



GEOADS03T (Geotectonics & Geomorphology)

Category A: 10 Marks

1. Discuss the tectonic and structural evolution of the Earth with reference to the Pleistocene events.
2. Explain the principles of isostasy. Compare the Airy and Pratt models with suitable diagrams.
3. Describe the plate tectonic theory as a unifying concept of global tectonics. Illustrate with examples from plate margins and hotspots.
4. Explain the formation and classification of folds. Add neat sketches.
5. Describe the different types of faults and discuss their geomorphic expression.
6. Discuss the role of weathering and mass wasting in landform development.
7. Explain the processes and landforms produced by river systems in uniclinal and folded structures.
8. Describe the coastal processes and the landforms they produce.
9. Explain the erosional and depositional landforms associated with glacial and glacio-fluvial processes.
10. Compare the models of landscape evolution proposed by Davis, Penck, and Hack.

Category B: 5 Marks

11. What is meant by the geological time scale? Write briefly on its importance in tectonic studies.
12. Write a short note on the Pleistocene epoch.



13. Explain the concept of isostasy in brief.
14. Write the basic assumptions of the Airy model of isostasy.
15. Write the basic assumptions of the Pratt model of isostasy.
16. Mention the major evidence supporting the theory of plate tectonics.
17. Differentiate between divergent and convergent plate margins.
18. Define hotspot. Give two examples.
19. Distinguish between folds and faults.
20. Write a short note on a normal fault.
21. Write a short note on reverse fault.
22. Briefly explain strike-slip fault.
23. What is mass wasting? Write its geomorphic significance.
24. Briefly explain the concept of weathering.
25. Describe the surface expression of faults.
26. Define meandering and braiding in rivers.
27. Write a short note on deltas.
28. Explain the role of waves in coastal erosion.
29. Write a note on cirques and moraines.
30. Write a short note on dunes.

Category C: 2 Marks

31. Define tectonics.
32. What is the geological time scale?
33. What is isostasy?



34. Name the scientists who proposed the models of isostasy.

35. What is plate tectonics?

36. Define subduction zone.

37. What are transform faults?

38. Define fold.

39. Define fault.

40. Mention two landforms formed by folding.

41. Mention two landforms formed by faulting.

42. Define weathering.

43. What is mass wasting?

44. Name two agents of erosion.

45. Define drainage basin.

46. What is a sea cliff?

47. Define fjord.

48. What is a drumlin?

49. Define loess.

50. Who proposed the cyclic concept of landscape evolution?



GEOADS03P (Geotectonics & Geomorphology)- Lab

10 Marks each

1. Interpret the given geological map with folds and mark the axial trace.
2. Interpret the given geological map with unconformity. Explain its geomorphic significance.
3. Interpret the given geological map with an igneous intrusion.
4. Construct a **serial relief profile** from the given toposheet and interpret.
5. Construct a **superimposed relief profile** from the given toposheet and interpret.
6. Construct a **projected relief profile** from the given toposheet and interpret.
7. Construct a **composite relief profile** from the given toposheet and interpret.
8. From the given Survey of India toposheet, extract geomorphic information of a plateau region.
9. Delineate a **drainage basin** from the given toposheet.
10. Perform **stream ordering (Strahler's method)** on the delineated drainage basin.
11. Calculate the **Relative Relief (Smith's method)** for the given basin.
12. Calculate the **Average Slope (Wentworth's method)** from the given data.
13. Calculate the **Drainage Density (Horton's method)** from the given map.
14. Construct a **hypsomeric curve** for the given drainage basin.



15. Derive the **hypsometric integral** and interpret its meaning.
16. Calculate the **Channel Sinuosity Index** for a 10 km river reach.
17. Calculate the **Braiding Index** of a river from the given toposheet .
18. Compare and interpret **serial, superimposed, projected, and composite relief profiles**.
19. Draw and explain a **longitudinal profile of a river** from the given data.
20. Discuss the geomorphic significance of slope analysis in plateau regions with diagrams.

