Coastal processes and resulting landforms, Recent Trends in Geomorphology, Applied geomorphology: Urban geomorphology, Geomorphic hazards.

References:

- Ahmed E. (1985) Geomorphology, Kalyani Publishers, New Delhi.
- Strahler A.N. (1968) The Earth Sciences, Harper & Row Intl. Edn, New York
- Thornberry W.D. (1969) Principles of Geomorphology 2nd Edition, Wiley Intl. Edn. & Wiley Eastern Reprints 1984.
- Verstappen H. (1983) Applied Geomorphology, Geomorphological Surveys for Environmental Development, Elsevier, Amsterdam
- Woodridge S.W and R.S. Morgan (1991) An Outline of Geomorphology, The Physical Basis of Geography, Orient Longman, Kolkata.
- Dayal P. (1995) A Text Book of Geomorphology 2nd Edition., Sukla Book/Dept. Patna.
- Homes A. (1965) Principles of Physical Geology, 3rd Edition, ELBSS Edn.
- Goudie Anrew et.al. (1981) Geomorphological Techniques, George Allen & Unwin, London.
- Bloom A.L. (1978) Geomorphology: A Systematic Analysis of Late Cenozoic Landforms Prentice – Hall of India, New Delhi.
- Singh, Savindra (2001): Bhuakriti Vigya, Pravalika Publications, Allahabad.
- Singh, Savindra (2015): Bhautik Bhugol, Pravalika Publications, Allahabad.
- Worcester P.G. (1965), A Text Book of Geomorphology, Can North and 2nd Edition, East-West Edn. N Delhi.
- J.A. Steers: Unstable Earth
- Tiwari, Ram Kumar (2016) Bhoutik Bhugol, Hindi Granth Academy, Jaipur, (Raj.)

III. CORE COURSE [CCGEO103]:

(Credits: Theory-04, Tutorial-01)

Marks: 30 (MSE: 20Th. 1Hr + 5Attd. + 5Assign.) + 70 (ESE: 3Hrs)=100**Pass Marks (MSE:17 + ESE:28)=45****Instruction to Question Setter:****Mid Semester Examination (MSE):**

There will be **two** groups of questions in written examinations of 20 marks. **Group A is compulsory** and will contain five questions of **very short answer type** consisting of 1 mark each. **Group B will contain descriptive type five** questions of five marks each, out of which any three are to be answered.

End Semester Examination (ESE):

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

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

The Mid Semester Examination shall have three components. (a) Two Semester Internal Assessment Test (SIA) of 20 Marks each, (b) Class Attendance Score (CAS) of 5 marks and (c) Class Performance Score (CPS) of 5 marks. "**Better of Two**" shall be applicable for computation of marks for SIA.

(Attendance Upto75%, 1mark; 75<Attd.<80, 2 marks; 80<Attd.<85, 3 marks; 85<Attd.<90, 4 marks; 90<Attd, 5 marks).

CLIMATOLOGY**Theory: 60 Hours; Tutorial:15 Hours****Unit 1:**

Definitions, nature, scope of Climatology. Elements of weather and climate. Origin, Composition and Structure of atmosphere. Temperature: Solar radiation principles, Greenhouse effects, Horizontal and Vertical distribution of temperature & inversion of temperature. Global warming.

Unit 2:

Atmospheric Pressure: Pressure Gradient, Coriolis Effect, Horizontal and vertical distribution of Air Pressure and Pressure Belts. Winds: Planetary, Monsoons, Local Winds, Jet Streams. Mechanism of monsoon. Humidity and Precipitación. El-Nino and La Nina phenomena, El-Nino-Southern Oscillation (ENSO).

Unit 3:

Air masses: Definition, Nature, Source Region, Clasificación of air masses. Fronts - Frontogenesis and Frontolysis, Classification of fronts, Cyclones: Tropical Cyclones & Temperate Cyclones - Origin, types, structure and distribution.

Unit 4:

Classification of World climates: Koppen's & Thornthwaite classification. Climatic changes, Weather forecasting, Problems and prospects of weather forecasting in India.

References:

- Savindra Singh (2005): Climatology, Prayag Pustak Bhawan, 20-A, University Road, Allahabad- 02. UP.
- Critchfield H.J. (2005): General Climatology, Prentice Hall of Inida, Pvt. Ltd. New Delhi-01.
- Lal D.S (2009): Physical Geography, Sharada Pustak Bhawan, II, University Road, Allahabad – UP.
- Siddhartha K (2005): Atmosphere, Weather and Climate, Kisalaya Publications Pvt.ltd., C—2, Padma Apartment, Mehruli, New Delhi-30.
- Lal D.S. (2005): Climatology: Sharadu Pustak Bhawan, 11, Univ. Road, Allahabad -02, UP.
- Dasagupta A and Kapoor A.N. (1978): Principles of Physical Geography, Chand S & Co. Ltd. New Delhi.
- Strahler A.N. (1976): The Earth Sciences, Harpu & Row, Intl. Ed. New York.
- Alka Goutam (2012): Climatology, Prayag Pustak Bhawan, 20 A, University Road, Allahabad – 02, UP
- Tiwari, Ram Kumar (2016) Bhoutik Bhugol, Hindi Granth Academy, Jaipur, (Raj.).

IV. CORE COURSE PRACTICAL [CPGEO104]:

(Credits: Practical-05)

Marks: 30 (ESE: 20 Viva + 5Attd. + 5 Record) + 70 (ESE Pr: 6Hrs)=100**Pass Marks =45****Instruction to Question Setter:****End Semester Practical Examination (ESE Pr):**

The questions in practical examination will be of equal to 70 marks and will be so framed that the students are able to answer them within the stipulated time. 20 marks will be awarded on the performance in viva voce whereas 10 marks will be awarded on cumulative assessment which is further subdivided as 5 marks for Practical record and 5 marks for Attendance.

Note:

(Attendance Upto75%, 1mark; 75<Attd.<80, 2 marks; 80<Attd.<85, 3 marks; 85<Attd.<90, 4 marks; 90<Attd, 5 marks).

PRACTICAL-I**Practical: 60Hours****Unit 1:**

Map Projection: Sinusoidal Projection (Simple), Mollweide's Projection (interrupted), Globular Projection, Gnomonic Projection (Polar, Equatorial and Oblique).

Unit 2:

Geological Maps: Construction of sections and interpretation, Identification of rocks and minerals.

Unit 3:

Triangular Graph, Poly Linear Graph, Scattered diagram, Lorenz Curve, Divided Rectangular diagram.

Unit 4:

Profiles: Serial, Superimposed, Projected and Composite, Slope analysis (Wentworth's Method), Stream ordering.

References:

- Monkhouse F.J and Wilkinson HR (1952) Maps and Diagrams, their compilations and concentration, Muthuen & Co. London.
- Harwel JD, Newson MD. (1973)- Techniques in Physical Geography, Mc. Millan Edu. Ltd. London.
- Mishra RP. And Ramesh A (1968) – Fundamentals of Cartography, Prasaraanga, University of Mysore, Mysore.
- Robinson & Marison (1995), Elements of Cartography USA.
- R.L. Singh (2010) Practical Geography, Sharada Pustak Bhavan, 11, University Road, Allahabad, UP - India
- Singh RL. (1979) Elements of Practical Geography, Kalyani Publishers, New Delhi.
- Sharma, J.P. (2011): Prayogik Bhugol, Rastogi Publications, Meeruth.
- Chouhan, P.R. (2005) Prayogik Bhogol, Vasundhara Prakashan, Gorakhpur.
- Hiralal (2006): Prayogik Bhugol, Radha Publications, New Delhi
- Tiwari, R.C. & Tripathi, S. (2011): Prayogatamak Bhugol, Prawalika Publications, Allahabad.
- Khullar, D.R. (2002): Prayogatamak Bhugol Ke Tatwa, New Academic Publishing Company, Jalandhar.
- Singh, L.R. (2011): Prayogik Bhugol Ke Sidhhant, Sharda Pustak Bhawan, Allahabad.

SEMESTER II**4 Papers****Total 100 x 4 = 400 Marks****I. CORE COURSE [CCGEO201]:**

(Credits: Theory-05)

Marks: 30 (MSE: 20Th. 1Hr + 5Attd. + 5Assign.) + 70 (ESE: 3Hrs)=100	Pass Marks (MSE:17 + ESE:28)=45
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Instruction to Question Setter:**Mid Semester Examination (MSE):**

There will be **two** groups of questions in written examinations of 20 marks. **Group A is compulsory** and will contain five questions of **very short answer type** consisting of 1 mark each. **Group B will contain descriptive type five** questions of five marks each, out of which any three are to be answered.

End Semester Examination (ESE):

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

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

The Mid Semester Examination shall have three components. (a) Two Semester Internal Assessment Test (SIA) of 20 Marks each, (b) Class Attendance Score (CAS) of 5 marks and (c) Class Performance Score (CPS) of 5 marks. “**Better of Two**” shall be applicable for computation of marks for SIA.

(Attendance Upto75%, 1mark; 75<Attd.<80, 2 marks; 80<Attd.<85, 3 marks; 85<Attd.<90, 4 marks; 90<Attd, 5 marks).

