

## GEOLOGY

### PAPER - I

Time Allowed : 3 hours

Full Marks : 100

*Marks for each question is indicated against it.*

*Attempt any 5 (five) questions taking not more than 3 (three) questions from each Part.*

#### PART A

1. Briefly describe the term Trench, Benioff zone and Island arc establishing their interrelationship. Why are earthquake and volcanic belts confined to plate margins? Add a note on intra-plate volcanism. **(10+5+5=20)**
2. Write explanatory notes on any two of the following: **(2×10=20)**
  - (a) Application of geomorphology in groundwater prospecting.
  - (b) The Electromagnetic Spectrum and Remote Sensing.
  - (c) GIS and its application.
3. Explain Darcy's Law in relation to groundwater movement. Write brief notes on all the rock properties that has a bearing on groundwater storage and movement. **(10+10=20)**
4. Discuss briefly on the engineering properties of rocks. Also add notes on the various geological considerations to be taken into account for the construction of tunnels. **(8+12=20)**

#### PART B

5.
  - (a) Define unconformity and add notes on the types of unconformities. **(10)**
  - (b) Describe the mechanism of folding. **(10)**
6. What are microfossils? Name the types of fossils studied under micropaleontology. Outline the use of micropaleontology in relation to petroleum exploration and source rock studies. **(2+6+12=20)**
7. What are the broad bases of classification of stratigraphic units? Describe biostratigraphy in detail. **(6+14=20)**
8. Write explanatory notes on any two of the following: **(2×10=20)**
  - (a) Cretaceous - Tertiary boundary problem.
  - (b) Triassic succession of Spiti.
  - (c) General stratigraphic succession of Mizoram.