5 Marks each

21. Write the margin information from a Survey of India toposheet.
22. Show the steps of drainage basin delineation on the given toposheet.
23. Calculate Relative Relief (Smith's method) for a small dataset.
24. Calculate Average Slope (Wentworth's method) for given values.
25. Calculate Drainage Density (Horton's method) for a given reach.
26. Construct a simple hypsometric curve from sample data.
27. Compute channel sinuosity index from given river length and valley length.
28. Compute the braiding index for a short river reach.
29. Draw a neat sketch of an anticline and a syncline.
30. Draw a simple longitudinal profile from the given dataset.



Viva Voce Questions

31. Define a mineral with one example.
32. Define rock with one example.
33. Differentiate between igneous and sedimentary rocks.
34. Which mineral is used in making pencils?
35. What is the hardness of Talc on the Mohs scale?
36. What is the parent rock of marble?
37. Name two igneous rocks.
38. Name one silicate and one carbonate mineral.
39. What is stream order?
40. Define drainage basin.
41. What is meant by drainage density?
42. Define channel sinuosity.
43. What does a high braiding index indicate?
44. What is an unconformity?
45. What is the difference between a projected and a composite profile?
46. What is the significance of a hypsometric curve?
47. What is relative relief?
48. What is the main use of topographical maps in geomorphology?
49. What is the geomorphic significance of slope analysis?
50. What information can be extracted from a Survey of India topographical sheet?



GEOADS08T – Population Geography

Category A: 10 Marks

1. Discuss the development of Population Geography as a specialized field and its relationship with demography.
2. Explain the sources of population data and highlight their reliability and problems of mapping.
3. Examine the theories of population distribution and growth, both classical and modern, with suitable examples.
4. Discuss the demographic transition model with examples from different countries.
5. Analyze the determinants of world patterns of population distribution and growth. Explain the concept of optimum population.
6. Describe the population distribution, density, and growth profile of India with suitable data.
7. Discuss the concepts of age-sex composition, rural-urban composition, and literacy in the context of population development.
8. Explain the methods of measuring fertility and mortality. Discuss the concept of cohort and life table.
9. Examine the causes and types of national and international migration with special reference to India.
10. Critically evaluate the population policies of developed and developing countries with reference to India's population and environment.



Category B: 5 Marks

11. Define population geography and distinguish it from demography.
12. Write a note on the importance of population data in geography.
13. What are the limitations of census data?
14. Differentiate between the density of population and the growth of population.
15. Briefly explain the Malthusian theory of population.
16. Write a short note on optimum population.
17. Mention the main features of the demographic transition model.
18. What are the determinants of world population distribution?
19. Discuss the population growth trends of India since independence.
20. Differentiate between the rural and urban composition of the population.
21. Write a short note on literacy as a demographic attribute.
22. Explain the significance of sex ratio in population studies.
23. Write briefly about the measurement of mortality rate.
24. What is the cohort method in population studies?
25. Discuss the urbanization trends of India.
26. Explain the occupational structure of India.
27. Write a short note on the types of migration.
28. What are the causes of international migration?
29. Write a note on the declining sex ratio in India.



30. Briefly explain the Human Development Index (HDI) and its components.

Category C: 2 Marks

31. Define demography.
32. What is population geography?
33. Name two major sources of population data.
34. What is population density?
35. Write the formula for the population growth rate.
36. Who proposed the demographic transition model?
37. State two features of the demographic transition model.
38. What is the optimum population?
39. Define overpopulation.
40. Mention two determinants of population distribution.
41. What is the literacy rate?
42. Define age-sex pyramid.
43. What is the crude birth rate?
44. What is the crude death rate?
45. Write the meaning of life expectancy.
46. Define urbanisation.
47. What is meant by occupational structure?
48. Name two types of migration.
49. What is the Human Development Index?
50. Mention two components of HDI.