GEOGRAPHY OF INDIA**Theory: 60 Hours; Tutorial:15 Hours****Unit 1:**

Physical Setting of India: Location, Physiographic Divisions, Natural Drainage Systems and their Distribution. Climate: seasons & climatic regions. Soils: Types, Distribution, Erosion and Conservation. Natural Vegetation: Types and Distribution, Degradation and Conservation.

Unit 2:

Agriculture: Major Agricultural Crops: Rice, Wheat, Cotton, Sugarcane, Maize, Jowar, Tea, Coffee, Rubber, Mulberry Crops. Green Revolution in India, and Food Security in India. Irrigation: Major River Projects.

Unit 3:

Distribution, production and trade of important Minerals & Power resources: Iron Ore, Manganese, Mica, Copper, Bauxite, Coal, Petroleum, Natural Gas, Atomic Energy, Hydral and Thermal Power. Growth, Development and Distribution of Major Industries: Iron & Steel, Engineering, Cement, Paper, Fertilizers, Cotton Textiles, Silk, Knowledge-based Industries, Industrial Regions of India.

Unit 4:

Growth & Development of Transportation Transport System: Roads, Railways, Airways and Inland Water, Population: Growth and Distribution, Composition and Density, Literacy, Sex Ratio, Fertility & Mortality & Health Services.

References:

- Khullar DR. (2009): India: A Comprehensive Geography, Kalyani Publishes, New Delhi, Hyderabad, Kolkota.
- Alka Gautam (2009) Geography of India, Sharada Pustak Bhawan, University Road, Allahabad – UP.

- Sharma T.C. & Coutinho O (2005): Economic and Commercial Geography of India, Vikas Publishing House Ltd., New Delhi-14
 - Tiwari R.C. (2008) Geography of India, Prayag Pustak Bhavan, 20-A, University Road, Allahabad- UP.
 - Pritivish Nag & Smita Sengupta (1992) Geography of India, Concept Publishing Company, New Delhi – 59.
 - Ranganath (2007): Geography of India, Vidhyanidhi Prakashan, Station Road, Gadag.
 - Phani Deka & Abani Bhagabati (1992): Geography: Economic and Regional, Wiley Eastern Limited, Ansari Raod, Daryaganj, New Delhi-01.
 - Majid Husain (2008): Geography of India, Tata Mc. Graw Hill Publishing Co. Ltd., New Delhi.
 - Singh R.L. (1971) ; India: A Regional Geography, National Geographical Society of India, Varanasi, UP.
 - Jadish Singh (2003): India: A comprehensive Systematic Geography, Gyanodaya Prakashan, Gorakhpur- UP.
 - India: Year Books- (PRD Govt. of India publishes every year).
 - <http://www.mapsofindia.com/geography>
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II. CORE COURSE [CCGEO202]:

(Credits: Theory-04, Tutorial-01)

Marks: 30 (MSE: 20Th. 1Hr + 5Attd. + 5Assign.) + 70 (ESE: 3Hrs)=100**Pass Marks (MSE:17 + ESE:28)=45****Instruction to Question Setter:****Mid Semester Examination (MSE):**

There will be **two** groups of questions in written examinations of 20 marks. **Group A is compulsory** and will contain five questions of **very short answer type** consisting of 1 mark each. **Group B will contain descriptive type five** questions of five marks each, out of which any three are to be answered.

End Semester Examination (ESE):

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

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

The Mid Semester Examination shall have three components. (a) Two Semester Internal Assessment Test (SIA) of 20 Marks each, (b) Class Attendance Score (CAS) of 5 marks and (c) Class Performance Score (CPS) of 5 marks. "**Better of Two**" shall be applicable for computation of marks for SIA.

(Attendance Upto75%, 1mark; 75<Attd.<80, 2 marks; 80<Attd.<85, 3 marks; 85<Attd.<90, 4 marks; 90<Attd, 5 marks).

OCEANOGRAPHY**Theory: 60 Hours; Tutorial:15 Hours****Unit 1:**

Nature and scope of Oceanography, Configuration of Ocean Floor - Continental Shelf, Slope, Ocean Plains and Ocean Deeps, Physical and Chemical properties of ocean water: Composition, Temperature and Salinity

Unit2:

Surface currents, Waves and tides, Marine biological environment, Biozones, Types of organism, Plankton, Nekton and Benthos, Food and mineral resources of the sea.

Unit 3: Major marine environment: Coastal, Estuaries, Deltas, Coastal Ecology-Coastal Dunes and Mangroves.

Unit 4:

Ocean Deposits: Types and Distribution, Coral Reefs: Origin, Types and Theories of Origin of Coral Reefs (Darwin, Dally and Murray). Impact of Humans on the Marine Environment. Recent Trends in Oceanography.

References:

- Lal. D.S. (2003) Oceanography, Sharada Pustak Bhavan, Allahabad 02.
- King Cuchalaine A.M. (2000) Oceanography for geographers, Edward Arnold publications, London.
- Savindra Singh (2004): physical geography, Prayog Pustak Bhavan, Allahabad -02
- Siddharth (2005) Oceanography: A brief introduction, Rawat Publishers. New Delhi.
- Sharma RC (2000) Oceanography for Geographers, Chaitanya Publishers, Allahabad -02
- Vattal and Sharma (2003), Oceanography for Geographers, Chaitanya Publishers, Allahabad -02
- Yadav A.S. (2002): Geography of Minerals of Oceans, concept Publishers, New Delhi,
- Basu S.K. (2003): Hand book of oceanography, Global vision, Delhi.
- Garisson Tom (1999): Oceanography, Cole, Wadsworth, New York.
- Sharma and Vattal (1962) Oceanography for Geographers, Chaitanya Publication House, Allahabad.
- Turman Harold (1985); Introductory Oceanography, Bell & Howell Co. London.
- Tiwari, Ram Kumar (2016) Bhautik Bhugol, Rajsthan Hindi Granth Academy, Jaipur.
- Gautam, Alka(2005): Jalwayu Evam Samudra Vigyan, Rastogi Publication, Meeruth.
- Kulshrestha, K.P. (2004): Samudra Vigyan, Kitab Ghar, Kanpur.

III. CORE COURSE [CCGEO203]:

(Credits: Theory-04, Tutorial-01)

Marks: 30 (MSE: 20Th. 1Hr + 5Attd. + 5Assign.) + 70 (ESE: 3Hrs)=100**Pass Marks (MSE:17 + ESE:28)=45****Instruction to Question Setter:****Mid Semester Examination (MSE):**

There will be **two** groups of questions in written examinations of 20 marks. **Group A is compulsory** and will contain five questions of **very short answer type** consisting of 1 mark each. **Group B will contain descriptive type five** questions of five marks each, out of which any three are to be answered.

End Semester Examination (ESE):

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

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

The Mid Semester Examination shall have three components. (a) Two Semester Internal Assessment Test (SIA) of 20 Marks each, (b) Class Attendance Score (CAS) of 5 marks and (c) Class Performance Score (CPS) of 5 marks. "**Better of Two**" shall be applicable for computation of marks for SIA.

(Attendance Upto75%, 1mark; 75<Attd.<80, 2 marks; 80<Attd.<85, 3 marks; 85<Attd.<90, 4 marks; 90<Attd, 5 marks).

POPULATION GEOGRAPHY**Theory: 60 Hours; Tutorial: 15 Hours****Unit1:**

Nature and Scope of Population Geography, Population Geography and Demography, Sources of Population Data, Distribution and Density of Population, Distribution and its Pattern in the World, Factors Influencing Distribution of Population in the world.

Unit 2:

Concept of Population Composition, Population Change: Growth of Population in the World and India, Components of Population Change, Fertility, Mortality and Migration, Determinants of Fertility and Mortality, Demographic Transition Theory.

Unit 3:

Migration - Meaning and Types, Causes and Consequences, Theories of Migration – Ravenstein & Lee.

Unit 4:

Population and Resources, Optimum Population, Population Resource Regions, Malthus Population Theory, Population Policy of India.

References:

- Chandna R.C. (2009), Geography of Population, Kalyani Publicishers, Ansari Road, Daryaganj, N. Delhi-2.
- Majid Hussain (1999), Human Geography, Rawat Publications, Jaipur.
- Trewartha GT. (1959) A Geography of Population, World Patterns, John Wiley and Sons Inc. New York.
- Ghosh BN. (1987) Fundamentals of Population Geography, Sterling Publishing Company, New Delhi
- R.K. Tripathi ((2000) Popolaton Geography, Commonwealth Publishers, New Delhi.
- Kayastha, S.L. (1998) Geography of Population, Rawat Publications, Jaipur.
- Clerk I (1984) Geography of Population, Approaches and Applications, Pergamon Press, Oxford, UK.
- Tiwari, Ram Kumar (2015): Jansankhya Bhugol, Prwalika Publication, Allahabad.
- Hiralal (2007): Jansankhya Bugol Ke Mul Tatwa, Radha Publication, New Delhi.
- Mourya, S.D. (2011): Jansankhya Bhugol, Sharda Pustak Bhawan, Allahabad.
- Dubey, K.K. & Singh, M.B. (2001): Jansankhya Bhugol, Rawat Publication, Jaipur.

