

DEPARTMENT OF GEOGRAPHY

DAYANAND COLLEGE, HISAR

Affiliated To

Guru Jambheshwar University of Science & Technology, Hisar

Scheme for Theory + Practical Based Subjects

Guidelines for Scheme of examination of UG Course GEOGRAPHY-B.A. Pass course (under semester system)

The Scheme of Examination of undergraduate (UG) Courses (**Theory-70 marks + Practical- 30 marks Based Subjects**) under Faculty of Humanities & Social Sciences run by affiliated degree colleges will be under (50+20) + 30 (External + Internal + Practical) for practical based courses. Pass percentage will be ...

For the UG courses under Faculty of Humanities & Social Sciences, the guidelines regarding scheme and paper setting will be followed as:

For the end semester examinations regarding practical subjects, nine questions are to be set by the examiner. The candidates shall attempt five questions in all. First question will be compulsory of 10 marks based on the entire syllabus. It will comprise of ten short answer type questions of one mark each. Students are required to attempt any four questions out of remaining eight questions (these eight questions may be (in) up to four units depending on the subject). All remaining questions shall carry equal marks.
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Scheme: (50+20) + 30 (External + Internal + Practical)

1 st question=10 marks (10 short answer type questions of 1 mark each)

Rest four questions: 10 marks each i.e. 4 x 10=40

Total = (10+40+20) + 30 = 100 marks

Components of Internal Assessment (Breakdown of 20 marks)	
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(a)	Class Test: 5 marks
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(b)	Assignment: 5 marks
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(c)	Participation in Class Discussions: 3 marks
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(d)	Term Paper/written test/2 nd assignment: 5 marks
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(e)	Attendance: 2 marks*
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*Weightage of 2 marks for **Attendance** component out of 20 marks for Internal Assessment shall be available only to those students who attend **75% and more** of classroom lectures and practical. The break-up of marks for **attendance component** for theory + practical papers shall be as under:

(a) 75% and above up to 85%: 01 mark

(b) Above 85%: 02 marks

B.A.-1 GEOGRAPHY (PASS COURSE THEORY) 1ST SEMESTER

GEOG – 101: GEOGRAPHY OF INDIA

Maximum Marks: 70

External Assessment: 50

Internal Assessment: 20

Time: 3 Hours

Note:-

1. The question paper will consist of **nine** questions. The candidate shall attempt **five** questions in all. The Question No. 1 will be **compulsory**. The Candidate shall attempt four more questions selecting at least one from each Unit. The paper will carry 70 marks out of which 20 marks will be earmarked for internal assessment.
2. The **Compulsory Question No.1** will be short answer type questions containing **ten** questions of equal marks (i.e., 1 mark each) spread over the whole syllabus. Other questions will carry the 10 marks each.

SECTION- A

1. India: Location, relief, and drainage systems.
2. Climate, soils, natural vegetation, and natural disasters in India.

SECTION – B

3. Population: distribution, density, growth and composition.
4. Production and Distribution of crops: Rice, Wheat, Cotton and Sugarcane with special reference to Haryana, Green revolution.

SECTION-C

5. Energy resources: coal, petroleum, hydroelectricity, solar, and nuclear energy
6. Mineral resources: iron ore, manganese, aluminium, and mica.

SECTION-D

7. Industries- iron and steel, cotton textile, sugar and industrial regions of India with special reference to Haryana.
8. Transport and communication, Modes of transport: Road, Railway, Water.

Suggested Readings

1. Deshpande, C D: India – A Regional Interpretation, Northern Book Depot, New Delhi, 1992.
2. Singh, Gopal : Geography of India, Atma Ram and Sons, 2006.
3. Shafi, M : Geography of South Asia, McMillan and Company, Calcutta, 2000.
4. Singh, R L (ed) : India : A Regional Geography, National Geographical Society, India, Varansi, 1971.
5. Spate, O H K and ATA Learmonth : Indian and Pakistan – Land, People and Economy, Methnen and Company, London, 1967

B.A.-1 GEOGRAPHY (PASS COURSE PRACTICAL) 1ST SEMESTER
GEOG- 102: MAPS, SCALES

Maximum Marks: 30
Time: 3 Hours

Distribution of Marks

Exercises = 18 Record File

= 6

Viva-voce = 6

Note: There will be four questions in all and candidate has to attempt three questions

1. Introduction to Cartography.

2. Maps and their types.

3. Map Scales.

Exercises

(i) Methods of Expressing a scale

2

(ii) Conversion of Statement of Scale into R.F. and vice-versa.

1

(iii) Plain Scale (Km and mile)

1

(iv) Comparative Scale

2

(v) Diagonal Scale

2

4 Measurement of Distances and Areas on Maps

2

5 Enlargement and Reduction of Maps

2

SUGGESTED READINGS :

1. F.J. Monkhouse and H.R. Wilkinson (1972) Maps and Diagrams, Mothuen and Co. Ltd., London
2. L.R. Singh and Raghuvander Singh (1973), Map Work and Practical Geography, Central Book Depot, Allahabad.
3. R.I. Singh and P.K. Dutt (1968), Elements of Practical Geography, Students Friends, Allahabad.
4. Singh, Gopal (2004) 4th edition, Map Work and Practical Geography, Viksa Publication House.

B.A.-1 GEOGRAPHY (PASS COURSE THEORY) 2ND SEMESTER

GEOG – 103: PHYSICAL GEOGRAPHY (GEOMORPHOLOGY)

Maximum Marks: 70

External Assessment: 50

Internal Assessment: 20

Time: 3 Hours

Note:-

1. The question paper will consist of **nine** questions. The candidate shall attempt **five** questions in all. The Question No. 1 will be **compulsory**. The Candidate shall attempt four more questions selecting at least one from each Unit. The paper will carry 70 marks out of which 20 marks will be earmarked for internal assessment.
- 2 The **Compulsory Question No.1** will be short answer type questions containing **ten** questions of equal marks (i.e., 1 mark each) spread over the whole syllabus. Other questions will carry the 10 marks each.

SECTION- A

1. Definition, Nature, scope and fields of Physical Geography.
2. Interior of the earth, Geological time scale and rocks.

SECTION- B

3. Earth movements; folds and faults; earth quakes and volcanoes.
4. Theory of Isostasy; Wegner's theory of continental drift and Plate tectonic theory.

SECTION- C

5. Weathering; processes and its types.
6. Mass-movements; causes, its types and impacts.

SECTION- D

7. Cycle of erosion; concepts and theories of W.M. Davis and Penck.
8. Processes and landforms of Wind, River, Underground water, and Glaciers.

REFERENCES

1. Sharma H.S. Perspective in Geomorphology, Concept, New Delhi 1980.
2. Singh Savinder, Geomorphology, Prayag Publication, Allahabad 1998.
3. Singh Savinder, Physical Geography Prayag Publication, Allahabad, 1998.
4. Sparks B.W. Geomorphology, Jojngman, London, 1960.
5. Thornbury W.D. 1969 Principles of Geomorphology, New York, John Wiley & Sons.

B.A.-1 GEOGRAPHY (PASS COURSE PRACTICAL) 2ND SEMESTER

GEOG- 104: REPRESENTATION OF PHYSICAL FEATURES

Distribution of Marks

Exercises = 18

Record File = 6

Viva-voce = 6

Note: There will be four questions in all and candidate has to attempt three questions

Exercises

- | | |
|--|---|
| 1. Introduction to Topographical Sheets
India and adjacent countries Degree
Sheet
Half Degree Sheet Quarter
Degree Sheet Conventional Signs | 3 |
| 2. Methods of representing relief | 1 |
| 3. Representation of Topographical features by contours.
Slopes (Concave, convex, undulating and terraced) Valleys (V
Shaped, U shaped, Gorge, Re-entrant) Ridges (Conical hill, Volcanic
hill, Plateau, Escarpment)
Complex features (waterfall, sea cliff, overhanging cliff, Fiord coast) | 4 |
| 4. Drawing of Profiles
(a) Cross Profiles: Serial, superimposed, projected and
composite profiles.
(b) Longitudinal profiles | 5 |
| 5. Chain and Tape Survey. | 2 |

SUGGESTED READINGS:

1. F.J. Monkhouse and H.R. Wilkinson (1972) Maps and Diagrams, Mothuen and Co. Ltd., London
2. L.R. Singh and Raghuvander Singh (1973), Map Work and Practical Geography, Central Book Depot, Allahabad.
3. R.I. Singh and P.K. Dutt (1968), Elements of Practical Geography, Students Friends, Allahabad.
4. Singh Gopal (2004) 4th edition, Map Work and Practical Geography, Viksa Publication House.

B.A. II YEAR (PASS COURSE THEORY) 3RD SEMESTER

GEOG 201 : PHYSICAL GEOGRAPHY (CLIMATOLOGY)

Maximum Marks: 70
External Assessment: 50
Internal Assessment: 20

Note:

Time : 3 hours

1. The question paper will consist of *nine* questions. The candidate shall attempt *five* questions in all. The Question No. 1 will be *compulsory*. The Candidate shall attempt *four* more questions selecting at least *one* from each Unit. The paper will carry 70 marks out of which 20 marks will be earmarked for internal assessment.
2. The **Compulsory Question No.1** will be short answer type questions containing *ten* questions of equal marks (i.e., 1 marks each) spread over the whole syllabus. Other questions will carry the 10 marks each.