GEOADS09T – Environmental Geography

Category A: 10 Marks

1. Discuss the geographers' approach to environmental studies with suitable examples.
2. Explain the concept of holistic environment and the systems approach in environmental geography.
3. Describe the concept, structure, and functions of an ecosystem with a neat diagram.
4. Explain the concept of ecosystem services. Discuss provisioning, cultural, supporting, and regulating services with examples.
5. Describe the importance and characteristics of wetland ecosystems with special reference to the East Kolkata Wetlands.
6. Discuss rural environmental issues in India with reference to sanitation and public health.
7. Analyze urban environmental issues with special reference to solid waste management.
8. Discuss the impact of plastic pollution on oceans and suggest possible measures of control.
9. Critically examine India's environmental policies with reference to the National Environmental Policy (2006) and the National Action Plan on Climate Change.



10. Discuss global environmental initiatives with special reference to the Montreal Protocol, Kyoto Protocol, and Paris Climate Summit.

Category B: 5 Marks

11. Write a short note on the scope of environmental geography.
12. Define systems approach. How is it useful in environmental studies?
13. Explain the term “ecosystem structure.”
14. Briefly describe the functional aspects of an ecosystem.
15. Distinguish between natural and man-made ecosystems with examples.
16. What are ecosystem services? Give examples of provisioning services.
17. Write a short note on cultural ecosystem services.
18. What are supporting services of ecosystems? Give two examples.
19. Describe the regulating services provided by ecosystems.
20. Write a short note on East Kolkata Wetlands.
21. Mention the rural environmental issues associated with drinking water supply.
22. Discuss the role of sanitation in rural environmental management.
23. Write briefly about urban air pollution.
24. Explain the importance of solid waste management in cities.
25. Write a short note on the impacts of ocean pollution.
26. Explain the problem of plastic pollution in marine environments.



27. Write a short note on the Stockholm Earth Summit.
28. Briefly discuss the Rio Earth Summit (1992).
29. Write a short note on Johannesburg Summit (2002).
30. Explain the significance of India's National Action Plan on Climate Change.

Category C: 2 Marks

31. Define environmental geography.
32. What is a holistic environment?
33. What is a system?
34. Define ecosystem.
35. Name two components of an ecosystem.
36. What is meant by ecosystem function?
37. Give two examples of provisioning services.
38. Give two examples of cultural services.
39. Mention two supporting services of ecosystems.
40. Mention two regulating services of ecosystems.
41. Define wetlands.
42. Mention two ecological functions of wetlands.
43. Name two rural environmental issues.
44. Mention two urban environmental issues.
45. State two impacts of plastic pollution on oceans.
46. What is the full form of NEP (2006)?
47. Write the year of the Stockholm Earth Summit.



48. Mention the year of the Rio Earth Summit.
49. Name two protocols related to climate change.
50. Expand HDI and explain its environmental relevance in one line.

Department of Geography



GEOADS010T – Soil and Bio- Geography

Category A: 10 Marks

1. Define and discuss the significance of soil properties: texture, structure, and moisture with examples.
2. Explain the importance of soil pH, organic matter, and NPK in soil fertility.
3. Describe the soil profile. Discuss the origin and profile characteristics of lateritic, podsol, and chernozem soils.
4. Analyze the factors, processes, and management measures of soil erosion and degradation.
5. Explain the principles of soil classification with reference to Genetic and USDA systems. Discuss the concept of land capability classification.
6. Discuss the concepts of biosphere, ecosystem, biome, ecotone, community, niche, succession, and ecology with suitable examples.
7. Explain the concepts of trophic structure, food chain, and food web. Discuss the flow of energy in ecosystems.
8. Discuss the bio-geochemical cycles with special reference to carbon and nitrogen cycles.
9. Describe the geographical extent and characteristic features of tropical rainforest, savanna, hot desert, and taiga biomes.
10. Explain the causes, consequences, and management of deforestation with suitable examples.