IV. CORE COURSE PRACTICAL [CPGEO204]:

(Credits: Practical-05)

Marks: 30 (ESE: 20 Viva + 5Attd. + 5 Record) + 70 (ESE Pr: 6Hrs)=100**Pass Marks =45*****Instruction to Question Setter:******End Semester Practical Examination (ESE Pr):***

The questions in practical examination will be of equal to 70 marks and will be so framed that the students are able to answer them within the stipulated time. 20 marks will be awarded on the performance in viva voce whereas 10 marks will be awarded on cumulative assessment which is further subdivided as 5 marks for Practical record and 5 marks for Attendance.

Note:

(Attendance Upto75%, 1mark; 75<Attd.<80, 2 marks; 80<Attd.<85, 3 marks; 85<Attd.<90, 4 marks; 90<Attd, 5 marks).

PRACTICAL-II**Practical: 60Hours****INSTRUMENTAL SURVEY (PRACTICAL)****Unit 1:**

Importance of field work, Scope and purpose, Types of survey, Principles and applications of selected survey instruments, Plane Table, Plan preparation, Resection method: two point problem, three point problem, Tracing paper method.

Unit 2:

Prismatic Compass: Open and closed traverse, elimination of error by Bowditch Rule. Other smaller instruments: Sextant, Abney Level and Indian Clinometer. Dumpy Level: Traverse Survey, Spot height determination and contour plan preparation,

Unit 3:

Theodolite: horizontal and vertical (height) measurement, Accessible and inaccessible method. Survey of selected area, Preparation of base map by the use of surveying instruments.

Unit 4:

Measures of Central Tendency, Dispersion, Skewness, Kurtosis, Moments, Correlation, Regression.

References:

- Monkhouse F.J and Wilkinson HR (1952) Maps and Diagrams, their Compilations and Concentration, Muthuen & Co. London.
- Harwel JD, Newson MD. (1973)- Techniques in Physical Geography, Mc. Millan Edu. Ltd. London.
- Sarkar, A: Practical Geography – A Systematic Approach.
- R.L. Singh (2010) Practical Geography, Sharada Pustak Bhavan, 11, University Road, Allahabad, UP - India
- Singh RL. (1979) Elements of Practical Geography, Kalyani Publishers, New Delhi.
- Kaanetkar and Kulkarni: Surveying and Levelling, Part-I and Part-II.
- R.L. Singh (2010) Practical Geography, Sharada Pustak Bhavan, 11, University Road, Allahabad, UP - India
- Sharma, J.P. (2011): Prayogik Bhugol, Rastogi Publications, Meeruth.
- Chouhan, P.R. (2005) Prayogik Bhogol, Vasundhara Prakashan, Gorakhpur.
- Hiralal (2006): Prayogik Bhugol, Radha Publications, New Delhi
- Tiwari, R.C. & Tripathi, S. (2011): Prayogatamak Bhugol, Prawalika Publications, Allahabad.
- Khullar, D.R. (2002): Prayogatamak Bhugol Ke Tatwa, New Academic Publishing Company, Jalandhar.

SEMESTER III

4Papers**Total 100 x 4 = 400 Marks****I. ABILITY ENHANCEMENT COURSE [ECGEO301A]: (Credits: Theory-05)**

Marks: 30 (MSE: 20Th. 1Hr + 5Attd. + 5Assign.) + 70 (ESE: 3Hrs)=100	Pass Marks (MSE:17 + ESE:28)=45
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Instruction to Question Setter:**Mid Semester Examination (MSE):**

There will be **two** groups of questions in written examinations of 20 marks. **Group A is compulsory** and will contain five questions of **very short answer type** consisting of 1 mark each. **Group B will contain descriptive type five** questions of five marks each, out of which any three are to be answered.

End Semester Examination (ESE):

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

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

The Mid Semester Examination shall have three components. (a) Two Semester Internal Assessment Test (SIA) of 20 Marks each, (b) Class Attendance Score (CAS) of 5 marks and (c) Class Performance Score (CPS) of 5 marks. "**Better of Two**" shall be applicable for computation of marks for SIA.

(Attendance Upto75%, 1mark; 75<Attd.<80, 2 marks; 80<Attd.<85, 3 marks; 85<Attd.<90, 4 marks; 90<Attd, 5 marks).

A. AGRICULTURE GEOGRAPHY**Theory: 60 Hours; Tutorial:15Hours****Unit 1:**

Nature and scope, Significance and development of agricultural geography, Approaches to the study of agricultural geography, Origin and dispersal of agriculture, Sources of agricultural data.

Unit 2:

Determinants of agricultural land use – Physical, economic, social and technological, Land holding and land tenure systems, Land reforms, Land use policy and planning, Cropping pattern, Intensity of cropping.

Unit 3:

Theories of agricultural location based on several multi dimensional factors, Von Thunen's model and its recent modifications, Whittlesey's classification of agricultural regions, Agro-climatic regions of India.

Unit 4:

Agriculture in India – Land use and shifting cropping pattern, New trends in Indian agriculture, Green Revolution, White Revolution, Blue Revolution, Problems of Indian agriculture, Agricultural Policy of India.

References:

- Mohammad Shafi (2006): Agricultural Geography, Dorling Kindessley (India) Pv. Ltd. New Delhi.
 - Negi. B.S. (2003) Indian Agriculture: problems, Progress & Prospects, Vikas publishing house Pvt. Ltd. S. Ansari Road, Daryagani, New Delhi-2.
 - Majid Hussain (2000): Agricultural Geography, Ed Anmol Publishing Pvt. Ltd. Ansari Road, Daryagani, New Delhi-2.
 - Shafi M. (1999): Agricultural Geography, Kedarnath Ram Nath, 132, College road, Meetat UP-1.
 - Singh & Dhillion (2000): Agriculture Geography, Prayag Pustak Bhavan, 20 A, University road, Allahabad-211002, UP.
 - Jasbir singh (2001): Agriculture geography, Prayog Pustak Bhavan, 20 A, University road, Allahabad-211002, UP.
 - Memonia CB (1998): Agriculture Problems in India: Prayog Pustak Bhavan, 20 A, University road, Allahabad-211002, UP.
 - Majid Husain (2007): Systematic Agricultural Geography, Rawat publications, Jawahar Nagar, Jaipur, New Delhi – 92.
 - Goh Cheng Leong & Gillian C. Morgan (2009): Human and Economic Geography, Oxford University Press, New Delhi, New York.
 - The Hindu Publications: 2005 to 2010; Survey of Indian Agriculture.
 - Tiwari, R.C., & Singh, B.N. (2015): Krishi Bhugol, Prawalika Publications, Allahabad
 - Singh, Indira (2007): Krishi Bhugol, Discovery Publishing Home, New Delhi.
 - Lesely Simon (Translated by Shyam Sundar Katare) (1989): Krishi Bhugol, Madhya Pradesh Hindi Granth Academy, Bhopal.
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OR**ABILITY ENHANCEMENT COURSE [ECGEO301B]:** (Credits: Theory-05)

Marks: 30 (MSE: 20Th. 1Hr + 5Attd. + 5Assign.) + 70 (ESE: 3Hrs)=100	Pass Marks (MSE:17 + ESE:28)=45
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Instruction to Question Setter:**Mid Semester Examination (MSE):**

There will be **two** groups of questions in written examinations of 20 marks. **Group A is compulsory** and will contain five questions of **very short answer type** consisting of 1 mark each. **Group B will contain descriptive type five** questions of five marks each, out of which any three are to be answered.

End Semester Examination (ESE):

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

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

The Mid Semester Examination shall have three components. (a) Two Semester Internal Assessment Test (SIA) of 20 Marks each, (b) Class Attendance Score (CAS) of 5 marks and (c) Class Performance Score (CPS) of 5 marks. "**Better of Two**" shall be applicable for computation of marks for SIA.

(Attendance Upto75%, 1mark; 75<Attd.<80, 2 marks; 80<Attd.<85, 3 marks; 85<Attd.<90, 4 marks; 90<Attd, 5 marks).

B. SETTLEMENT GEOGRAPHY**Theory: 60 Hours; Tutorial:15 Hours****Unit 1:**

General Introduction, Evolution & Distribution of Settlements: Nature, Scope, Significance and Recent Trends in Settlement Geography. Evolution of Settlements in India: Emergence of Village Settlements, Origin and Growth of Towns; Basic and Non-Basic Concepts in Settlement formation. Distribution of Settlements, Spacing of Settlements-Application of Models of Christaller and Losch.

Unit 2:

The Functional classification of Settlements: Rural and Urban Settlements. Rural Settlements - Types of Rural Settlements, House Types, Morphology and Functions of Rural Settlements; Rural Service Centers and their Role in Urbanization Process. Indian Rural Settlements in Different Micro-Environmental Conditions: (a) Mountains (b) Desert Region (c) In the vicinity of Urban Centers.

Unit 3:

Urban Settlements - Classification of Urban Places: Non-Functional and Functional. Morphology of Indian Cities and Its Comparison with Western Cities; Functional Relations between Urban Settlements and their umlands.

Unit 4:

Theories in Settlement Geography – CBD, Centrifugal and centripetal forces theory, Urban Fringe, Urban structures theories. Rank size relationship. Settlement Geography of selected Indian Cities: Mumbai, Kolkata, Delhi, Chennai, Ranchi, Jamshedpur and Dhanbad.