SECTION-A

1. Weather and Climate; Origin, composition and structure of atmosphere.
2. Insolation, Global heat budget, Horizontal and vertical distribution of temperature, inversion of temperature.

SECTION-B

1. Atmospheric pressure- measurement and distribution, pressure belts, planetary winds, Monsoon, Jet Streams EL NINO- La Nina Phenomenon and Local winds.
2. Humidity- measurement and variables, evaporation, condensation, precipitation types and distribution, hydrological cycle.

SECTION-C

1. Air masses- concept and classification; Fronts- type and characteristics, Weather disturbances- tropical and extra-tropical cyclones.
2. Climate classification by Koppen; climatic change and global warming.

SECTION-D

1. Configuration of oceanic floors and surface relief of Pacific, Atlantic and Indian Oceans; temperature and salinity of oceans.
2. Tides, waves and oceanic currents; circulation in Pacific, Atlantic and Indian Oceans; Oceanic resources.

SUGGESTED READINGS:

1. Critchfield, H., General Climatology, Prentice-Hall of India, 2002.
2. Barry, RG and Chorley R.J., Atmosphere, Weather and Climate, Routledge, 1998.
3. King, C. Oceanography for Geographers, Edward Arnold, London, 1975
4. Trewartha, GT: An Introduction to Climate, Mc-Graw Hill, New York, 1981.
5. Trewartha, G.T., The Earth's Problems Climates, University of Wisconsin Press, USA.

B.A. II GEOGRAPHY (PASS COURSE PRACTICAL) 3RD SEMESTER

GEOG(P) 202 : REPRESENTATION OF CLIMATIC DATA

Maximum Marks :30

Time : 3 hours

Distribution of Marks

Exercise: 18

Record File: 06

Vivo-voce : 06

Note: There will be four questions in all and candidate has to attempt three exercises.

1. Measurement of temperature, rainfall, pressure and humidity.
2. Representation of temperature and rainfall.
 - (i) Line and Bar Graph – 1 Exercise.
 - (ii) Distribution of temperature (180 therms) – 1 Exercise.
 - (iii) Distribution of rainfall (180 hytes) – 1 Exercise.
 - (iv) Hythergraph - 1 Exercise.
 - (v) Rainfall deviation diagram - 1 Exercise.
3. Climograph (wet and dry places) - 2 Exercise.
4. Distribution of pressure (180 bars) - 2 Exercise.
5. Weather map Interpretation (January & July) - 2 Exercise.

SUGGESTED READINGS:

1. Mishra R.P. and Ramesh A. 1999. Fundamentals of Cartography, Concept Publishing Company, New Delhi.
2. Monkhouse, FJ, and Wilkinson H.R., 1972. Maps and Diagrams, Methuen Press, London
3. Robinson, A.H. et.al. Elements of Cartography, John Wiley & Sons, 1995.
4. Singh, R.L., 1979. Elements of Practical Geography, Kalyani Publisher, New Delhi.

B.A. II GEOGRAPHY (PASS COURSE THEORY) 4TH SEMESTER

GEOG 203 : HUMAN GEOGRAPHY

Maximum Marks: 70
External Assessment: 50
Internal Assessment: 20

Time : 3 hours

Note:

1. The question paper will consist of *nine* questions. The candidate shall attempt *five* questions in all. The Question No. 1 will be *compulsory*. The Candidate shall attempt *four* more questions selecting at least *one* from each Unit. The paper will carry 70 marks out of which 20 marks will be earmarked for internal assessment.
2. The **Compulsory Question No.1** will be short answer type questions containing *ten* questions of equal marks (i.e., 1 marks each) spread over the whole syllabus. Other questions will carry the 10 marks each.

Section - I

1. Nature and scope of Human Geography, Branches of Human Geography, Approaches to the study of Human Geography.
2. Division of Mankind: Spatial distribution of race of India; concept of men-environment relation: A historical approach.

Section - II

1. Human adaptation to the environment (i) Cold region – Eskimo (ii) Hot region- Bushman (iii) Plateau – Gonds (iv) Mountains – Gujjars
2. Meaning, nature and components of resources; Classification of resources – renewal and non- renewable ; biotic and abiotic, recyclable and non recyclable.

Section - III

1. Distribution and density of world population, population growth, Demographic Transition Model.
2. Concept of over, under and optimum population; Population theories: Malthus, Ricardo and Marx.

Section - IV

3. Rural settlements: Meaning, classification and types. Urban settlements: Origin, classification and functions of towns, Problems of urbanization in India.
4. Population pressure, resource use and environment degradation; sustainable development, concept of deforestation, soil erosion, air and water pollution.

SUGGESTED READINGS:-

1. Agarwal, A etal : The Citizen's Fifth Citizen's Report, Centre for Science & Environment, New Delhi, 1999.
2. Alexander, John. W. : Economic Geography, Prentice Hall of India Ltd., New Delhi, 1988.
3. Bergwan, Edward E: Human Geography: Culture Connections and Landscape, Prentice- Hall, New Jersey, 1985.
4. Carr, M. Patterns: Process and Change in Human Geography, McMillan Education, London, 1987.
5. Chandna, R.C. : A Geography of Population : Concepts, Determinants and Patterns, Kalyani Publishers, New Delhi, 1986.
6. DeBlij, H. J. : Human Geography, Culture, Society and Space, John Wiley, New York, 1996.
7. Fellman, J.L. : Human Geography-Landscapes of Human Activities, Brown and Benchman Pub., USA, 1997.
8. Global Environment Outlook: Earthscan, London, 2000.
9. McBride, P.J. Human Geography; Systems Patterns and Change, Nelson, UK and Canada, 1996.
10. Michael, Can: New Patterns : Process and Change in Human Geography, Nelson, 1996

B.A. II GEOGRAPHY (PASS COURSE PRACTICAL) 4TH SEMESTER

GEOG (P) 204: MAP PROJECTIONS

Maximum Marks : 30

Time: 3 hours

Distribution of Marks

Exercise: 18

Record File: 06

Vivo-voce : 06

Note: There will be four questions in all and candidate has to attempt three exercises.

Total Exercises = 15

1. Introduction to Map Projection: Meaning, Classification and importance; Characteristics of latitudes and longitudes lines.
2. Cylindrical projections : Characteristics applications and drawing;
 - (i) Simple cylindrical projection
 - (ii) Cylindrical equal area projection.
 - (iii) True shape or orthomorphic or Mercator's Projection.
3. Conical Projections: Characteristics, applications and drawing. (5)
 - (i) Simple conical projections with one standard parallel
 - (ii) Simple conical projection with two standard parallel
 - (iii) Bonne's Projection
 - (iv) Polyconic projection.
 - (v) International Map Projection.
4. Zenithal Projections: Characteristics, applications and drawing. (5)
 - (i) Polar Zenithal Equidistant Projection
 - (ii) Polar Zenithal Equal Area Projection
 - (iii) Polar Zenithal Gnomonic Projection
 - (iv) Polar Zenithal Stereographic Projection
 - (v) Polar Zenithal Orthographic Projection
5. Characteristics, applications and drawings of (2)
 - (i) Sinosoidal and (ii) Mollweide Projections.
6. Plane Table Survey. (2)

SUGGESTED READINGS:-

1. Goyal K.K.1981.. Practical Geography, Manthan Publication, Rohtak.
2. Gregory S. 1963. Statistical Methods and the Geography, Longman, London.
3. Khan, A.A. 1996. Text Book of Practical Geography, Concept, New Delhi,.
4. Lawrence, G.P.1968. Cartographic Methods, Methuen, London,.
5. Monkhouse, F.J. and Wilkinson, H.R.1994. Maps and Diagrams, Methuen, London,
6. Pal. S.K. 1998: Statistics for Geoscientist- Techniques and Applications, Concept Publication, New Delhi,.
7. Sarkar, A.K 1997: Practical Geography-A Systematic Approach, Orient Longman, Calcutta,.
8. Singh, R.L. 1972. Elements of Practical Geography, Kalyani Pub., New Delhi
9. Steers, J.B. Map Projections; University of London Press, London.

B.A. III GEOGRAPHY (PASS COURSE THEORY) 5TH SEMESTER

PAPER 301 (ECONOMIC GEOGRAPHY)

Maximum Marks: 70

External Assessment: 50

Internal Assessment: 20

Time : 3 Hours

Note: *Question 1 is compulsory and comprises of Ten short answer type questions to be answered in 15-20 words. There will be eight long questions, two from each section. The candidate has to answer one question from each section. All five questions carry equal marks.*

Section A

1. Nature, scope and relationship of economic geography with economics and other branches of social sciences.
2. Classification of economic activities and their impact on environment.

Section B

3. World natural resources: Types, bases and classification.
4. Conservation and utilization of natural resources.

Section C

5. Spatial distribution of food (rice and wheat), commercial (cotton and sugarcane) and plantation crops (tea, rubber and coffee).
6. Classification of mineral resources (ferrous and non-ferrous), distribution and production of coal, iron ore, petroleum and natural gas.

