

2021

GEOLOGY

PAPER-I

Time Allowed — 3 Hours

Full Marks — 200

*If the questions attempted are in excess of the prescribed number, only the questions attempted first up to the prescribed number shall be valued and the remaining ones ignored.*

*Answers may be given either in English or in Bengali but all answers must be in one and same language.*

**Group-A**

Answer any three questions.

1. (a) What is a seismogram? Illustrate and explain how the epicentre of an earthquake can be located from the seismogram data. What is a seismic shadow zone? 20  
(b) Explain any two of the following: 10×2=20
  - (i) Intensity of earthquakes
  - (ii) Recording of earthquakes
  - (iii) Assessment of seismic risks
2. (a) Define a fold. How folds are classified? Explain with the help of neat sketches the important types of folds, as distinguished on the basis of inclination of axial plane. 20  
(b) Describe the different types of plate boundaries and their characteristic features. How does plate tectonic theory supports the continental drift theory? 20
3. (a) What is 'Hydraulic Conductivity of an aquifer? Show how it is related to 'Transmissivity' of an aquifer. Also show how hydraulic conductivity is related to groundwater velocity. 20  
(b) What is the reason for systematic repetition of marine magnetic anomalies on opposite side of mid-oceanic ridges? What is Bouger correction in gravity survey? 20
4. (a) What do you understand by Landslides? Briefly describe the different types of landslides and their characteristic features. 20  
(b) Define Compressional and Shear waves. Draw the variation of P wave and S wave velocities within the interior of the Earth and describe the various discontinuities with respect to the above velocity variation. 20
5. (a) Describe the different types of orbiting satellites and their characteristics features. What is atmospheric window? Give a detailed account on the basic components of GPS. 20  
(b) Describe the salient features that are to be given importance in selecting sites for construction of a dam. 20

**Group-B**

Answer any two questions.

6. (a) Discuss briefly on the classification of Gondwana Supergroup of rocks in India. 20  
(b) What is an Index fossil? Briefly discuss the significance of Index fossils. 20
7. (a) Describe in brief, about the hard part morphology of Brachiopods. 20  
(b) Give an account of the Cuddapah Group of rocks with special reference to its mineral wealth. 20
8. (a) What is glacial activity? Explain the terms 'Moraines', 'Drumlins', 'Eskers' and 'Kames'. 20  
(b) Give an account of geological work of wind explaining briefly some major geological features produced by this agency on the land surface due to erosion and deposition. 20
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