

2025

M.Sc. 3rd Semester Examination
GEOGRAPHY

Paper : GEO - 307-A/C/D/E/F

Full Marks : 25

Time : One Hour

*The figures in the margin indicate full marks.
Candidates are required to give their answers
in their own words as far as practicable.*

Spl. Paper : Advanced Geomorphology

GEO - 307A

(Process Geomorphology-2)

Group - A

Answer any *two* questions : $2 \times 2 = 4$

1. Distinguish between panplain and peneplain.
2. What is permafrost?
3. Define outwash plain.
4. What is meant by "geotourism"?

Group - B

Answer any *two* questions : $4 \times 2 = 8$

5. "Quaternary environmental change has an impact on the development of landforms" — Explain with examples.

P.T.O.

(2)

6. Describe different types of moraines with suitable diagram.
7. Elucidate impacts of basin landuse change on river channel.
8. Comment on the necessity of dam-decommissioning in India.

Group - C

Answer any *one* question :

8×1=8

9. Explain different types of erosional landforms developed due to periglacial processes.
10. Examine geomorphic significance of either Mawsmat speleothem or Nohkalikai waterfall of Meghalaya as a geomorphosite.

Internal Assessment : 5 marks

(3)

**Spl. Paper : Urban Geography and Regional
Planning**

GEO - 307C

(Contemporary Urban Issues)

Group - A

Answer any *two* questions : $2 \times 2 = 4$

1. What do you mean by urban homelessness?
2. What is meant by social stratification in a city?
3. What is meant by the "multiplier effect" in an urban economy?
4. Differentiate between monocentric and polycentric metropolitan development.

Group - B

Answer any *two* questions : $4 \times 2 = 8$

5. How have globalization and information technology reshaped urban form and function?
6. Explain the concept of a city's ecological footprint and its relevance in assessing urban sustainability.
7. Discuss in brief the problem of urban poverty and homelessness as a challenge to the social fabric of Indian cities.
8. Explain the four critical pillars of AMRUT 2.0 for Urban redevelopment in India.

P.T.O.

(4)

Group - C

Answer any *one* question : $8 \times 1 = 8$

9. Examine how social stratification and class diversity shape the spatial organization and lifestyle patterns in Indian metropolitan cities.
10. Analyze the environmental implications of rapid urbanization in Indian metropolises, with reference to urban heat islands and drainage system.

Internal Assessment : 5 marks

(5)

GEO- 307D

**(Photogrammetry, Aerial Photo,
and Satellite System)**

Group - A

Answer any *two* questions : $2 \times 2 = 4$

1. What is the conjugate principal point?
2. What do you mean by relative aperture?
3. What is photographic overlap and why is it important in aerial photography?
4. What do you mean by lens distortion in aerial photographs?

Group - B

Answer any *two* questions : $4 \times 2 = 8$

5. If the shadow length of a building is 20 m, with the local sun angle of 45° , find the height of the building.
6. Write the principles of relief displacement for height measurement from a vertical aerial photo.
7. Describe the scale of a vertical air photo over variable terrain height.
8. Differentiate between whiskbroom and pushbroom scanning systems used in satellite imagery.

P.T.O.

(6)

Group - C

Answer any *one* question : 8×1=8

9. Describe the principles of measuring height from image parallax.
10. Describe stereoscopic 3D viewing and stereoscopic measurements in detail, and discuss their significance in stereophotogrammetry. What is orthorectification?

6+2

Internal Assessment : 5 marks

(7)

GEO - 307E

(Metrics and Models In Landscape Ecology)

Group - A

Answer any *two* questions : $2 \times 2 = 4$

1. Define a "patch" in the context of landscape ecology.
2. What is a "core area metric" in landscape analysis?
3. Differentiate between an "edge" and a "boundary".
4. Differentiate between aggregation and diversity metrics with examples.

Group - B

Answer any *two* questions : $4 \times 2 = 8$

5. How does spatial configuration influence ecological processes in a heterogeneous landscape?
6. Illustrate with examples how landscape composition affects species distribution.
7. State the importance of Shape Metrics in analyzing the landscape character of a region.
8. Explain the role of models in landscape ecology.

Group - C

Answer any *one* question : $8 \times 1 = 8$

9. Explain with examples how composition and configuration jointly determine landscape functionality and biodiversity patterns.

P.T.O.

(8)

10. Discuss how models contribute to understanding spatial pattern-process relationships in landscapes with special reference to Neutral Model.

Internal Assessment : 5 marks

(9)

GEO - 307F

(Statistical Climatology)

Group - A

Answer any *two* questions : $2 \times 2 = 4$

1. What do you mean by climatologies of precipitation?
2. What is a large-scale oscillation in an atmospheric system?
3. What is monsoon low?
4. How is statistical downscaling different from dynamical downscaling?

Group - B

Answer any *two* questions : $4 \times 2 = 8$

5. How does the anomaly of SST explain the occurrence of ENSO in the Pacific Ocean basin?
6. Write a short note on dipole phases over the Indian Ocean.
7. Write, in brief, the statistical requirements of machine learning in climate studies.
8. The IMD has predicted a negative IOD coupled with an increased likelihood of La Niña conditions in the post-monsoon season of 2025. How do you think both will affect the winters over the Indian sub-continent?

P.T.O.

(10)

Group - C

Answer any *one* question : $8 \times 1 = 8$

9. Write the theoretical basics of EOF for analyzing the time series data.
10. Describe the phases of MJO. What is the climatic significance of MJO?

Internal Assessment : 5 marks