Section D

7. Classification of industries, world distribution and production of iron and steel and textile industry, major industrial complexes of the world.
8. Transport, communication and trade: geographical factors in their development, major modes of water, land and air transport, recent trends in international trade

SUGGESTED READINGS:

1. Hartshorne TN and Alexander JW. 1988. Economic Geography, Prentice Hall, New Delhi.
2. Jones CF and Darkenwald GG. 1975. Economic Geography. McMillan Company, New York
3. Thomas, RS. 1962. The Geography of Economic Activities. McGraw Hill, New York.
4. Wheeler J et al. 1995. Economic Geography. John Wiley, New York.

**B.A. III GEOGRAPHY (PASS COURSE THEORY) 6TH SEMESTER
PAPER-303(NTRODUCTION TO REMOTE SENSING, GIS &
QUANTITATIVE METHODS)**

**Maximum Marks: 70
External Assessment: 50
Internal Assessment: 20**

Note: Question 1 is compulsory and comprises of Ten short answer type questions to be answered in 15-20 words. There will be eight long questions, two from each section. The candidate has to answer one question from each section. All five questions carry equal marks.

Section-A

1. Introduction to Aerial Photographs: their advantages and types.
2. Elements of aerial Photo interpretation.

Section-B

3. Introduction to Remote Sensing; Electromagnetic spectrum, stages in remote sensing, type of satellites.
4. Types of Imageries and their application in various fields such as agriculture, environment and resource mapping.

Section-C

5. Introduction to Geographical Information System: Definition, purpose, advantages and software and hardware requirements.
6. Application of GIS in various fields of geography.

Section-D

7. Measure of Central Tendency: Mean, Median and Mode.
8. Measure of Dispersion: Range, Quartile deviation and Mean deviation, Standard deviation, Coefficient of variation.

SUGGESTED READINGS:

1. Aslam Mahmood 1993. Statistical Methods in Geographical Studies, Rajesh Publications, New Delhi,.
2. John R. Jensen 2009. Remote Sensing of the Environment;, An Earth Resource Perspective, Pearson Education, (India Edition) New Delhi,
3. Kumar Meenakshi 2001. Remote Sensing, NCERT, New Delhi,
4. Lillesand and R.W.Kiefer,2005. Remote Sensing and Image Interpretation, John Wiley and Sons.
Pritvish Nag, and M.Kudrat 1998. Digital Remote Sensing, Concept Publishing Company, New Delhi,

B.A. III GEOGRAPHY (PASS COURSE PRACTICAL) 5th +6th SEMESTER
PAPER 302 & 304 (DISTRIBUTION MAPS, DIAGRAMS, REMOTE SENSING AND FIELD
SURVEY REPORT (PRACTICAL)

Maximum
Marks: 60
Time : 3 Hours

**Distribution
of Marks**

Exercises = 36 Record File = 12 Viva-voce = 12

Note: There will be four questions in all and candidate has to attempt three exercises selecting at least from unit I and II, while unit III is compulsory.

UNIT-I

1. Principal of map design and layout
2. Symbolization: point, line and area symbol
3. Lettering and toponomy
4. Mechanics of map construction
5. Distribution maps
 - (i) Qualitative distribution maps
 - Choroschematic maps- 1 Exercise
 - Chorochromatic maps- 2 Exercise
 - (ii) Quantitative distribution Maps
 - Isopleth maps-3 Exercises
 - Choropleth maps-3 Exercises
 - Dot maps-3 Exercises
 - Diagrammatic maps- 3 Exercises.
6. Prismatic Compass Survey – 2 Exercises.

UNIT-II

1. Demarcation of Principal Point, Conjugate Principal point and Flight line on Aerial Photographs – 1 Exercise
2. Determination of Scale of Aerial Photographs – 1 Exercise.
3. Interpretation of Single Vertical Photographs – 1 Exercise.
4. Use of Stereoscope and Identification of Features – 1 Exercise.
5. Identification of Features on IRSID, LISS III imagery (Mark copy of FCC) -1 Exercise.

UNIT-III

Socio-economic Survey and Report Writing -15

Field Survey Report = 10 marks

Viva-voce = 5 marks

SUGGESTED READINGS:

1. Mishra RP and Ramesh A. 1999. Fundamentals of Cartography, Concept Publishing Company, New Delhi.
2. Monkhouse FJ and Wilkinson HR. 1972. Maps and Diagrams, Methuen Press, London
3. Singh Gopal. 2004. Map Work and Practical Geography, Vikas Publication House, New Delhi.
4. Singh RL. 1979. Elements of Practical Geography, Kalyani Publishers, New Delhi
5. John R. Jensen, Remote Sensing of the Environment; An Earth Resource Perspective, Pearson Education, (India Edition) New Delhi, 2009.
6. Lillesand and R.W.Kiefer, Remote Sensing and Image Interpretation, John Wiley and Sons, 1994.

PG

Syllabus

DEPARTMENT OF GEOGRAPHY

DAYANAND COLLEGE, HISAR

Affiliated To

Guru Jambheshwar University of Science & Technology, Hisar

Scheme for Theory + Practical Based Subjects

PG Course (M.Sc. Geography)

SEMESTER I

Semester-I Paper No.	Title	Max. Marks	Internal Assessment	Time
GEOG-101	Climatology	80	20	3 Hours
GEOG-102	Geography of India	80	20	3 Hours
GEOG-103	Economic Geography	80	20	3 Hours
GEOG-104	Statistical Methods in Geography	80	20	3 Hours
GEOG-105	Cartographic Method in Geography (Practical)	80	20	3 Hours
Semester-II				
GEOG-201	Geomorphology	80	20	3 Hours
GEOG-202	Population Geography	80	20	3 Hours
GEOG-203	Regional Development and Planning (with special reference to India)	80	20	3 Hours
GEOG-204	Agricultural Geography	80	20	3 Hours
GEOG-205	Interpretation of Topo-Sheets and Morphometric Analysis (Practical)	80	20	3 Hours

GEOG-101

Climatology

Max.

Marks:80

Time: 3Hrs.

Note:- There will be nine questions in all. Question No. 1 is compulsory and consists of 10 short notes (required to be answered in not more than 25 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, one from each unit. Question 1 carries 20 marks while remaining four questions carry 15 marks each.

UNIT-I

1. Definition of weather and climate; Climatology and Meteorology.
2. Origin, composition and structure of atmosphere.
3. Solar radiation, heat budget and temperature distribution.

UNIT-II

4. Atmospheric pressure and its distribution pattern.
5. General circulation and planetary winds, Walker circulation- ENSO and La Nina, origin of monsoons and jet streams.
6. Atmospheric Moisture : humidity, evaporation, condensation.

UNIT-III

7. Precipitation : Dynamics and types of precipitation.
8. Stability and instability of atmosphere, air masses and fronts.
9. Weather systems : Extra tropical and tropical cyclones.

UNIT-IV

10. Climatic classification: Bases of climatic classification by Koeppen, Trewartha and Thornthwaite.
11. Climatic change- Evidences and explanations.
12. Global warming and its impacts.

Suggested Readings:

1. Trewartha G. T., An Introduction to Climate, McGraw Hill Company, New York, 1980.
2. Chritchfield, H J, General Climatology, Printice Hall of India, New Delhi, 1987.
3. Barry R. G. and Chorley, R. J, Atmosphere, Weather and Climate, Marthren , 1968.
4. Lal, DS, Climatology, Chetanya Publishing House, Allahabad, 1966
5. Das, PK, The Monsoons, National Book Trust, New Delhi, 1984
6. Ramasastry, AA, Weather and Weather Forecasting, Publication Division, New Delhi.

GEOG-102
Geography of India

Max.
Marks:80
Time: 3Hrs.

Note:- There will be nine questions in all. Question No.1 is compulsory and consists of 10 short notes (required to be answered in not more than 25 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, one from each unit. Question 1 carries 20 marks while remaining four questions carry 15 marks each.

UNIT-I

1. Major terrain elements of India and their role in shaping physical landscapes of India
2. Drainage systems of India and their functional significance.
3. Regional and seasonal variations in climate and climate regions of India.
4. Soil and vegetation types of India- their distribution, characteristics and conservation.

UNIT-II

5. Agriculture: Characteristics of Indian agriculture, agricultural development in India since independence, problems of Indian agriculture.
6. Irrigation development in India, environmental impacts of irrigation development projects with special reference to Bhakra Nangal and Indira Gandhi Canal.

UNIT-III

7. Production and distribution of following minerals and power resources.
 - (a) Minerals: Iron ore, mica, manganese, bauxite.
 - (b) Power Resources: coal, petroleum, hydropower.
8. Minerals and power resources- The status of their use and need for conservation.

UNIT-IV

9. Production and distribution of
 - (a) iron and steel.
 - (b) cotton textile
 - (c) automobile industry
10. Major industrial regions of India and their characteristics.
11. Patterns of domestic and international trade.
12. Major exports and imports of India's trade and balance of payment.