References:

- Hudson, F. S. (1976) Geography of Settlements, Macdonald, London.
- Northam Ray, M. (1979). Urban Geography, John Wiley and Sons, New York.
- Ambrose, Peter, 1970: Concepts in Geography, Vol.-I, Settlement Pattern, Longman.
- Baskin, C., (Translator) 1996: Central Places in Southern Germany, Prentice-Hall Inc. Englewood Cliffs New Jersey.
- Haggett, Peter, Andrew D. Cliff and Allen Frey (Ed.) 1979: Locational Models Arnold Heinemann.
- King, Leslie, J., 1986: Central Place Theory, Saga Publications, New Delhi.

- Mayer, M. Harold and Clyde F. Kohn (Ed.) 1967 Readings in urban Geography, Central Book Depot, Allahabad.
 - Mitra, Asok, Mukherjee S and Bose, R., 1980: Indian Cities Abhinav Publications, New Delhi.
 - Nangia, Sudesh, 1976: Delhi Metropolitan Region, K.B. Publications, New Delhi.
 - Prakasa, Rao, V. L. S., 1992: Urbanisation in India: Spatial Dimensions, Concept Publishing Co., New Delhi.
 - Ramachandran, R., 1992: Urbanisation and Urban Systems in India, Oxford University Press, New Delhi.
 - Singh, R. L. and Kashi Nath Singh (Ed.) 1975: Readings in Rural Settlement Geography, National Geographical Society of India, Varanasi.
 - Marya, S.D. (2011): Adhiwas Bhugol, Sharda Pustak Bhawan, Allahabad.
 - Tiwari, R.C. (2011) Adhiwas Bhugol, Prawalika Publications, Allahabad.
 - Singh, S. (2008): Adhiwas Bhugol, Vishwa Bharti Publications, Delhi.
 - Bansal, S.C. (2003): Adhiwas Evam Jansankhya Bhugol, Rastogi Publication, Meeruth.
 - Singh, Ramyag (2012): Adhiwas Bhugol, Rawat Publication, Jaipur.
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OR**ABILITY ENHANCEMENT COURSE [ECGEO301C]:** (Credits: Theory-05)

Marks: 30 (MSE: 20Th. 1Hr + 5Attd. + 5Assign.) + 70 (ESE: 3Hrs)=100	Pass Marks (MSE:17 + ESE:28)=45
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Instruction to Question Setter:**Mid Semester Examination (MSE):**

There will be **two** groups of questions in written examinations of 20 marks. **Group A is compulsory** and will contain five questions of **very short answer type** consisting of 1 mark each. **Group B will contain descriptive type five** questions of five marks each, out of which any three are to be answered.

End Semester Examination (ESE):

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

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

The Mid Semester Examination shall have three components. (a) Two Semester Internal Assessment Test (SIA) of 20 Marks each, (b) Class Attendance Score (CAS) of 5 marks and (c) Class Performance Score (CPS) of 5 marks. "**Better of Two**" shall be applicable for computation of marks for SIA.

(Attendance Upto 75%, 1 mark; 75 < Attd. < 80, 2 marks; 80 < Attd. < 85, 3 marks; 85 < Attd. < 90, 4 marks; 90 < Attd., 5 marks).

C. TOURISM GEOGRAPHY**Theory: 60 Hours; Tutorial: 15 Hours****Unit 1:**

Definition, Nature, Scope and Extent, Concept of Tourism, Importance of Tourism, Relationship between Geography and Tourism, Ecotourism, Agro-tourism, Heritage tourism and Adventure tourism.

Unit 2:

Types of Tourism – Domestic and International Tourism, Adventure, Wildlife, Medical, Pilgrimage, Business, Leisure, Pleasure, and Cultural Tourisms, Tourists types – Local, National and International, Economic and socio- cultural impact of Tourism.

Unit 3:

Infrastructural approach for the development of Tourism – Mode of transportation, Govt. agencies, Guides, License, Hotels, Resorts, Youth Hostels, Home stays, Government policies for planning and promotion of Tourism in India. Prospects and planning of tourism in Jharkhand.

Unit 4:

Case Studies – Hill Station – Mount Abu, Shimla, Ooty, Beach Points – Kwalum, Goa and Marino Beach. Historical Centres – Mysore, Jaipur and Agra, Religious Centers – Puri, Shirdi and Tirupathi, Dams – Sardar Sarovar, Bhakranangal and Masanjore dam, National Parks – Gir National Park, Palamu Tiger Reserve, Betla, Nandan Kanan National Park, Bhubaneswar.

References:

- Bhatia A.K (1996): Tourism Development: Principles and Practices. Sterling Publishers, New Delhi.
- Kaul R.K (1985): Dynamics of Tourism and Recreation, Inter- India, New Delhi.
- Kaur, J. (1985): Himalyan Pilgrimages and New Tourism, Himalyan Books, New Delhi
- Milton, D. (1993): Geography of World Tourism, Prentice Hall, New York
- Peace, D. G. (1987): Tourism To-Day: A geographical Analysis, Harlow, Longman
- Robinson, H. A. (1996): A geography of Tourism, McDonald and Evans, London
- Sharma, J. K. (ed.) (2000): Tourism, Planning and Development- A New Perspective, Kanishka
- Singh, R. L. and Kashi Nath Singh (Ed.) 1975: Readings in Rural Settlement Geography, National Geographical Society of India, Varanasi.
- Kapoor, B.K. (2008) Paryatan Bhugol, Vishwa Bharti Publication, Delhi.

II. CORE COURSE [CCGEO302]:

(Credits: Theory-04, Tutorial-01)

Marks: 30 (MSE: 20Th. 1Hr + 5Attd. + 5Assign.) + 70 (ESE: 3Hrs)=100**Pass Marks (MSE:17 + ESE:28)=45****Instruction to Question Setter:****Mid Semester Examination (MSE):**

There will be **two** groups of questions in written examinations of 20 marks. **Group A is compulsory** and will contain five questions of **very short answer type** consisting of 1 mark each. **Group B will contain descriptive type five** questions of five marks each, out of which any three are to be answered.

End Semester Examination (ESE):

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

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

The Mid Semester Examination shall have three components. (a) Two Semester Internal Assessment Test (SIA) of 20 Marks each, (b) Class Attendance Score (CAS) of 5 marks and (c) Class Performance Score (CPS) of 5 marks. "**Better of Two**" shall be applicable for computation of marks for SIA.

(Attendance Upto75%, 1mark; 75<Attd.<80, 2 marks; 80<Attd.<85, 3 marks; 85<Attd.<90, 4 marks; 90<Attd, 5 marks).

ECONOMIC GEOGRAPHY**Theory: 60 Hours; Tutorial:15 Hours****Unit 1:**

Nature, Scope and importance of Economic Geography, Evolution of Economic Geography, approaches to economic Geography, Concept of Economy, Spatial structure of the economy, Economy and economic Geography.

Unit 2:

Primary Economic Activities: Hunting, Fishing, Food gathering, Herding, Timbering, Agriculture and Mining. Commercial Economic Activities: Dairying, Mixed Farming, Poultry, and Plantations. Fishing and Forestry: Law of the sea, fishing grounds and aquaculture. Issues and challenges for the development of fishing and forestry.

Unit 3:

Knowledge-based Technologies: Electronic age, Spatial Information Technology, Telecommunication, High tech-transport, Effects of Liberalization, Privatization and Globalization (LPG) on Economic activities in the World and India.

Unit 4:

Economic Development: Growth and Development, Definition, Concept, Contents of Development and Sustainable Development. Human Resource Development: Concept, Measurement, Indicators and Components.

References:

- Alexander (1975): Economic Geography
- Guha J.L. and Chattoraj (2004), A New approach to Economic Geography, A Study of Resources, The World Press Pvt. Ltd. Calcutta.
- Zimmerwan- World Resources and Industries
- Khanna K.K. and Gupta V.K (1993) Economic and Commercial Geography, Sultan Chand, New Delhi.
- Mallappa P. (2004) Udyam Saupahmagalu, Chetan Book House, Mysore
- Roy. PR. (2001) Economic Geography- A study of Resources, New Central Book Agency, (P) Ltd. Calcutta.
- P. Hagget (1997), Geography, A Modern Synthesis, Haper and Roo Publications, New York.
- Dubey RN. And Negi BS (2002)- Economic Geography of India, Kitabmahal, Allahabad.

III. CORE COURSE [CCGEO303]:

(Credits: Theory-04, Tutorial-01)

Marks: 30 (MSE: 20Th. 1Hr + 5Attd. + 5Assign.) + 70 (ESE: 3Hrs)=100**Pass Marks (MSE:17 + ESE:28)=45****Instruction to Question Setter:****Mid Semester Examination (MSE):**

There will be **two** groups of questions in written examinations of 20 marks. **Group A is compulsory** and will contain five questions of **very short answer type** consisting of 1 mark each. **Group B will contain descriptive type five** questions of five marks each, out of which any three are to be answered.

End Semester Examination (ESE):

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

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

The Mid Semester Examination shall have three components. (a) Two Semester Internal Assessment Test (SIA) of 20 Marks each, (b) Class Attendance Score (CAS) of 5 marks and (c) Class Performance Score (CPS) of 5 marks. "**Better of Two**" shall be applicable for computation of marks for SIA.

(Attendance Upto75%, 1mark; 75<Attd.<80, 2 marks; 80<Attd.<85, 3 marks; 85<Attd.<90, 4 marks; 90<Attd, 5 marks).