Category B: 5 Marks

11. Write a short note on the significance of soil texture.
12. What is soil structure? Why is it important for plant growth?
13. Explain the importance of soil moisture.



14. Define soil pH and state its agricultural importance.
15. What is the role of organic matter in soil fertility?
16. Write a short note on lateritic soil.
17. Describe the profile characteristics of podsol soil.
18. Write a brief note on chernozem soil.
19. What are the major factors responsible for soil erosion?
20. Explain sheet erosion and gully erosion briefly.
21. Mention the role of humans as agents of soil transformation.
22. Write a short note on the USDA soil classification system.
23. Define land capability and its importance in soil management.
24. Write a short note on biome.
25. Explain the term “ecotone” with one example.
26. Define ecological succession and state its importance.
27. Write a note on food chain and food web.
28. Briefly describe the nitrogen cycle.
29. Write short notes on the characteristic features of the savanna biome.
30. Briefly explain the concept of phytogeographical regions.

Category C: 2 Marks

31. Define soil geography.
32. What is soil texture?
33. Define soil structure.
34. What is soil moisture?
35. What is the ideal pH range for most crops?
36. Expand NPK.
37. Define soil profile.
38. Mention two characteristics of lateritic soils.
39. Name two characteristics of podsol soils.
40. Give two features of chernozem soils.



41. Define soil erosion.
42. Mention two processes of soil degradation.
43. What is the genetic classification of soil?
44. Define land capability.
45. Define biome.
46. Give two examples of ecological niches.
47. Define food chain.
48. What is a food web?
49. Mention two greenhouse gases involved in biogeochemical cycles.
50. Name two consequences of deforestation.

Department of Geography



GEOADS011T – Remote Sensing, GIS and GNSS

Category A: 10 Marks

1. Explain the principles of Remote Sensing with types of RS satellites and sensors.
2. Discuss in detail the sensor resolutions with examples from IRS and Landsat missions.
3. Describe the process of image referencing and the acquisition of free geospatial data from NRSC/Bhuvan/USGS.
4. Write a detailed procedure for preparing False Colour Composites from IRS LISS-3 and Landsat TM / OLI data.
5. Explain image interpretation principles. How are LULC features identified from satellite images?
6. Discuss the acquisition and utilization of free DEM data from CartoDEM, SRTM, and ALOS.
7. Explain the concept of GIS. Discuss its components and applicability in detail.
8. Describe different types of GIS data structures. Differentiate between spatial and non-spatial data, as well as raster and vector data.
9. Explain in detail the preparation of attribute tables, data manipulation, and overlay analysis in GIS.
10. Discuss the principles and methodology of GNSS positioning and waypoint collection.

Category B: 5 Marks

11. Differentiate between the IRS and Landsat satellite missions in terms of sensor resolution.
12. What is the significance of georeferencing in remote sensing?
13. Briefly describe the steps for preparing False Colour Composites.



14. What are the major principles of satellite image interpretation?
15. Describe CartoDEM and its applications.
16. What are the various types of data structures used in GIS?
17. Explain the concept of raster vs vector data models.
18. Write short notes on attribute tables and their importance in GIS analysis.
19. What is buffer preparation in GIS? Explain its use.
20. Describe the process of transferring GNSS waypoints to GIS software.
21. Explain the process of acquiring geospatial data from the Bhuvan portal.
22. Describe the differences between CartoDEM, SRTM, and ALOS in terms of resolution and usage.
23. Write short notes on the importance of sensor resolutions in image interpretation.
24. Explain the concept and applications of overlay analysis in spatial decision-making.
25. Discuss the role of GNSS in land surveying and mapping applications.

Category C: 2 Marks

26. Define Remote Sensing.
27. Name any two RS satellites.
28. What is spatial resolution?
29. What does USGS stand for?
30. Define False Colour Composite (FCC).
31. What is LISS-3?
32. Expand TM and OLI in Landsat sensors.
33. What is DEM used for?
34. Name any two free sources of geospatial data.
35. Define GIS.
36. What is a non-spatial attribute?