Suggested Readings:

1. Bharucha, J.P., 1982 : Vegetation of India, Oxford India, Bombay.
2. Dubey, R. N. , 1974 : Economic Geography of India, Kitab Mahal, Allahabad
3. Joshi, H. L. , 1990 : Industrial Geography of India, Rawat Publications, Jaipur
4. Nag, P. and Sengupta, S., 1992 : Geography of India, Concept publications. Co., New Delhi.
5. Rautray, J.K. : Geography of regional disparity, Asian Institute of Technology, Bangkok, 1993
6. Singh, R. L. : India : A Regional Geography, N.G.S.I., Varanasi, 1971
7. Sharma, T. C. and Coutinho, O. 1988 : Economic and Commercial Geography of India, Vikas publishing house Pvt. Ltd, New Delhi.
8. Tirtna, R. and Krishan G., 1996 : Geography of India, Rawat Publications, Jaipur & New Delhi.
9. Tiwari, R. C. : Geography of India, Prayag Pustak Bhawan, Allahabad.

GEOG-103
Economic Geography

Max. Marks:80
Time: 3Hrs.

Note:- There will be nine questions in all. Question No. 1 is compulsory and consists of 10 short notes (required to be answered in not more than 25 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, one from each unit. Question 1 carries 20 marks while remaining four questions carry 15 marks each.

UNIT-I

1. Definition, nature, scope and approaches of economic geography.
2. Relationship of economic geography with economics and other branches of social sciences.
3. World Economies: bases of classification, patterns and characteristics of developed and developing economies of the world.

UNIT-II

4. World production and distribution of energy resources: coal and petroleum
5. World production and distribution of mineral resources: iron-ore and bauxite.

UNIT-III

6. Network structure and economic activities, impact of transport on economic activities, Edward Ullman's spatial interaction model
7. Basic concepts in location problems, location models of Weber, Christaller and Losch

UNIT-IV

8. Concept of economic growth and development, globalization and pattern of economic development.
9. Recent trends in pattern of international trade.
10. Emergence of a new global economy – transnational integration and its spatial outcomes.
11. Major regional trade blocks of the world, free trade initiatives (GATT, UNCTAD, WTO).

Suggested Readings:-

1. Hartshorne, T. A. and Alexander, J. W., Economic Geography (fourth Edition) 2001, New Delhi, Prentice Hall of India.
2. Jones, C. F., and Darkenwarld , G. G., Economic Geography New York, The Macmillan and Co.
3. James. D., Wheeler and Peter O., Muller, Economic Geography, New York, John Wiley and Sons.
4. Knox, P. 2003. The Geography of World Economy. Arnold, London.
5. Hudson, R. 2005. Economic Geography. Sage Publication, New Delhi.
6. Gautam, A.2010. Advanced Economic Geography. Sharda Pustak Bhawan, Allhabad.

GEOG-104
Statistical Methods in Geography

Max. Marks: 80

Time: 3Hrs.

Note:- There will be nine questions in all. Question No. 1 is compulsory and consists of 10 short notes (required to be answered in not more than 25 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, one from each unit. Question 1 carries 20 marks while remaining four questions carry 15 marks each. (The examiner will set both theoretical and numerical questions)

UNIT-I

1. Descriptive Statistics: Histograms and Graphs, Measures of Central Tendency: mean, median, mode. Partitioned values: Quartiles and deciles. Comparing the mean, median and mode
2. Measures of Dispersion: Absolute measures: Range, Quartile Deviation, Mean Deviation, Standard Deviation. Relative measure of dispersion: coefficient of variation.

UNIT-II

3. Normal curve as a probability distribution: Its characteristics and area under curve
4. Measure of inequality: (i) Location quotient (ii) Lorenz curve.
5. Sampling: Theory of sampling, Methods of sampling, Sampling distribution and Chance errors in sampling.

UNIT-III

6. Bivariate Analysis: Scatter diagram, correlation analysis, Spearman's rank correlation and Karl Pearson's correlation coefficient. Test of significance.
7. Simple Linear Regression Model: properties of least square estimate. Coefficient of determination.

UNIT-IV

8. Residuals and their mapping.
9. Basics of multivariate analysis: Correlation matrix, partial and multiple correlation.

Suggested Readings:

1. Aslam Mahmood : Statistical Methods in Geographical Studies, Rajesh Publications, New Delhi, 1993.
2. Saroj K. Paul : Statistics for Geoscientists : Techniques and Applications, Concept Publishing Company, New Delhi, 1998.
3. C. B. Gupta : An Introduction to Statistical Methods, Vikas Publishing House, Delhi, 1974.
4. S. Gregory, : Statistical Methods and the Geographers, Longman, London, 1964.
5. A. Reza Hoshmand (second edition), : Statistical Methods for Environmental and Agricultural Sciences, CRC Press, New York, 1998.
6. R. J. Johnston : Multivariate Statistical Analysis in Geography, Longman Scientific and Technical, John Wiley & Sons, 1989 (4th edition).
7. Rogerson. P.A. (2010), Statistical Methods for Geography, (A Student's Guide), 3rd Edition, Sage Publication, New Delhi
8. Jack Levin and J.A. Fox (2006), Elementary Statistics in Social Research, 10th edition, Peason Education, New Delhi.

GEOG-105

CARTOGRAPHIC METHODS IN GEOGRAPHY (PRACTICAL)

Max. Marks: 80

Time: 3Hrs.

Note:- The examiner shall set four questions, one from each unit. The candidate shall attempt three questions including theory questions which is compulsory.

UNIT-I

1. Climate data representation by diagrams and maps :
 - Line and bar graph
 - Poly graph
 - Rainfall deviation diagram
 - Climograph (Taylor and Foster's)
 - Hythergraph
 - Isopleth
 - Wind rose diagram

UNIT-II

2. Diagrams : Types and properties of diagrams representing socio-economic data:
 - One dimensional diagram - Bar diagram : Simple bar, multiple bar, comparative bar
 - Two dimensional diagram- pie diagram proportional circle, rectangle, square.
 - Three dimensional diagram- Sphere, cube, curbsi

UNIT-III

3. Distribution maps
 - Dot method
 - Choropleth – monovariate and bivariate

UNIT-IV

4. Miscellaneous diagrams and graphs
 - Trend graph
 - Age and Sex pyramid
 - Flow diagram, cartogram and accessibility maps.

Suggested Readings:

1. Monkhouse, F.J., and Wikinson, H.R. : Maps and diagrams, B. I Publications put. Ltd.
2. Singh, R. L. : Elements of Practical Geography, Kalyani Publishers, New Delhi.

GEOG-201
GEOMORPHOLOGY

Max. Marks: 80

Time: 3Hrs.

Note:- There will be nine questions in all. Question No. 1 is compulsory and consists of 10 short notes (required to be answered in not more than 25 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, one from each unit. Question 1 carries 20 marks while remaining four questions carry 15 marks each.

UNIT-I

1. Introduction to geomorphology as a science: definition, nature, scope and recent developments.
2. Fundamental concepts:
 - (i) Geological structure and landforms
 - (ii) Uniformitarianism
 - (iii) Multicycle and polygenetic evolution of landscape
 - (iv) Frequency concept of geomorphic processes
 - (v) Climatogenetic geomorphology

UNIT-II

3. Continental drift theory and its basic considerations; Plate tectonics-meaning and concept, margins and boundaries, plate motion and cycle; Tectonic activities along boundaries and distribution of plates.
4. Hill slope-definition and forms of slope, geomorphic processes and slope forms, slope evolution: down wearing, parallel retreat and slope replacement models.

UNIT-III

5. Weathering : Causes; types of weathering: physical, chemical and biological.
6. Mass movement, causes, classifications and types of mass movements- slow and rapid mass movements.

UNIT-IV

7. Geomorphic processes and resulting land forms:
 - (i) Fluvial
 - (ii) Glacial
 - (iii) Aeolian
 - (iv) Karst
8. Applied geomorphology: Meaning and concept, role of geomorphology in environmental management of the following:
 - (i) Accelerated erosion and sedimentation
 - (ii) Construction of large dams
 - (iii) Urban geomorphology
 - (iv)

SUGGESTED READINGS:

1. Embleton, C. Thornme. J. (eds) 1979. Process in Geomorphology. London, Edward Arnold.
2. Fourbridge, R. W. (Ed) 1968 Encyclopedia of Geomorphology, New York, John Wiley & Sons.
3. Ritters D. F. Kochel, R. C. and Miller J. R., 1995, Process Geomorphology. Dubuque, Win C. Brown Publishers (3rd Edn)

4. Sharma, V.K. 2010. Introduction to process Geomorphology. Tayler and Francs'S, London
5. Kale VS and Gupta A.2001. Introduction to Geomorphology orient –Longman, Hyderabad.
6. Bloom AL. 2002. Geomorphology : A systematic Analysis of late Canozic landforms. Prentice – Hall Private Limited, New Delhi
7. Thornbury, W. D. 1969, Principle of Geomorphology, New York, John Wiley & Sons.
8. Sparks B. W. Geomorphology, Longman, London, 1960.
9. Singh, Savinder. Geomorphology, Prayag Publication, Allahabad, 1998.
- 10.Sharma, H.S. and Kale VS. 2009. Geomorphology in India, Prayag Pustak Bhawan, Allahabad.