GEOGRAPHY OF JHARKHAND**Theory: 60 Hours; Tutorial:15 Hours****Unit 1:**

Physical: Areal differentiation and characterization of land units based on rock type, topography, drainage, climate, vegetation and soil.

Unit 2:

Agriculture, areal pattern differentiation of different crops, crop intensity (irrigated and un irrigated), yield of crops and agricultural productivity of the land, impact of physical, economic and institutional factors (size of land holding, land tenure, agricultural practices etc.)

Unit 3:

Location of economic activities, types of industries (Large, medium and small), relationship of the resource based and footloose industries, industrial regions, minerals and power resources.

Unit 4:

Population: Demographic and socio-economic characteristics and locations of infrastructure facilities and amenities, Demographic and socio-economic conditions of tribes – Oraon, Munda and Santhal, Settlement hierarchy and pattern, Urbanization, Tourism.

References:

- Ahmad, E: Bihar: A Physical, Economic and Regional Geography, Ranchi University, Ranchi, 1965.
- Tiwari, R.K.: Jharkhand Ka Bhoogol, Rajesh Publication, New Delhi.
- Tiwari, R.K.: Jharkhand ki Rooprekha, Shivangan Publication, Ranchi.
- Singh, R.L.: India: A Regional Geography, National Geographical Society, India, Varanasi, 1971.
- Ram, L.N.: A Systematic Geography of Bihar, Department of Geography, Patna University, Patna, 1971.

IV. CORE COURSE PRACTICAL [CPGEO304]:

(Credits: Practical-05)

Marks: 30 (ESE: 30 Written Exam) + 70 (ESE: 50 Report + 20 Viva)=100**Pass Marks =45*****Instruction to Question Setter:******End Semester Practical Examination (ESE Pr):***

1. *Physical Survey report will have to be submitted to the H.O.D. ten days before examination and it will be placed before the external examiners who will ask questions related to the concerned report.*
2. *Marking will be made on the basis of Written Exam (30 Marks), the report presentation (50 Marks) and viva (20 Marks).*

PRACTICAL-III**PHYSICAL SURVEY (PRACTICAL)*****Objective:***

The main objective of the field work (Physical Survey) is to conduct an extensive survey of a contiguous wider region of India and identify salient landforms, their genesis and their impact on human life, flora and fauna. It is an extensive field study outside the class room and the University provides the requisite fund for conducting the survey.

Unit 1:

Trace the prominent features of the area to be surveyed. Identify the salient landform features of the selected area on a topographical sheet.

Unit 2:

Identify the landforms on the surface, while in the field. Also note the agents of erosion, transportation and deposition associated with the landforms.

Unit 3:

Identify and classify the biodiversity in the area (Flora and Fauna).

Unit 4:

Observe the relationship of various landforms, flora and fauna with land use, settlement, structure and life style of the people.

Note:

Based on observations of the above characteristics, prepare a field survey report. The report need 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 land use/settlement pattern. This is also a training in Report Writing.

SEMESTER IV

4 Papers**Total 100 x 4 = 400 Marks**
I. GENERIC/DISCIPLINE CENTRIC ELECTIVE [ECGEO401A]:
 (Credits: Theory-04, Tutorial-01)

Marks: 30 (MSE: 20Th. 1Hr + 5Attd. + 5Assign.) + 70 (ESE: 3Hrs)=100	Pass Marks (MSE:17 + ESE:28)=45
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Instruction to Question Setter:***Mid Semester Examination (MSE):***

There will be **two** groups of questions in written examinations of 20 marks. **Group A is compulsory** and will contain five questions of **very short answer type** consisting of 1 mark each. **Group B will contain descriptive type five** questions of five marks each, out of which any three are to be answered.

End Semester Examination (ESE):

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

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

The Mid Semester Examination shall have three components. (a) Two Semester Internal Assessment Test (SIA) of 20 Marks each, (b) Class Attendance Score (CAS) of 5 marks and (c) Class Performance Score (CPS) of 5 marks. "**Better of Two**" shall be applicable for computation of marks for SIA.

(Attendance Upto 75%, 1 mark; 75 < Attd. < 80, 2 marks; 80 < Attd. < 85, 3 marks; 85 < Attd. < 90, 4 marks; 90 < Attd., 5 marks).

A. HYDROLOGY AND WATER RESOURCES**Theory: 60 Hours; Tutorial: 15 Hours****Unit 1:**

Definition and scope of hydrology, importance of water, hydrological cycle, water storages – glaciers, river channels, lakes and reservoirs, soil moisture, ground water,

Unit 2:

Surface water: sources and factors affecting quality and quantity; precipitation: forms and factors; interception: factors; runoff: sources and factors affecting runoff; evaporation: measurement and factors; evapotranspiration: control and factors.

Unit 3:

Ground water: characteristics of stream flow, darcy's law, permeability, infiltration, ground water storage, ground water aquifers in different rock systems, movement and discharge.

Unit 4:

Environmental influences on water resources; sectoral demands for water; urban water supply; water management; water harvesting; water pollution and control.

References:

- Timothy, Davie. 2003. Fundamentals of Hydrology. Routledge, Taylor and Francis Group, U.K.
- Todd, D.K. 2009. Groundwater Hydrology. John Wiley & Sons Inc.
- Mahajan, G. 1989. Evaluation and Development of Groundwater. Ashish Publishing House, New Delhi.
- Karanth, K.R.C. 1988. Ground Water: Exploration, Assessment and Development. Tata-Mcgraw Hill, New Delhi.
- Andrew D. Ward and Stanley Trimble. 2004(2nd edition). Environmental Hydrology. Lewis Publishers.
- Wright. R.T and Nebel. B.J. 2002(8th Edition). Environmental Science: Toward a Sustainable Future. Prentice Hall India Ltd.
- Vijay P. Singh. 1995. Environmental Hydrology. Kluwer Academic Publications, The Netherlands.

- ❑ Subramaniam V. 2002. Text Book of Environmental Science. Narosa Publishing House, Delhi.
- ❑ Santhosh Kumar Garg. 2007. Hydrology and Water Resources Engineering. Khanna Publishers, Delhi.
- ❑ Patra, K.C. 2004. Hydrology and Water Resources Engineering. Narosa Publications, New Delhi.
- ❑ Viessmann, Warren., Lewis, Gary. 2002(5th edition) Introduction to Hydrology. Prentice Hall.
- ❑ Hendriks Martin. 2010. Introduction to Hydrology. Oxford University Press, London.
- ❑ Raghunath H.M.2006. Hydrology: Principles, Analysis and Design. New Age International Publishers , Mysore.

OR**GENERIC/DISCIPLINE CENTRIC ELECTIVE****[ECGEO401B]:**

(Credits: Theory-04, Tutorial-01)

Marks: 30 (MSE: 20Th. 1Hr + 5Attd. + 5Assign.) + 70 (ESE: 3Hrs)=100	Pass Marks (MSE:17 + ESE:28)=45
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Instruction to Question Setter:Mid Semester Examination (MSE):

There will be **two** groups of questions in written examinations of 20 marks. **Group A is compulsory** and will contain five questions of **very short answer type** consisting of 1 mark each. **Group B will contain descriptive type five** questions of five marks each, out of which any three are to be answered.

End Semester Examination (ESE):

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

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

The Mid Semester Examination shall have three components. (a) Two Semester Internal Assessment Test (SIA) of 20 Marks each, (b) Class Attendance Score (CAS) of 5 marks and (c) Class Performance Score (CPS) of 5 marks. "**Better of Two**" shall be applicable for computation of marks for SIA.

(Attendance Upto75%, 1mark; 75<Attd.<80, 2 marks; 80<Attd.<85, 3 marks; 85<Attd.<90, 4 marks; 90<Attd, 5 marks).

B. REGIONAL PLANNING & DEVELOPMENT**Theory: 60 Hours; Tutorial: 15 Hours****Unit 1:**

Concept of Region: Types, hierarchy and characteristics of regions, Delineation methods of regions – Formal, Functional and Nodal. Geography and regional planning. Concept and scope of Regional Planning. Regional Approaches. Principles, methods, techniques of regional planning, need for planning.

Unit 2:

Conceptual and theoretical frame work of regional planning: Growth pole and growth foci. Planning Processes: Sectoral, Multilevel, decentralized planning. Integrated Area Development Planning (IADP). Planning for tribal and hill areas, drought prone areas, command areas and watershed. Planning for metropolitan region: CDP, satellite towns, urban green belt.

Unit 3:

Concept of Development, Indicators of development. Regional imbalance. Regional development strategies. Problems and issues in regional planning. Sustainable development of regions. Regionalization of India: Based on natural, economic and administration (macro and meso levels only).

Unit 4:

Theories of regional development: Central Place Theory, Diffusion theory (Hegerstand's). The role of locational theories in regional planning process. An evaluation of regional disparities / imbalances – backward regions of India. Identification of backward areas, Planning backward area. Harnessing the information through GIS, Remote Sensing, GPS for regional planning and development.