37. Give an example of raster data.
38. Give an example of vector data.
39. What is an attribute table?
40. What is overlay analysis in GIS?
41. Define buffer zone in GIS.
42. What is GNSS?
43. What is waypoint collection in GNSS?
44. How is GNSS data integrated into GIS?
45. Name any two satellite-based GNSS systems.
46. What is the full form of SRTM?
47. Mention one application of False Colour Composite.
48. List any one difference between LULC and DEM.
49. What is the purpose of waypoint collection in GNSS?
50. Name one software used for GIS analysis.



GEOADS011P– Remote Sensing, GIS, and GNSS (Lab)

Category A: 10 Marks (Hands-on Based)

1. Perform georeferencing of a given topographic map using ground control points. Explain the steps and generate the rectified output.
2. Prepare a False Colour Composite (FCC) of a given IRS LISS-III image and identify at least three land cover features. Submit the print and interpretation.
3. Using a Landsat OLI dataset, prepare FCC using two different band combinations and compare the differences in land cover identification.
4. Perform supervised classification on the given satellite image. Generate land use/land cover map and calculate the percentage area under each class.
5. Edit the misclassified pixels in a supervised classification output. Generate the final classified map and interpret changes.
6. Digitise road networks, water bodies, and settlement areas from the given base map. Attach attributes to each layer.
7. Prepare an overlay map combining land use and soil data. Write the interpretations of overlay analysis.
8. Generate a thematic map showing population distribution using the choropleth method in GIS. Please submit both the map and its interpretation.
9. Prepare a pie-chart and bar graph-based thematic map using attribute data of crops in districts. Compare the visual effectiveness of both maps.
10. Collect waypoints of at least 5 important locations using a GNSS receiver. Export the data to GIS and plot them on a base map.



Category B: 5 Marks (Hands-on Based)

11. Georeference a small section of a scanned map and save it in QGIS.
12. Enhance a satellite image using contrast stretching and submit the output.
13. Generate an FCC using standard band combination and identify vegetation and water bodies.
14. Prepare an FCC using non-standard band combination and compare it with standard FCC.
15. Perform supervised classification with two training sites and generate the output map.
16. Do post-classification smoothing for the given supervised classification image.
17. Digitise river features from the given base map and save them as a shapefile.
18. Attach attribute data (name, length) to the digitised rivers.
19. Overlay land use and road network layers and interpret connectivity.
20. Prepare a choropleth map showing literacy rates in districts.
21. Create a pie-chart map for agricultural land use data.
22. Prepare a bar graph map for rainfall distribution of states.
23. Export GNSS waypoint data into GIS and plot the locations.
24. Collect a track (path) using GNSS and plot it in GIS.
25. Generate an attribute table for settlement polygons with population data.
26. Compare raster and vector-based outputs of the same dataset in QGIS.
27. Prepare a buffer zone of 2 km around rivers using GIS.
28. Generate a land cover statistics table from classified image output.



29. Perform clipping of a satellite image using a district boundary.
30. Prepare a layout (map composition) including scale, north arrow, and legend in QGIS.

Category C: 2 Marks (Viva-Voce)

31. What is georeferencing?
32. What is the role of ground control points?
33. Expand FCC.
34. Name two satellites commonly used in remote sensing.
35. What is supervised classification?
36. What is the main difference between supervised and unsupervised classification?
37. What is a shapefile?
38. Name two types of attribute data.
39. What is overlay analysis?
40. Mention two examples of thematic maps.
41. Expand GNSS.
42. Name two global GNSS systems other than GPS.
43. What is a waypoint?
44. What is the function of QGIS?
45. What is digitisation in GIS?
46. What is the difference between raster and vector data?
47. What does a legend in a map represent?
48. What is a buffer in GIS?
49. What is the purpose of scale in a map layout?
50. What is the viva-voce mark distribution in this paper?