GEOG-202
POPULATION GEOGRAPHY

Max. Marks: 80

Time: 3Hrs.

Note:- There will be nine questions in all. Question No.1 is compulsory and consists of 10 short notes (required to be answered in not more than 25 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, one from each unit. Question 1 carries 20 marks while remaining four questions carry 15 marks each.

UNIT-I

1. Nature and scope of population geography.
2. Methodological problems in population geography.
3. Sources of population data, quality and reliability of data, problems of mapping population data.

UNIT-II

4. Concepts, determinants and world patterns of the following attributes of population:
 - (i) Distribution and density
 - (ii) Vital rates: birth and death rates
 - (iii) Migration (including laws of migration)
 - (iv) Growth
 - (v) Age and Sex Composition
 - (vi) Occupation
 - (vii) Literacy

UNIT-III

5. Demographic Transition Model
6. Population Resource Regions
7. Theories of population: Malthus, Ricardo and Marx

UNIT-IV

8. Population policy of India
9. Comparative study of population problems and policies of developed and less developed countries.
10. Population and Environment: Implications for the future

SUGGESTED READINGS:

1. Beaujeu, Garnier, J. (1966) Geography of Population, Longman, London.
2. Brooks, S. (1977) : The World Population Today (Ethnodemographic Process), USSR Academy of Sciences, Moscow.
3. Cassen, Robert & Bates, Lisa M. (1994) : Population Policy : A New Consensus Overseas Development Council, Washington, D.C.
4. Chandna, R. C. (1997) : Jansankhya Bhugol, Kalyani Publishers, New Delhi.
5. Chandna, R. C. (1998) : Population, Publishers, New Delhi.
6. Chandna, R. C. (1998) : Environmental awareness, Publishers, New Delhi.
7. Chandna, R. C. (1998) : a Geography of Population : Concepts,

Determinants and Patterns, Publishers, New Delhi.

8. Clarks, John, I. (1971) : Population Geography and the Developing Countries, Pergamon Press, New York.
9. Demko, G. J. and others (Eds.) (1971) : Population Geography, Reader, McGraw-Hill Books Co., New York
10. Jones, Huw, R. (1981) : A Population Geography, Harper and Row Publishers, London.
11. Petrov, V. (1985) : India: Spotlight of Population, Progress Publishers, Moscow.
12. Trewartha, G. T. (1972) : The Less Developed Realm-A Geography of its Population, John Wiley & Sons, Inc., New York.
13. Trewartha, G. T. (1978) : The More Developed Realm-A Geography of its Population Pergamon Press, New York.
14. Woods, R. (1979) : Population Analysis in Geography, Longman, London.

GEOG-203

REGIONAL DEVELOPMENT AND PLANNING (WITH SPECIAL REFERENCE TO INDIA)

Max. Marks: 80

Time: 3Hrs.

Note:- There will be nine questions in all. Question No.1 is compulsory and consists of 10 short notes (required to be answered in not more than 25 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, one from each unit. Question 1 carries 20 marks while remaining four questions carry 15 marks each.

UNIT-I

1. Regional Development: Concept of Space and Region, Typology of Regions, Planning Regions; planning regions of India and their characteristics.

UNIT-II

2. Theories of Regional Development: Theory of Polarized Development, F. Perroux Model, Hirschman Theory, Myrdal Theory; Theory of Development from below by J. Friedman, Ecological Theory of Sustainable Development

UNIT-III

3. Development and Regional Disparities in India since Independence
 - (i) Disparities in Agricultural Development
 - (ii) Disparities in Industrial Development.
 - (iii) Disparities in Human Resource Development in terms of education and health

UNIT-IV

4. Approaches to regional planning in India.
5. Planning in India through Five Year Plans; Special Area Development Plans.
6. Metropolitan Planning; Regional Problems and Prospects in India.

SUGGESTED READINGS:

1. Chandna, R.C. (2000): Regional Planning : A Comprehensive Text. Kalyani Publishers., New Delhi.
2. Chaudhuri, J.R. (2001) : An Introduction to Development and Regional Planning with special reference to India. Orient Longman, Hyderabad.
3. Friedmann, J. and Alonso, W. (ed.) (1973) : Regional Development and Planning. The MIT Press, Mass.
4. Hettne, B.; Inotai, A. and Sunkel, O.(eds.) (1999-2000): Studies in the New Regionalism. Vol. I-V. Macmillan Press, London.
5. Kuklinski, A.R. (1972): Growth Poles and Growth Centres in Regional Planning. Mouton and Co., Paris.
6. Kuklinski, A.R. (ed.) (1975): Regional Development and Planning : International Perspective, Sijthoff-Leydor.
7. Leys, C. (1996): The Rise and Fall of Development Theory. Indian University Press, Bloomington, and James Curry, Oxford.

8. Mahapatra, A.C. and Pathak, C.R. (eds.) (2003): Economic liberalization and Regional Disparities in India. Special Focus on the North Eastern Region. Star Publishing House, Shillong.
9. Mahesh Chand and V. K. Puri ; Regional Planning in India, Allied Publishers, New Delhi, 1983.
10. Misra, R.P. (ed.) (1992) : Regional Planning: Concepts, Techniques, Policies and Case Studies. 2nd edition. Concept Publishing Company., New Delhi.
11. Misra, R.P. and Natraj, V.K. (1978): Regional Planning and National Development. Vikas, New Delhi.
12. Planning Commission of India: Eighth Five Year Plan (1992-97) Vol. I, Govt. of India, New Delhi.
13. K. V. Sundaram : Urban and Regional Planning in India, Vikas Publishing House, 1986, New Delhi
14. R. P. Mishra, (1988), Moonis Raza (ed) Regional Development Vol. 10, Contribution to Indian Geography Heritage Publishers, New Delhi.
15. A. Kundu and Moonis Raza (1988) : Indian Economy: The Regional Dimension, CSRD/SSS, JNU. New Delhi.
16. S.C. Patnaik, (1981), Economics of Regional Development and Planning in Third World Countries, Associate Publishing House, New Delhi.

GEOG- 204
AGRICULTURAL GEOGRAPHY

Max Marks: 80

Time: 3 Hrs.

Note:- There will be nine questions in all. Question No.1 is compulsory and consists of 10 short notes (required to be answered in not more than 25 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, one from each unit. Question 1 carries 20 marks while remaining four questions carry 15 marks each.

UNIT-I

1. Nature, scope and significance of agricultural geography.
2. Origin and dispersal of agriculture.
3. Determinants of agricultural patterns: physical, technological and cultural factors

UNIT-II

4. Concepts of land capability survey, landuse and cropping pattern.
5. Approaches in agricultural regionalization: Von Thunen Model of agricultural landuse, crop combination, concentration and diversification.
6. Agro-climatic Zonation : Concept and Indian experience.

UNIT-III

7. Bases of identification of agricultural systems by Whittlesey and agricultural typology by Kostrowiki.
8. Measurements of regional imbalances in agricultural productivity.
9. Green revolution: Its impacts and consequences in India.

UNIT-IV

10. Food production and security in India.
11. Neo-liberalization and Indian agriculture.
12. Agriculture and climate change: Impacts and adaptation.

Suggested Readings:

1. Symons, Leslic (1967): Agricultural Geography, G. Bell and Sons, London.
2. Geoffrey, H.F.: (1970) Geography of Agriculture: Themes in Research, Practice Hall, N.J.
3. Morgon, W.B. and Munton, R.J.C.: (1971) Agricultural Geography Methuen, London.
4. Singh Jasbir and Dhillon S.S. (1994) Agricultural Geography, Tata Mc Graw Hill, New Delhi.
5. Husain, Majid (1996), Systemic Agricultural Geography Rawat Publications, Jaipur.
6. Tarrant, J.R. (1974) Agricultural Geography, Willey, New York.
7. Safi, Mohammad (2007) Agricultural Geography.
8. Singh Jasbir (1989) Agricultural Geography.
9. Bowler TR (1992) The Geography of Agriculture in Developed Market Economics, Longman.
10. Grigg D (1995) Introduction to Agricultural Geography, Routkdge, London.

GEOG-205

INTERPRETATION OF TOPOSHEETS AND MORPHOMETRIC ANALYSIS (PRACTICAL)

Max. Marks: 80

Time:- 3Hrs.

Distribution of Marks Exercises	45 marks
Viva-Voce	20 marks
Record book	15 marks

Note:- The examiner shall set four questions, one from each unit. The candidate shall attempt three questions including theory questions which are compulsory.

UNIT-I

Interpretation of toposheets : (a) Physical features and (b) Cultural features.

1. Profile Analysis: Transverse and Longitudinal
 - a) Serial Profiles
 - b) Superimposed Profiles
 - c) Composite Profiles
 - d) Projected Profiles
 - e) Longitudinal or valley Thalweg Profile.