References:

- Tiwari R. C. (2005) Geography of India, Prayoug Pustak Bhavan, Allahabad.
 - Singh Jagadish (2003) India – A Comprehensive Systematic Geography, Gyanodaya Prakashan, Gorakhpur, U.P.
 - Mishra R. P (1969) Regional Planning Concepts Techniques Policies and case studies, Prasaranga, The Mysore University, Mysore.
 - V.K.R.V. Rao (1978). Planning in Perspective, Allied Publishers Private Limited, Bombay.
 - Mahesh Chand and Viney K. Puri (1985)n Regional Planning in India, Allied Publishers Pvt. Ltd., Bombay.
 - Mishra R.P. (1979) Regional Planning and National Development, Vikas Publishing House Pvt. Ltd., New Delhi.
 - Laxmidevi (1997) Planning Development and Regional Deisparities, Anmol Publication Pvt. Ltd., New Delhi.
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OR**GENERIC/ DISCIPLINE CENTRIC ELECTIVE [ECGEO401C]:**

(Credits: Theory-04, Tutorial-01)

Marks: 30 (MSE: 20Th. 1Hr + 5Attd. + 5Assign.) + 70 (ESE: 3Hrs)=100	Pass Marks (MSE:17 + ESE:28)=45
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Instruction to Question Setter:**Mid Semester Examination (MSE):**

There will be **two** groups of questions in written examinations of 20 marks. **Group A is compulsory** and will contain five questions of **very short answer type** consisting of 1 mark each. **Group B will contain descriptive type five** questions of five marks each, out of which any three are to be answered.

End Semester Examination (ESE):

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

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

The Mid Semester Examination shall have three components. (a) Two Semester Internal Assessment Test (SIA) of 20 Marks each, (b) Class Attendance Score (CAS) of 5 marks and (c) Class Performance Score (CPS) of 5 marks. "**Better of Two**" shall be applicable for computation of marks for SIA.

(Attendance Upto 75%, 1 mark; 75 < Attd. < 80, 2 marks; 80 < Attd. < 85, 3 marks; 85 < Attd. < 90, 4 marks; 90 < Attd., 5 marks).

C. ENVIRONMENTAL GEOGRAPHY Theory: 60 Hours; Tutorial: 15 Hours**Unit 1:**

Nature and Interdisciplinary Aspect of Environmental Geography. Ecological Approachs. Definition and Meaning of environment. Habitat. Ecological Niche. Bio-sphere and Biodiversity.

Unit 2:

Ecosystem: Structure and Functioning of Ecosystem, Pond as a Ecosystem, Food Chains, Food Webs, Food Pyramid. Biomes – Equatorial to Tundra i.e 11 types. Man and Environmental Relationships. Resource Use and Ecological Imbalance with reference to Soil, Forests and Energy Resources. Man Made Ecosystem - Urban, Ecotourism, National Parks and Sanctuaries. Depletion of Ozone, Green House Effect and Acid Rain.

Unit 3:

Man Induced Changes in Environment: Environmental Pollution, i.e. Air, Water, Noise, Solid Waste with special reference to India. Environmental Hazards, i.e. earth as Warehouses, Flood, Famines, Land Slides, Avalanches, Forest Fires, Impact of Green revolution and Extinction of Species.

Unit 4:

Principles of Environmental Management- Environmental Policy of India, (post 2000AD). Environment Impact Assessment (EIA). Global Summits and Agencies of Environment Conservation.

References

- Strahler A.N. (1968) The Earth Sciences, Harper International Education, New York.
- Richard H.B. (2004) Physical Geography, Heinmann Simple Services, Rupa & Company, New Delhi
- Robinson H. (1982) Bio Geography, ELBS, New York.
- Healey I.N. and Moore P.D. (1973) Bio-Geography, Backwell Oxford, U.K.
- Strahler A.N. and Strahler A.H. (1973) Environmental Geo Science, Hamilton, California.
- Savindra Singh (2004) Environmental Geography, Prawalika Publication, Allahabad,
- Savindra Singh (2004) Pryawaran Bhugol, Prawalika Publication, Allahabad,
- Paul Selman (2000) Environmental Planning, Sage Publicatoin, New Delhi.
- Tiwari, Ram Kumar (2005): Pryawaran Adhyayan, Luxmi Publications, New Delhi.
- Rao, B.P. (2000): Paryawaran Bhugol, Vasundhara Prakashan, Gorakhpur.
- Strahler A.N. and Strahler A.H. (1977) Geography and Man's Environment, John Wiley & Sons, N.York.

II. GENERIC/DISCIPLINE CENTRIC ELECTIVE [ECGEO402A]:

(Credits: Theory-04, Tutorial-01)

Marks: 30 (MSE: 20Th. 1Hr + 5Attd. + 5Assign.) + 70 (ESE: 3Hrs)=100	Pass Marks (MSE:17 + ESE:28)=45
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Instruction to Question Setter:***Mid Semester Examination (MSE):***

There will be **two** groups of questions in written examinations of 20 marks. **Group A is compulsory** and will contain five questions of **very short answer type** consisting of 1 mark each. **Group B will contain descriptive type five** questions of five marks each, out of which any three are to be answered.

End Semester Examination (ESE):

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

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

The Mid Semester Examination shall have three components. (a) Two Semester Internal Assessment Test (SIA) of 20 Marks each, (b) Class Attendance Score (CAS) of 5 marks and (c) Class Performance Score (CPS) of 5 marks. "**Better of Two**" shall be applicable for computation of marks for SIA.

(Attendance Upto 75%, 1 mark; 75 < Attd. < 80, 2 marks; 80 < Attd. < 85, 3 marks; 85 < Attd. < 90, 4 marks; 90 < Attd., 5 marks).

A. SOIL GEOGRAPHY**Theory: 60 Hours; Tutorial: 15 Hours****Unit 1:**

Nature, scope and significance of Soil Geography; its relationship with Pedology, Soil forming factors: parent material, organic, climatic, topographic, Spatio-temporal dimensions, Processes of soil formation and soil development: Physical, Biotic and Chemical. Soil profile.

Unit 2:

Soil organism, macro-animals (earthworms, sowbugs, mites, centipedes, rodents and insects), Micro-animals and plants-Nematodes, Protozoa, Rotifers, Fungi, Bacteria, algae and Actinomyces.

Unit 3:

Physical properties of soils: Morphology, Texture, Structure, Water, Air, Temperature and other properties of soil, Chemical properties of soil and soil reaction, Soil erosion, Degradation and Conservation

Unit 4:

Evaluation of land and soil: Parametric and non-parametric systems, Land capability classification, Soil reclamation and management: soil survey and landforms in environmental management, Sustainable development of soil resources with reference to India.

References:

- Miller, R. W. and Donahue, R. L. (1992): Soils: An Introduction to Soils and Plant Growth, Prentice-Hall of India, New Delhi
- Brady, N. C., and Weil, R. R. (2008): The Nature and Properties of Soils, Prentice Hall, New Jersey
- Pitty, A. F. (1978): Geography and Soil Properties, Methuen and Co., London
- Bridges, E. M. and Davidson, D. A. (1982): Principles and Applications of Soil Geography, Longman Group, London
- Daji, J. A. (1970): A Textbook of Soil Science, Asia Publication House, New York
- Birkeland, P. W (1999): Soils and Geomorphology, Oxford University Press, New York
- Govinda Rajan, S.V. and Gopala Rao, H.G.: Studies on soils of India, Vikas, New Delhi, 1978.
- Raychoudhuri, S.P.: Soils of India, ICAR, New Delhi, 1958.
- Bunting, B.T.: The Geography of Soils, McGraw Hill, New York.
- Clarke, G.R.: Study of the Soil in the Field, Oxford University Press, Oxford, 1957.
- Foth H.D. and Turk, L.M.: Fundamentals of Soil Science, John Wiley, New York, 1972.
- Bennet, B.T.: Soil Conservation, McGraw Hill, New York.

OR**GENERIC/DISCIPLINE CENTRIC ELECTIVE****[ECGEO402B]:**

(Credits: Theory-04, Tutorial-01)

Marks: 30 (MSE: 20Th. 1Hr + 5Attd. + 5Assign.) + 70 (ESE: 3Hrs)=100**Pass Marks (MSE:17 + ESE:28)=45****Instruction to Question Setter:****Mid Semester Examination (MSE):**

There will be **two** groups of questions in written examinations of 20 marks. **Group A is compulsory** and will contain five questions of **very short answer type** consisting of 1 mark each. **Group B will contain descriptive type five** questions of five marks each, out of which any three are to be answered.

End Semester Examination (ESE):

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

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

The Mid Semester Examination shall have three components. (a) Two Semester Internal Assessment Test (SIA) of 20 Marks each, (b) Class Attendance Score (CAS) of 5 marks and (c) Class Performance Score (CPS) of 5 marks. "**Better of Two**" shall be applicable for computation of marks for SIA.

(Attendance Upto75%, 1mark; 75<Attd.<80, 2 marks; 80<Attd.<85, 3 marks; 85<Attd.<90, 4 marks; 90<Attd, 5 marks).

B. URBAN GEOGRAPHY**Theory: 60 Hours; Tutorial: 15 Hours****Unit 1:**

Nature and scope of Urban Geography-Definition of Urban Settlements (Towns, Cities and Metro etc.), Attributes of urban places during ancient, medieval and modern period, Classification of urban settlements on the basis of size and function, Urban growth and theories, Central Place theory of Christaller and Losch, Contribution of Indian scholars to the studies of urban settlements.

Unit 2:

Urban Population Density and Land Value Curves- Urban Land Use – Vertical and Horizontal Growth of Cities, Concentric, Zonal and Multiple Nuclei Theories of Urban Structure.

