

**M.Sc. 3rd Semester Examination, 2023**

**REMOTE SENSING AND GIS**

*(Geoinformatics in Earth Sciences)*

**PAPER—RSG-303(C.1 & C.2)(New)**

*Full Marks : 50*

*Time : 2 hours*

*The figures in the right hand margin indicate marks*

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

*Illustrate the answers wherever necessary*

**PAPER—RSG-303C.1**

**(Option 3 : Fundamentals of Earth System)**

**GROUP – A**

**Answer any two questions : 2×2**

*( Turn Over )*

1. What are the primary Earthquake waves ?
2. Define Faults.
3. Characteristics of the Igneous Rocks.
4. What are the geomorphic agents ?

**GROUP – B**

Answer any **two** questions : 4 × 2

5. Discuss the nature and composition of earth's atmosphere.
6. Bring out the distinctions between the 'Continental drift' theory and the 'plate tectonics' theory.
7. Explain the formation of Metamorphic Rocks.

8. How are the following distinguished in satellite images :
- (a) Fold, Faults and lineaments.

GROUP – C

Answer any **one** question : 8 × 1

9. Draw a diagram showing the hydrosphere, with arrows to show the movement of water through the hydrophere and describe briefly. 4 + 4
10. Describe the role of geospatial techniques for delineating the drainage patterns. 8

**PAPER—RSG-303C.2**

*(Application of Geo-informatics in Earth Science)*

GROUP – A

Answer any **two** questions :

1. Define the term "spectral signature" and its relevance in image analysis.
2. Describe disaster management and its key objectives.
3. Which rivers are prominent in the hydro-geomorphological landscape of West Bengal?
4. Explain the difference between landslide hazard and landslide risk.

**GROUP – B**

Answer any **two** questions : 4 × 2

5. Examine the role of machine learning algorithm in automated lithological discrimination from digital images.
6. Explore the role of remote sensing and Geographic Information System (GIS) tech-

nologies in landslide hazard zonation. Discuss how satellite imagery and spatial analysis contribute to mapping landslide-prone areas.

7. Explore quantitative methods used in landslide hazard zonation, such as probabilistic modeling, slope stability analysis, and numerical simulations.
8. What are the prominent geological features that shape the hydro-geomorphology of West Bengal.

GROUP – C

Answer any **one** question : 8 × 1

9. How does satellite imagery aid in identifying potential water source and drainage patterns for canal construction planning and explain the significance of using DTMs in the planning and design of canal construction projects ?

10. Elaborate on the various geological, topographical, hydrological, and anthropogenic factors that contribute to landslide hazards. Explain how each factor is considered in LHZ assessments.

[ Internal Assessment – 10 Marks ]

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