UNIT-II

2. Linear Aspects of streams :
 - a) Relationship between stream order and stream Number
 - b) Relationship between stream order and Average stream length.
3. Areal Aspects of streams:
 - a) Drainage Frequency
 - b) Drainage Texture/Density

UNIT-III

5. Relief Aspect of Streams
 - a) Area Height Curve
 - b) Altimetric frequency curve
 - c) Hypsographic Curve
 - d) Hypsometric Integral Curve
 - e) Clinographic or clinometric curve

UNIT-IV

6. Slope Analysis
 - a) Wentworth's Method of Average Slope
 - b) G. H. Smith's Method of Relative Relief.

SUGGESTED READINGS:-

1. Manual of Photographic interpretation (1960), American Society of photogrammetry, The George Banta Co., Wisconsin.
2. Lilies, T. M. and Kiefer R. W. (1987), Remote Sensing and Image Interpretation, Jhon Wiley and Sons, New York.
3. Sabins, P. F., (1987), Remote Sensing, Freeman, New York.
4. Singh, R. L. (1986), Practical Geography, Kalyani Publications, Ludhiana.
5. Monkhouse, F. J. and Wilkinson (1980), Maps and Diagrams, B.I. Publications, New Delhi.
6. Miller, A., (1953), The Skin of the Earth, Methuen and Co., London. Dury, G. H. (ed.), (1966), Essays in Geomorphology, Heinmann, London.
7. Dury, G.H. (1966) Essays in Geomorphology Heinmann, London.

Guru Jambheshwar University of Science & Technology, Hisar

Scheme of Examination for M.Sc. Geography

Semester III

Paper No.	Title	Max Marks	Internal Assessment	Time
GEOG-301	Geography and Ecosystem	80	20	3 Hrs.
GEOG-302 (A)	Field Methods in Geography (Socio-economic) (Theory)	40	10	3 Hrs.
GEOG-302 (B)	Project Report Based on Field Survey	40	10	3 Hrs.
GEOG-303(i)	Urban Geography	80	20	3 Hrs.
GEOG-304 (iv)	Geography and Disaster Management	80	20	3 Hrs.
GEOG-305 (A)	Introduction to Remote Sensing (Theory)	40	10	3 Hrs.
GEOG-305 (B)	Introduction to Remote Sensing (Practical)	40	10	3 Hrs.

SEMESTER IV

Paper No.	Title	Max Marks	Internal Assessment	Time
GEOG-401	Geographical Thought	80	20	3 Hrs.
GEOG-402	Hydrology and Oceanography	80	20	3 Hrs.
GEOG-403(i)	Regional Geography of India (with special reference to Haryana)	80	20	3 Hrs.
GEOG-404(V)	Urbanization in India	80	20	3Hrs.
GEOG-405 (A)	Fundamental of Geographical Information Systems (Theory)	40	10	3 Hrs.
GEOG-405 (B)	Fundamental of Geographical Information Systems (Practical)	40	10	3 Hrs.

GEOG-301
Geography and Ecosystem

Max Marks: 80

Time : 3 Hrs.

Note:- There will be nine questions in all. Question No. 1 is compulsory and consists of 10 short notes (required to be answered in not more than 25 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, one from each unit. Question 1 carries 20 marks while remaining four questions carry 15 marks each.

UNIT-I

1. Concept of Ecosystem; Types, components and function of ecosystem.
2. Energy flow in ecosystem: food chain, food web, trophic levels, ecological production and ecological pyramids.
3. Biogeochemical cycles: Hydrological, carbon, oxygen and nitrogen cycles

UNIT-II

4. Biome: Scheme of Classification: factors affecting the distribution of biomes;
 - a. Tropical evergreen rain forest biome
 - b. Savana biome
 - c. Monsoon biome
 - d. Temperate biome
 - e. Marine biome
2. Ecosystem approach and its relevance in geography

UNIT-III

3. Man-environment relationship: Classification of resources; use and ecological imbalance with reference to soils, forests and energy resources
4. Biodiversity and conservation: preservation and conservation of ecosystem through resource management.

UNIT-IV

5. Problems of pollution: concept of air, water, and noise pollution.
6. Environment legislation: The Stockholm Conference, the Earth Summit, Kyoto Protocol and Copenhagen Conference, Environmental laws in India (the Wild Life Act, Water Act, Forest Act, Environment Protection Act and National Environment Tribunal Act).

Suggested Readings:

1. Ackerman, E.A., Geography as a Fundamental Research Discipline, University of Chicago Research Papers, 1958.
2. Agarwal, A. and Sen, S.: The Citizens Fifth Report. Centre for Science and Environment New Delhi 1999.
3. Bertalanffy, L. General Systems Theory, George Bragiller New York, 1958.
4. Bodkin, E.: Environmental Studies, Charles E. Merrill Pub Co., Columbus, Ohio, 1982.
5. Chandna, R.C.: Environmental awareness, Kalyani Publishers, New Delhi, 1998.
6. Chorley, R.J., Geomorphology and General Systems Theory, U.S.G.S. Professional Paper, 500B, 1962.

7. Eyre, S.R. and Jones, G.R.J. (eds.), *Geography as Human Ecology*, Edward Arnold, London, 1966.
8. Kormondy, E.J.: *Concepts of Ecology*, Prentice Hall, 1989.
9. Manners, I.R. and Mikesell, M.W. (eds.), *Perspectives on Environment*, Commission on College Geography, Publ. No.13, Washington, D.C., 1974.
10. Nobel and Wright: *Environmental Science*, Prentice Hall, New York 1996.
11. Odum, E.P.: *Fundamentals of Ecology*, W.B. Saunders, Philadelphia, 1971.
12. Russwurm, L.H. and Sommerville, E.(eds.): *Man's Natural Environment- A systems Approach*, Duxbury, Massachusetts, 1985.
13. Sharma, H.S.: *Ranthambhore Sanctuary-Dilemma of Eco-development*, Concept, New Delhi, 2000.
14. Simmons, I.G.: *Ecology of Natural Resources*, Edward Arnold, London, 1981.
15. Singh, S.: *Environmental Geography*, Payag Publications, Allahabad, 1991.
16. Smith, R.L: *Man and his Environment: An Ecosystem Approach*, Harper & Row, London, 1992.
17. I.N.E.P.: *Global Environmental Outlook*, U.N. Pub, New York, 1998.
18. World Resources Institute: *World Resources*, (Latest Report) Washington D.C.
19. World Watch Institute: *State of the World*, (Latest Report) Washington, D.C.

GEOG-302 (A)

FIELD METHODS IN GEOGRAPHY (SOCIO-ECONOMIC) (THEORY)

Max. Marks: 40

Time 3 Hrs.

Note:- There will be seven questions in all. Question No.1 is compulsory and consists of 5 short notes (required to be answered in not more than 25 words each). Short notes shall cover entire syllabus. There will be 6 long questions, three from each unit. The candidate shall attempt THREE long questions selecting at least one from each unit. All questions carry equal marks.

UNIT-I

1. Significance of Field work in Geography
2. Identification of Research Problem and Formulation of Research Design.
3. Types and Sources of Data
4. Preparation of Questionnaires

UNIT-II

5. Sample Design
6. Collection of socio-economic data.
7. Retrieval and Analysis of Data
8. Format of Report Writing.

SUGGESTED READINGS:

1. Har Prasad (1992): Research Methods and Techniques in Geography, Rawat Publishers, Jaipur.
2. Mishra, H.N. and Singh V.P. (ed.) (1998), Research Methodology: Social, Spatial and Policy Dimensions, Rawat Publishers, Jaipur.
3. Goode and Hat, Research Methodology in Social Sciences, Oxford University Press, New Delhi.
4. Black James A and D.J. champion (1976): Methods and Issues in social Research, New York, Jolm Wiley and Sons, Inc.
5. Young, PV. An introduction to research methodology

PROJECT REPORT BASED ON FIELD SURVEY (302 B)

Max. Marks: 40

Time: 3 Hrs.

The students will have to write a project report based on field survey which shall be duly supervised by the teacher.

Scheme of Evaluation:

1. Report writing-25 marks
2. Viva voce on Report-15 marks.

GEOG- 303 (i)

Urban Geography

Max Marks: 80

Time: 3 Hrs.

Note:- There will be nine questions in all. Question No. 1 is compulsory and consists of 10 short notes (required to be answered in not more than 25 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, one from each unit. Question 1 carries 20 marks while remaining four questions carry 15 marks each.

UNIT-I

1. Urban Geography: nature, scope and concepts.
2. Origin and evolution of towns and factors of urban growth.
3. Economic base of cities: concept and employment ratio.

UNIT-II

4. Functional classification of cities: concepts and scheme of classification.
5. Rural Urban Fringe: structural characteristics and its development.
6. City and region: concepts of influence and dominance, methods of delimitation of area of influence and area of dominance.