Unit 3:

Urban Functions- Basic and Non-Basic- Urban Hierarchy- Rank-Size Rule – Central Place Theory – Functional Classification of Towns by C.D. Harris and H.J. Nelson. Urban Issues & Challenges: Water supply, traffic congestion, solid waste, smog, sewage and drainage system.

Unit 4:

Concept of City, Region and Urban Hinterland – Urban Sprawl- Urban Slums – Urban Crimes and their Trends with reference to India- Concept and Issues of Peri-Urbanization. Elements of Urban Planning – Urban Renewal – Policies of Urban Development in India – Master Plans of Ranchi City.

References:

- Beanjen-Garnier J&G. Chabot (1967) Urban Geography, Jhonwiley, New York.
- Northham Ray M. (1975) Urban Geography, Jhon Wiley & Sons, Inc. New York
- Ranan Paddison (2001) Hand Book or Urban Studies, University of Glasgow, U.K., Sage Publications, N. Delhi.
- Peter Roberts (2000) Urban Regeneration, University of Dundee, U.K., Sage Publication, New Delhi.
- Saskia Sassen (2000) Cities in a World Economy, University of Chicago, USA, Sage Publications, New Delhi.
- Stephen Ward (2004) Planning and Urban Change, Sage Publications, New Delhi
- Karen Stromme Christensen (1999) Cities and Complexity, University of California, Berkely USA, Sage Publication, New Delhi.
- Mayer H.M. & Kohn CF (1967) Urban Geography, Central Depot, Allahabad, India
- King Leslie J. & Regionald G. Gollodge (1978) Cities, Space and Behaviour 0 The Elements of Urban Geography, Pentice-Hall, Inc. Englewood Cliffs, New Jersey, USA.
- Mandal R.B. (2002) Urban Geography – A Text Book, Concept Publishing Company, New Delhi.
- Siddartha K & S. Mukherjee (1996). Cities, Urbanization and Urban Systems, Transworld Media and Communication Pvt. Ltd. New Delhi

- Johnson James H (1966) Urban Geography – An Introductory Analysis, Pergamon Press Oxford, London.
- Bansal, S.C. (2011): Nagariya Bhogol. Meenakshi Publication, Meeruth.
- www.geography.about.com/cs/cities/urbanl/geo/
- www.brixworth.demon.co.uk/leeds/

OR**GENERIC/ DISCIPLINE CENTRIC ELECTIVE****[ECGEO402C]:**

(Credits: Theory-04, Tutorial-01)

Marks: 30 (MSE: 20Th. 1Hr + 5Attd. + 5Assign.) + 70 (ESE: 3Hrs)=100	Pass Marks (MSE:17 + ESE:28)=45
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Instruction to Question Setter:Mid Semester Examination (MSE):

There will be **two** groups of questions in written examinations of 20 marks. **Group A is compulsory** and will contain five questions of **very short answer type** consisting of 1 mark each. **Group B will contain descriptive type five** questions of five marks each, out of which any three are to be answered.

End Semester Examination (ESE):

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

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

The Mid Semester Examination shall have three components. (a) Two Semester Internal Assessment Test (SIA) of 20 Marks each, (b) Class Attendance Score (CAS) of 5 marks and (c) Class Performance Score (CPS) of 5 marks. "**Better of Two**" shall be applicable for computation of marks for SIA.

(Attendance Upto 75%, 1mark; 75 < Attd. < 80, 2 marks; 80 < Attd. < 85, 3 marks; 85 < Attd. < 90, 4 marks; 90 < Attd, 5 marks).

C. REMOTE SENSING & GIS/GPS**Theory: 60 Hours; Tutorial: 15 Hours****Unit 1:**

Stages in remote sensing data acquisition; physics of remote sensing; electro magnetic spectrum (ems); emr and its interaction with atmosphere and earth surface features.

Unit 2:

Remote sensing - platforms: types and their orbital characteristics; sensors types: active and passive; sensors systems: whiskbroom and push broom; satellite series: irs, spot, ikonos and quick bird.

Unit 3:

Digital image processing: digital data formats; image restoration: geometric radiometric corrections and filtering. Image enhancement: linear and non linear contrast stretch; band combinations; image classifications: supervised and unsupervised.

Unit 4:

Geographic information system and global positioning system:

Components of GIS; Data Structures; Data Base Management System (DBMS); Data Models; spatial data analysis and applications; Fundamentals of GPS; Segments of GPS; GPS Applications.

References:

- Lillesand T.M and Keifer R.W. 2008(6th edition). Remote Sensing and Image Interpretation. John Wiley and Sons, New York.
- Joseph George. 2005(2nd edition), Fundamentals of Remote Sensing. University Press. Hyderabad
- Sabins, F.F. 1986. Remote Sensing: Principles and Interpretation. Freeman, New York
- Rashid S.M. and Mazhar A.K. 1993. Dictionary of Remote Sensing. Manak Publishing House, Delhi
- Lo, C.P. and Yeung AKW. 2006(2nd edition). Concepts and Techniques of GIS, Prentice – Hall of India, New Delhi.
- Masood, A.S . 2006. Introduction to GIS, Allahabad.
- Fazal S. and Rahman A. 2007. GIS Terminology. New Age International Publishings, New Delhi
- Leick. A. 2003(2nd edition). GPS Satellite Surveying. John Wiley and Sons, New York.
- N.K. Agarwal. 2004. Essentials of GPS, Spatial Network Pvt. Ltd.

III. GE/DC PRACTICAL [EPGEO403A]:

(Credits: Practical-05)

Marks: 30 (ESE: 20 Viva + 5Attd. + 5 Record) + 70 (ESE Pr: 6Hrs)=100**Pass Marks =45*****Instruction to Question Setter:******End Semester Practical Examination (ESE Pr):***

The questions in practical examination will be of equal to 70 marks and will be so framed that the students are able to answer them within the stipulated time. 20 marks will be awarded on the performance in viva voce whereas 10 marks will be awarded on cumulative assessment which is further subdivided as 5 marks for Practical record and 5 marks for Attendance.

Note:

(Attendance Upto75%, 1mark; 75<Attd.<80, 2 marks; 80<Attd.<85, 3 marks; 85<Attd.<90, 4 marks; 90<Attd, 5 marks).

A. SOIL GEOGRAPHY & HYDROLOGY PRACTICAL**Practical: 60Hrs****Unit 1:**

Land capability, Agricultural Efficiency, Cropping Intensity. Crop Combination.

Unit 2:

Study of Soil P_H Value, Nitrogen Content, Phosphorous and Construction of Soil Profiles.

Unit 3:

Stream Ordering, Drainage Density, Drainage Texture, Thalweg, Channel Profiles, Hypsometric Curve, Area-height Diagram.

Unit: 4

Water Budget, Rainfall Dispersion Diagram, Ergo graph, Climatograph.

OR**GE/DC PRACTICAL [EPGEO403B]:**

(Credits: Practical-05)

Marks: 30 (ESE: 20 Viva + 5Attd. + 5 Record) + 70 (ESE Pr: 6Hrs)=100**Pass Marks =45*****Instruction to Question Setter:******End Semester Practical Examination (ESE Pr):***

The questions in practical examination will be of equal to 70 marks and will be so framed that the students are able to answer them within the stipulated time. 20 marks will be awarded on the performance in viva voce whereas 10 marks will be awarded on cumulative assessment which is further subdivided as 5 marks for Practical record and 5 marks for Attendance.

Note:

(Attendance Upto75%, 1mark; 75<Attd.<80, 2 marks; 80<Attd.<85, 3 marks; 85<Attd.<90, 4 marks; 90<Attd, 5 marks).

B. URBAN GEOG. & REG. PLANNING PRACTICAL**Practical: 60Hrs****Unit 1:**

Spherical Diagram, Isopleth, Volumetric or Sten de Geer's method, Traffic Flow Diagram.

Unit 2:

Distribution Maps: Uninhibited village in Jharkhand, Industrial Concentration Map, Regional Pattern of Urbanisation, Regional Pattern of Agricultural Labourers in Jharkhand.

Unit:

Delimitation of Planning Regions, Proposing Growth Foci.

Unit 4:

Planning of Satellite Town, Planning of Garden Town, Planning Resource Association Regions.

OR
GE/DC PRACTICAL [EPGEO403C]:

(Credits: Practical-05)

Marks: 30 (ESE: 20 Viva + 5Attd. + 5 Record) + 70 (ESE Pr: 6Hrs)=100	Pass Marks =45
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Instruction to Question Setter:**End Semester Practical Examination (ESE Pr):**

The questions in practical examination will be of equal to 70 marks and will be so framed that the students are able to answer them within the stipulated time. 20 marks will be awarded on the performance in viva voce whereas 10 marks will be awarded on cumulative assessment which is further subdivided as 5 marks for Practical record and 5 marks for Attendance.

Note:

(Attendance Upto75%, 1mark; 75<Attd.<80, 2 marks; 80<Attd.<85, 3 marks; 85<Attd.<90, 4 marks; 90<Attd, 5 marks).

C. REMOTE SENSING & GIS/GPS PRACTICAL**Practical: 60Hrs****Unit 1:**

Image analysis: Principles of visual image interpretation, recognition elements and interpretation keys for visual interpretation (Shape, size, colour, tone, texture, association), Interpretation of Satellite Image (Landsat, LISS III, LISS IV, Cartosat etc.)

