

2022

M.Sc.

4th Semester Examination

GEOGRAPHY

PAPER—GEO-404

Full Marks : 50

Time : 2 Hours

The figures in the right-hand margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

SPECIAL PAPER : ADVANCED GEOMORPHOLOGY

UNIT-404A.1 Advanced Geomorphic Techniques

Group-A

Answer any one question.

1×8

1. Elucidate procedures and specific applications of rock dating with special reference to radiometric dating.

(Turn Over)

2. Discuss the geo-ecological impacts of Farakka barrage on both upstream and downstream section of river Ganga.

Group-B

Answer any *two* questions.

2×4

3. Mention the techniques to estimate bed-load of a river.
4. Examine the entrainment threshold with the help of Shield diagram.
5. Write the different sources of flow resistance in an open channel.
6. Analyse the relationship between stage and discharge of a river.

Group-C

Answer any *two* questions.

2×2

7. Define unit stream power.
8. What is Froude Number?

9. What is critical shear stress?

10. Define watershed.

UNIT-404A.2 Applied Geomorphology

Group-A

Answer any *one* question.

1×8

1. Discuss the application of geomorphological knowledge in river basin management, citing the examples of the Kangsabati River in West Bengal.
2. Elucidate the nature of soil erosion in the Shilabati River basin and identify the hydro-geomorphological parameters in the estimation of soil erosion in the region.

Group-B

Answer any *two* questions.

2×4

3. Explain the reasons for erosion in the shoreline section of Old Digha in West Bengal.

4. Identify the factors of groundwater recharges and discharges in Kolkata urban areas with suitable examples.
5. Explain the significance of the geomorphological characteristics of Nayachara Island in the framework of Environmental Management Plan (EMP).
6. What is the role of geomorphology in dam site selection for a river?

Group-C

Answer any *two* questions.

2×2

7. Define EIA.
8. What type of storm water management is practised in the Kolkata urban belt?
9. What role does soil piping play in the Western Ghats?

10. Write a short note on the river bank erosion of the Bhagirathi River.

[Internal assessment - 10]

SPECIAL PAPER : COASTAL MANAGEMENT

UNIT-404B.1 Coastal Ecology and Hazards

Group-A

Answer any *one* question. 1×8

1. Elucidate the adaptation and reproduction strategies of dune-building plants.
2. Illustrate the techniques of wave monitoring along an open coast.

Group-B

Answer any *two* questions. 2×4

3. Examine the role of artificial sea weeds in controlling coastal erosion.

4. Evaluate environmental role of mangroves.
5. How do the mechanisms of long-term sea level change vary from that of short-term change?
6. Briefly describe the impacts of a recent tropical cyclone along estuarine coast of West Bengal.

Group-C

Answer any *two* questions. 2×2

7. Why does turbulence promote more primary productivity in sea weeds?
8. What is thermal expansion of sea water?
9. What is isostatic rebound?
10. Define tide-dominated estuary.

UNIT-404B.2 Coastal Issues and Management**Group-A**

Answer any *one* question.

1×8

1. Identify the impact of global warming on coral bleaching, and explain the methods of habitat conservation in the restoration of coastal wetlands.
2. Elucidate the role of remote sensing and GIS techniques in the identification of coastal cell circulation systems for estimating the temporary sediment shift in the coastal zone.

Group-B

Answer any *two* questions.

2×4

3. Assess the vulnerability of coastal zones using multi-criterion CVI.
4. Write a note on the positive and negative impacts of coastal engineering structures.

5. Identify the dredging techniques and procedures used to improve channel navigability.
6. Describe the impacts of coastal urbanisation on the low-lying alluvial coasts of Odisha and West Bengal.

Group-C

Answer any *two* questions.

2×2

7. What is the significance of coastal resource management?
8. What is the environmental zoning approach in coastal management?
9. Write a note on coastal eutrophication.
10. Justify the necessity for the preparation of CRZ maps.

[Internal assessment - 10]

**SPECIAL PAPER : URBAN GEOGRAPHY &
REGIONAL PLANNING**

**UNIT-404C.1 Theoretical Bases of
Regional Planning**

Group-A

Answer any *one* question. 1×8

1. Bring out rational of underdevelopment as explained in Dependency Theories.
2. Explain the regional growth perspective in the light of Perrouxian theory of "Growth Pole".

Group-B

Answer any *two* questions. 2×4

3. Critically discuss the Cumulative causation concept of G. Myrdal.
4. Highlight the environmental problems experienced by coastal regions of Purba Medinipur district.

5. Differentiate balanced growth from unbalanced growth.
6. Briefly discuss the integrated development approaches proposed by Dennis Rondinelli, for agropolitan development.

Group-C

Answer any *two* questions.

2×2

7. Mention the important techniques to measure regional disparity.
8. What do you mean by "Economic Space"?
9. What is meant by 'trickle down effect'?
10. What do you understand by propelling industries?

UNIT-404C.2 Planning for Urban Development**Group-A**

Answer any *one* question.

1×8

1. Discuss the role of Swachch Bharat Mission for the improvement of urban sanitation in India.
2. Briefly discuss the role of geoinformatics in urban planning.

Group-B

Answer any *two* questions.

2×4

3. Write the different types of housing in urban India.
4. Explain the role of mass transportation in urban planning.
5. Evaluate the factors determining the valuation of land in urban areas.

6. Explain the Real Estate Development model.

Group-C

Answer any two questions.

2×2

7. Write the names of major urban housing policies in India.
8. What are the basic features of under developed economy?
9. Distinguish between basic and non basic function in urban economy.
10. What do you mean by traffic management?

[Internal assessment – 10]

**SPECIAL PAPER : REMOTE SENSING AND
GEOGRAPHIC INFORMATION SYSTEM**

UNIT-404D.1 Advanced Remote Sensing

Group-A

Answer any *one* question.

1×8

1. How does the ground resolution cell size determine in the side looking radar (SLR) system?
2. Write a brief note on the image enhancement techniques and its significance.

Group-B

Answer any *two* questions.

2×4

3. Write a short note on passive microwave remote sensing.
4. Why is it important to understand the emissivity factor for thermal remote sensing?
5. Explain the importance of hyperspectral images for mineral mapping.

6. Mention different image interpretation keys that can be used for digital image processing.

Group-C

Answer any *two* questions. 2×2

7. What do you mean by point operation in digital image processing (DIP)?
8. What do you mean by systematic and non-systematic error in DIP?
9. What is hypercube?
10. Write down the operations principle of synthetic aperture radar (SAR).

UNIT-404D.2 Advanced GIS and Applications of Remote Sensing

Group-A

Answer any *one* question. 1×8

1. Describe, with graphics, algorithms to obtain the slope from DEM data.

2. State the application of remote sensing in vegetation mapping.

Group-B

Answer any *two* questions.

2×4

3. Briefly describe the krigging interpolation principle.
4. Discuss the spectral indices for mapping fresh and turbid water.
5. Write a note on the implication image overlay functions.
6. Describe the effectiveness of time series images in analyzing the vegetation-phenology.

Group-C

Answer any *two* questions.

2×2

7. What is a sliver polygon?
8. Why do we need polynomial expression to represent curvature of a surface?

9. What is Geometric Dilution of Precision in GPS positioning?
10. What do you mean by Red Edge spectral index?

[Internal assessment - 10]