UNIT-III

7. Urban morphology and land use structure: city core, commercial, industrial and residential areas.
8. Models of city structure: concentric zone model by E.W. Burgess, sector model by Homer Hoyt and multiple nuclei model by Harris and Ullman

UNIT-IV

9. Central place theory of Christaller and Losch.
10. Rank size rule and Law of primate city.
11. Social area analysis.

Suggested Readings:

1. Mayer H.M. and Kohn, C.F. (1968), Readings in Urt. The university of Chicago Press, Chicago.
2. Berry, J.E. & et al. (Eds.), 1970, Geography Perspective on Urban System, Prentice Hall, New Jersey.
3. Cater, Herald (1972), The study of Urban Geography, Edward Arnold, London.
4. Johnson, James (Eds.), 1974, Suburban Growth, John Wiley and sons, London.
5. Sinha, S.P. (1984), Processes and Fattern of Urban Development in India: A.C. study of Haryana, The associated Publishers, Ambala Caltt. David Clark (1982), Urban Geography, Croom Halm, London and Cambridge.
6. Northern, Urban Geography
7. Raymond and Murphy: American cities.
8. Michanel Pacione: Urban Geography.
9. R.Ramachandra: Urbanization and Urban System in India.

GEOG- 304 (IV)
GEOGRAPHY AND DISASTER MANAGEMENT

Max Marks: 80

Time: 3 Hrs.

Note:- There will be nine questions in all. Question No.1 is compulsory and consists of 10 short notes (required to be answered in not more than 25 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, one from each unit. Question 1 carries 20 marks while remaining four questions carry 15 marks each.

UNIT-I

1. Definition, nature and classification of disasters.
2. Geography and disasters: major disasters of world, disaster profile of India
3. Tectonic Disasters: Volcanoes, Earthquakes, Tsunamis, Landslides.

UNIT-II

4. Hydrological Disasters: Floods and Droughts
5. Climatic Disasters: Cyclones, Heavy Precipitation.
6. Human Induced Disasters: Epidemics, Industrial and Transport Disasters; Wars and Terrorism induced Disasters

UNIT-III

7. Vulnerability to Disasters and Affecting Factors.
8. Planning for Disaster Mitigation and Preparedness.
9. Mitigation Measures of Disasters.

UNIT-IV

10. Post Disaster Recovery and Rehabilitation
11. Impacts of Disaster on Society and Economy
12. Remote Sensing and GIS Applications in Disaster Prevention and Monitoring.

Suggested Readings:

1. Nlaikie, P and other (1994) At Risk: Natural Hazards, People;s Vulnerability and Disasters, Routledge, London.
2. Carter, NW (1991), Disaster Management: A Disaster Manager's Handbook, ADB, Manila.
3. Cuny, FC (1983) Disasters and Development, Oxford University Press.
4. Hewitt, K (1977) Regions of Risk: A Geographical Introduction to Disasters, Longman, Harlow.
5. Kates RW and I Burton (1986) Geography, Resources and Environment, Vol. I & II, Themes from the work of Gilbert F White, The University of Chicago Press, Chicago
6. Smith K (1996) Environmental Hazards: Assessing Risks and Reducing Disasters, Routledge, London.
7. Varley, A, Disaster, Development and Environment, John Wiley and Sons, Chichester.

GEOG- 305 (A)
INTRODUCTION TO REMOTE SENSING (THEORY)

Max Marks: 40

Time: 3 Hrs.

Note:- There will be seven questions in all. Question No.1 is compulsory and consists of 5 short notes (required to be answered in not more than 25 words each). Short notes shall cover entire syllabus. There will be 6 long questions, three from each unit. The candidate shall attempt THREE long questions selecting at least one from each unit. All questions carry equal marks.

UNIT-I

1. Fundamentals: Remote Sensing, definition and scope, EMR characteristics, Interaction with matter, remote sensing regions and bands, types of remote sensing.
2. Aerial Photographs: aerial photos, types and scale, resolution, geometric properties of single aerial photos, stereoscopy, stereoscopic parallax, relief displacement.

UNIT-II

3. Satellite Imagery: General orbital characteristics of remote sensing satellites, general characteristics of remote sensing sensors, characteristics of Indian remote sensing satellite and raw Remote Sensing data.
4. Interpretation and Application: Elements of image interpretation, image processing techniques: Visual and Digital. Applications in resource mapping and monitoring

Suggested Readings:-

1. Avery T.E., and G.L. Berlin (1992): Fundamentals of Remote Sensing and Air Photo Interpretation, 514 Ed. Macmillan, New York, USA.
2. Campbell, J.B. (2002) Introduction to Remote Sensing, 3rd ed., Taylor & Francis, New York, USA.
3. Lillesand, Thomas M. and R. Kiffer (1994), Remote Sensing and Image Interpretation, 3rd edition, John Willy & sons, Inc New York, USA.
4. Sabins, F (1982): Remote Sensing Principles and Application, Freeman and Company, New York, USA
5. Jensen, J.R. (2000), Remote Sensing of the Environment: An earth Resource Perspectives, Pearson Education Inc. India.
6. Aggarwal C.S. and P.K. Garg (2000). Remote Sensing, A.H. Wheeler & Co. Ltd, New Delhi.
7. Nag and Kudrat (2002), Remote Sensing and Image Interpretation, Concept Publishers, Delhi.
8. Meenakhi Kumar(2000), Text book on Remote Sensing; NCERT, New Delhi.
9. Anji Reddy (2000) Remote Sensing and Geographical Information System (An Introduction), Hyderabad.

GEOG- 305 (B)
INTRODUCTION TO REMOTE SENSING (PRACTICAL)

Max. Marks: 40
Time: 3 Hrs.

Laboratory Work: 24
Practical Record: 06
Viva-Voce: 10

Note: There will be three exercises and candidate has to attempt all. All questions carry equal marks.

Exercises:

1. Identification of Flight Line
2. Scale of Photographs.
3. Determination of height of objects from single vertical photographs
4. Identification of objects and features with stereoscope.
5. Preparation of Thematic maps on landuse/land cover
6. Georeferencing of satellite imagery in image processing software.
7. Image to image rectification.
8. Creating subset.
9. Merging images of various resolution
10. Making false colour composite

GEOG- 401

Geographical Thought

Max Marks: 80

Time: 3 Hrs.

Note:- There will be nine questions in all. Question No.1 is compulsory and consists of 10 short notes (required to be answered in not more than 25 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, one from each unit. Question 1 carries 20 marks while remaining four questions carry 15 marks each.

UNIT-I

1. Classification of knowledge, Nature of Geography and its place among sciences
2. Nature of Geographic knowledge during ancient (Greek and Roman) and medieval (Arab) periods
3. Foundation of Modern Geography-contributions of Varenius, Kant, Humboldt and Ritter.

UNIT-II

4. Emergence of Geography as a study of (i) physical features (ii) chorology (iii) landscapes.
5. Concepts and dualism in Geography: Environmental Determinism and Possibilism, Areal Differentiation; Physical vs Human Geography, and Systematic vs Regional Geography

UNIT-III

6. Quantitative Revolution-Emergence of theoretical geography
7. Positivist Explanations in Geography- Laws, theories, models, inductive & deductive logic.

UNIT: IV

8. Behavioral and Humanistic Perspectives in Geography
9. Social Relevance in Geography- Welfare, Radical and Feminist Perspectives
10. Postmodernism and Geography.

SUGGESTED READINGS:

1. Dickinson, R E (1969), The Makers of Modern Geography, London.
2. Dikshit, RD (1997), Geographical Thought- A Contextual History of Ideas, Prentice Hall of India, New Delhi.
3. Harvey David (1989), Explanation in Geography, Edward Arnold, London.
4. Hartshorne, R (1959), Perspectives on the Nature of Geography, Rand MacNelly, Chicago.
5. James PE and Martin J Geoffrey (1972) All possible Worlds, John Wiley and Sons, New York.
6. Johnston, RJ (1983) Geography and Geographers, Edward Heinemann, London
7. Peet, Richard (1998) Modern Geographical Thought, Oxford, Blackwell Publishers.

GEOG-402
HYDROLOGY AND OCEANOGRAPHY

Max. Marks: 80

Time: 3Hrs.

Note:- There will be nine questions in all. Question No. 1 is compulsory and consists of 10 short notes (required to be answered in not more than 25 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, one from each unit. Question 1 carries 20 marks while remaining four questions carry 15 marks each.

UNIT-I

1. Definition, nature, scope and historical development of hydrology. Relationship of hydrology with other physical sciences.
2. Hydrological cycle, estimation of global water budget, human impact on hydrological cycle.

UNIT-II

3. Rainfall: frequency, intensity and measurement, accuracy of rainfall measurement, determination of average rainfall (Arithmetic mean, Thiessen polygon, isohyetal methods), variations in rainfall and world distribution.
4. Sources and measurement of stream flow, hydrograph and its components, analysis of hydrograph, factors affecting the hydrograph shape, methods of hydrograph separation, variations in runoff, rainfall-runoff relationship.

UNIT-III

5. Major topographic features of ocean basins, bottom relief of Atlantic, Pacific and Indian oceans.
6. Sources, classification and distribution of ocean deposits, corals-origin, types and conditions for development. Theories of the origin of coral reefs (Subsidence and standstill).

UNIT-IV

7. Origin, causes, types and effects of the ocean currents, currents of the Atlantic, Pacific and Indian oceans.
8. Oceanic temperature: distribution and causes of variation.
9. Composition of oceanic water and distribution of salinity.