Unit 2:

Photographs Identification of Spatial Data: point, line and Polygon Features, Representation of Spatial Features: Raster and Vector Data Model, Data Structure, Overlay analysis, Change Analysis and Buffer Analysis.

Unit 3:

Introduction GIS Software, Geo-referencing and Projection Spatial data entry, editing, query building and executing, Topology creation and linking spatial and non spatial data, Spatial data visualization and output Map Generation.

Unit 4:

Introduction to GPS, Finding latitude, longitude and altitude, Tracking in GPS, Routing in GPS.

References:

- Peter A. Burrough and Rachael A. McDonnell (1998) Principles of Geographic Information systems, Oxford University Press, New York.
- Aronoff S. (1989) Geographic Information System, A Management Perspective, WDL Publications, Ottawa, Canada
- Ian Heywood, Sarah Cornelius, Steve Carver (2003), An Introduction to Geographic Information System, Pearson Education Ltd., India.
- Chrisman N.R. (1997) Exploring Geographic Information System, Wiley, New York.
- www.gisdevelopment.net/tutorials/human008.html
- www.gisloungue.com/remotesening.html

IV. CORE COURSE (PROJECT) [PRGEO404]:

(Credits: 05)

Marks: 100 (ESE: 3Hrs)=100**Pass Marks =45*****Guidelines to Examiners for******End Semester Examination (ESE):***

Overall project dissertation may be evaluated under the following heads:

- *Motivation for the choice of topic*
- *Project dissertation design*
- *Methodology and Content depth*
- *Results and Discussion*
- *Future Scope & References*
- *Participation in Internship programme with reputed organization*
- *Application of Research technique in Data collection*
- *Report Presentation*
- *Presentation style*
- *Viva-voce*

DISSERTATION

Each student has to submit two copies of the dissertation work duly forwarded by the HOD of Department concerned. The forwarded copies will be submitted in the Department of Chemistry, Ranchi University, for evaluation (Fifteen days before the seminar).

The paper will consist of

- (a) Field work/Lab work related to the project.
- (b) Preparation of dissertation based on the work undertaken.
- (c) Presentation of project work in the seminar on the assigned topic in the P.G. Department of Geography, Ranchi University, Ranchi & open viva there on.

Topics

Different topics will be allotted to each student under a supervisor (Faculty member of the Department).

NB:- Students will select topics for the project work in consultation with a teacher of the department. The Seminar will be held in the Department of Geography, Ranchi University, Ranchi.

**DISTRIBUTION OF CREDITS FOR P.G. PROGRAMME (SEMESTER-WISE) FOR
POSTGRADUATE ‘P.G. Voc./M.Sc./M.A./M.Com’ PROGRAMME**

Table B-1: Semester wise distribution of 80 Credits for Subjects with Practical Papers.

Semester	CC	FC	GE/DC	AE	Total credits
Semester I	15	05			20
Semester II	20				20
Semester III	15			05	20
Semester IV	5		15		20
	55	05	15	05	80

Table B-1: Semester wise distribution of 80 Credits for Subjects without Practical Papers.

Semester	CC	FC	GE/DC	AE	Total credits
Semester I	15	05			20
Semester II	20				20
Semester III	15			05	20
Semester IV	10		10		20
	60	05	10	05	80

CC=Core Course; FC=Foundation Compulsory/Elective Course; GE=Generic Elective; SE=Skill Enhancement Course; DC=Discipline Centric Elective

**SAMPLE CALCULATION FOR SGPA & CGPA FOR POSTGRADUATE 'P.G.
Voc./M.Sc./M.A./M.Com' PROGRAMME**

Table B-2: Sample calculation for SGPA for M.Sc./M.A./M.Com Programme

Course	Credit	Grade Letter	Grade Point	Credit Point (Credit X Grade)	SGPA (Credit Point/Credit)
Semester I					
FC	05	A	8	40	
C-1	05	B+	7	35	
C-2	05	B	6	30	
C-3/CP	05	B	6	30	
Total	20			135	6.60 (135/20)
Semester II					
C-4	05	B	6	30	
C-5	05	C	5	25	
C-6	05	B+	7	35	
C-7/CP	05	A+	9	45	
Total	20			135	6.60 (135/20)
Semester III					
EC-1	05	A+	9	45	
C-8	05	O	10	50	
C-9	05	A	8	40	
C-10/CP	05	A	8	40	
Total	20			175	8.75 (175/20)
Semester IV					
EC-2/EC-2	05	B	6	30	
EC-3/EC-3	05	A+	9	45	
C11/EP	05	B	6	30	
Project	05	A+	9	45	
Total	20			150	7.50 (150/20)
CGPA					
Grand Total	80			595	7.44 (595/80)

Table B-3: Sample calculation for CGPA for P.G. Vocational M.Sc./M.A./M.Com Programme

Semester I	Semester II	Semester III	Semester IV
Credit:20; SGPA:6.60	Credit:20; SGPA: 6.60	Credit:20; SGPA: 8.75	Credit:20; SGPA: 7.50

Thus CGPA= (20x6.60+20x6.60+20x8.75+20x7.50) /80=7.36

DISTRIBUTION OF MARKS FOR EXAMINATIONS AND FORMAT OF QUESTION PAPERS

Distribution of Marks for Mid Semester Evaluation:**Table No. 15:** Distribution of marks of Theory Examinations of Mid Semester

Topic	Code	Full Marks	Pass Marks	Time	Group-A (Very short answer type Compulsory Questions) No. of Questions x Marks = F.M.	Group-B (Descriptive Questions) No. of Questions x Marks = F.M.	Total No. of Questions to Set	
							Group A	Group B
Mid Sem*	T30*	30 (20 +5 +5)	17	1 Hr	5 x1 =5	3 (out of 5) x5 =15	05	5

***There shall be 20 marks theory examination for mid sem, 05 marks for attendance/ regular interactions & 05 marks for seminar/ assignment/ term paper given by faculty concerned in classrooms.**

Distribution of Marks for End Semester Theory Examinations:**Table No. 16:** Marks distribution of Theory Examinations of End Semester

Topic	Code	Full Marks	Pass Marks	Time	Group-A [#] (Very short answer type Compulsory Questions) No. of Questions x Marks = F.M.	Group-B (Descriptive Questions) No. of Questions x Marks = F.M.	Total No. of Questions to Set	
							Group A [#]	Group B
End Sem	T50	50	--	3 Hrs	2 x5 =10	2 (out of 3) x20 =40	2	3
	T70	70	28	3 Hrs	Q.No.1 (5x1) + 1x5 =10	4 (out of 6) x15 =60	2	6

Question No.1 in Group-A carries very short answer type questions of 1 Mark

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

FORMAT OF QUESTION PAPER FOR MID SEM EXAMINATION

20 MARKS



Ranchi University, Ranchi

Mid Sem No.Exam Year

Subject/ Code

F.M. =20Time=1Hr.

General Instructions:

समान्य निर्देश :

- i. **Group A** carries very short answer type compulsory questions.
(खंड 'A' में अत्यंत लघु उत्तरीय अनिवार्य प्रश्न हैं।)
- ii. **Answer 3 out of 5** subjective/ descriptive questions given in **Group B**.
(खंड 'B' के पाँच में से किन्हीं तीन विषयनिष्ठ/ वर्णनात्मक प्रश्नों के उत्तर दें।)
- iii. Answer in your own words as far as practicable.
(यथासंभव अपने शब्दों में उत्तर दें।)
- iv. Answer all sub parts of a question at one place.
(एक प्रश्न के सभी भागों के उत्तर एक साथ लिखें।)
- v. Numbers in right indicate full marks of the question.
(पूर्णांक दायीं ओर लिखे गये हैं।)

Group A

- | | | |
|----|-------|---------|
| 1. | ..... | [5x1=5] |
| 2. | ..... |  |
| 3. | ..... |  |
| 4. | ..... |  |
| 5. | ..... |  |

Group B

- | | | |
|-----|-------|-----|
| 6. | ..... | [5] |
| 7. | ..... | [5] |
| 8. | ..... | [5] |
| 9. | ..... | [5] |
| 10. | ..... | [5] |

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

FORMAT OF QUESTION PAPER FOR END SEM EXAMINATION

70 MARKS



Ranchi University, Ranchi

End Sem No.Exam Year

Subject/ Code

F.M. =70**P.M.** =28**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**.
(खंड 'B' के छः में से किन्हीं चार विषयनिष्ठ/ वर्णनात्मक प्रश्नों के उत्तर दें।)
- iii. Answer in your own words as far as practicable.
(यथासंभव अपने शब्दों में उत्तर दें।)
- iv. Answer all sub parts of a question at one place.
(एक प्रश्न के सभी भागों के उत्तर एक साथ लिखें।)
- v. Numbers in right indicate full marks of the question.
(पूर्णांक दायीं ओर लिखे गये हैं।)

Group A

- | | | |
|----|-----------|---------|
| 1. | | [5x1=5] |
| | i. | |
| | ii. | |
| | iii. | |
| | iv. | |
| | v. | |
| 2. | ..... | [5] |

Group B

- | | | |
|----|-------|------|
| 3. | ..... | [15] |
| 4. | ..... | [15] |
| 5. | ..... | [15] |
| 6. | ..... | [15] |
| 7. | ..... | [15] |
| 8. | ..... | [15] |

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