SUGGESTED READINGS:

1. Chorley, R. J. Water, Earth and Man, Methuen, London, 1969.
2. Rao, K.L. India's Water Wealth, Orient Longman, New Delhi, 1975.
3. Ward, WC, Principles of Hydrology, McGraw Hill, New York, 1967
4. King CAM, Oceanography for Geographers, 1962
5. Subramanya K. 1994. Engineering Hydrology, Tata McGraw-Hill Publishing Company Limited, New Delhi.
6. Patra K.C. 2010. Hydrology and Water Resource Engineering, Norsa Publishing House, New Delhi.
7. Reddi, P.J. 1992. A Text Book of Hydrology, Laxmi Publications, New Delhi.
8. Siddhartha, K. 1999. Oceanography-A brief Introduction, Kisalaya Publications, New Delhi.
9. Lal, DS. 2007. Oceanography. Sharda Pustak Bhawan, Allahabad.
10. Singh. S. 2008. Oceanography. Prayag Pustak Bhawan, Allahabad
11. Sharma RC and Vatal M. 1993. Oceanography for Geographers, Chaitanya Publishing House, Allahabad.

GEOG- 403 (I)

REGIONAL GEOGRAPHY OF INDIA (WITH SPECIAL REFERENCE TO HARYANA)

Max Marks: 80

Time: 3 Hrs.

Note:- There will be nine questions in all. Question No. 1 is compulsory and consists of 10 short notes (required to be answered in not more than 25 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, one from each unit. Question 1 carries 20 marks while remaining four questions carry 15 marks each.

UNIT-I

1. Concept and types of regions and regionalization
2. Regional Diversities in India
3. Critical Review of schemes of regionalization of India: Baker and Stamp, Pithawala, Spate and Learmonth and R L Singh.

UNIT-II

1. Macro Regions of India: Himalayas, Indo-Ganga Plains, Indian Peninsula; physical and socio-economic characteristics
2. Bases of demarcation of Meso Regions in India.
3. Schemes of socio-economic regionalization: Asok Mitra, P.Sengupta & Galina Sadasyuk, B.K. Roy.

UNIT-III

1. Physical and economic diversities in Haryana
 - i. Relief, Climate, Drainage, Groundwater, Soils and Natural Vegetation
 - ii. Agriculture and its spatial organization
 - iii. Industry, Transport and Communication

UNIT-IV

1. Demographic characteristics and diversities in Haryana.
2. Social diversities in terms of education and health in Haryana.
3. Social region of Haryana.

SUGGESTED READINGS:

1. Deshpande CD (1992), India: A Regional Interpretation, ICSSR and Northern Book Centre.
2. Singh, RL (ed.) (1971): India- A Regional Geography, National Geographical Society, Varanasi
3. Singh, Jasbir singh (1976) Agricultural Geography of Haryana, Vishal Publishers, Kurukshetra.
4. Spate OHK And ATA Learmonth (1971)- India and Pakistan, Methuen, London.
5. Tirtha R and Gopal Krishna (1996), Emerging India, Rawat Publications, Jaipur.
6. Census of India (1981) Regional Division in Haryana.
7. Census of India (2001), Administrative Atlas of Haryana.
8. FICCI (2007), State of Infrastructure in Haryana.
9. www.nic.gov.in (web site related to Haryana).

GEOG- 404 (V)
URBANIZATION IN INDIA

Max. Marks 80

Time: 3 Hrs

Note:- There will be nine questions in all. Question No.1 is compulsory and consists of 10 short notes (required to be answered in not more than 25 words each). Short notes shall cover entire syllabus. There will be 8 long questions, two from each unit. The candidate shall attempt FOUR long questions, one from each unit. Question 1 carries 20 marks while remaining four questions carry 15 marks each.

UNIT-I

1. History of urbanization in India: Ancient, Medieval, Colonial and post independence phases of urbanization.
2. Processes of urbanization: Socio-cultural, political, economic and geographical processes.

UNIT-II

3. Patterns of urbanization: settlement structure, level of urbanization, criteria of measurement and spatial patterns of urbanization in India.
4. Recent trends of urbanization in India.

UNIT-III

5. Urban regions of India: case studies of metropolitan regions of Delhi, Mumbai, Kolkata and Chennai.
6. Contemporary Urban issues: Urban poverty, slums and urban renewal, urban infrastructure and solid waste management.

UNIT-IV

7. Role of urbanization in economic and social change.
8. SEZ : Concept, policies and consequences.
9. National urbanization policy.

Suggested Readings:

1. Alam. S.M.: Hyderabad- Secunderabad Twin Cities Asia Publishing House, Bombay, 1964.
2. Alam, SM and Khan, W: Metropolitan Hyderabad and its Region: A Strategy for Development, Asia Publishing House, Bombay, 1972.
3. Berry, B.J.L. and Horton F.F. Geographic Perspectives on Urban Systems, Prentice Hall, Englewood Cliffs, New Jersey, 1970.
4. Carter: The Study of Urban Geography, Edward Arnold Publishers, London, 1972.
5. Chorley, R.J. and Haggett P. (ed.) : Models in Geography, Methuen, London, 1966.
6. Dickinson, R.E.: City and Region, Routledge, London, 1964.
7. Dwyer, D.J. (ed.) The City as a Centre of Change in Asia, University of Hong Kong Press, Hongkong, 1971.
8. Gibbs J.P.: Urban Research Methods D. Van Nostrand Co.Inc. Princeton, New Jersey, 1961.
9. Hall P.: Urban and Regional Planning, Routledge, London, 1992.
10. Hanser, Philip M. and Schnore Leo F.(ed.): The Study of Urbanization, Wiley, New York, 1965.
11. James, P.E. and Jones C.F. (eds.): American Geography, Inventory and Prospect, Syracuse University Press, Syracuse, 1954.
12. Kundu, A.: Urban Development and Urban Research in India, Khanna Publication, 1992.
13. Meyor, H.M. Kohn C.F. (eds.): Readings in Urban Geography, University of Chicago Press, Chicago, 1955.
14. Mumford, L Culture of Cities, Mc & Co. London, 1958.

15. Nangia, Sudesh Delhi Metropolitan Region: A study in settlement geography, Rajesh Publication, 1976.
16. Rao V.L.S.P: Urbanization in India: Special Dimensions. Concept Publishing Co. New Delhi.
17. Rao V.L.S.P: The Structure of an Indian Metropolis: A study of Bangalore Allied Publishers Bangalore, 1979.
18. Singh K and Steinberg F.(eds.): Urban India in Crisis, New Age Iterns, New Delhi, 1998.
19. Smailes A.E.: The Geography of Towns, Hutchinsonson, London, 1953.
20. Tewari, Vinod K, Jay A. Weinstein, VLS Prakasa Rao (editors) Indian Cities: Ecological Perspectives, Concept, 1986.

GEOG- 405 (A)

FUNDAMENTAL OF GEOGRAPHICAL INFORMATION SYSTEMS (THEORY)

Max Marks: 40

Time : 3 Hrs

There will be seven questions in all. Question No.1 is compulsory and consists of 5 short notes (required to be answered in not more than 25 words each). Short notes shall cover entire syllabus. There will be 6 long questions, three from each unit. The candidate shall attempt THREE long questions selecting at least one from each unit. All questions carry equal marks.

UNIT-I

1. GIS: concept, definition and development.
2. Hardware and software requirements for GIS environment
3. Data for GIS : (i) Spatial data and their sources (ii) Non –spatial data and their sources; (iii) data structure: vector and raster
4. Data Base Management System; Sources of errors in GIS database.

UNIT-II

5. Map, scale and map projection: Need of projection, spherical co-ordinate system and properties.
6. Integration of Remote Sensing data into GIS and its application in resource mapping, urban management and real time mapping.
7. Current issues in GIS.

Suggested Reading :

1. Ian Heywood, Sarah. C and Srinivasaraju (2006), An Introduction to GIS, Pearson Education, Delhi.
2. **Prithvish** Nag and Samita Sengupta (2007). GIS Concepts and Business opportunities, Concept publication, Delhi.
3. Jeffery Stare and John Estes (1990) Geographical Information Systems: An introduction, Prentice Hall.
4. Chrisman, Nicholas, (1997) Exploring GIS. John Wiley and Sons.
5. ESRI, (1997) Readings in: GIS at work in the Community.
6. ARC News, ESRI, Redlands, California.
7. GIS World, Inc, Fort Collins, Colorado
8. D.J. Maguire, M.F. Goodchild and D.W. Rhind (1991), Geographical Information System: Principles and Applications, Longman Scientific and Technical.
9. T. Bernhardsen (1999), GIS: An Introduction, Wiley, New York.

GEOG- 405 (B)

Fundamental of Geographical Information Systems (Practical)

Distribution of Marks:

Exercises/Lab work	24 Marks
Project Work	6 Marks
Viva voce	10 Marks

Note: Students have to prepare a Project file using spatial and non-spatial data based on 6 exercises mentioned below:

Practical Exercises:

1. Georeferencing
2. Creation of Geo-data base and shape file.
3. On screen digitization/vectorisation of spatial data in the form of 3 layers: polygon, polyline and point.
4. Adding attributes to these layers and statistical calculations.
5. Displaying attribute data on map by various methods.
6. Preparing layout and printing of theme map.

Head of the Department