

**CSM : 22**

**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. What is continental drift? Explain the geological and paleontological evidences put forward in favour of continental drift theory. Briefly discuss on the mechanism of plate separation and collision. **(20)**
2. (a) List the drainage patterns observed in nature. Explain *any one* of them in relation to the underlying lithology and rock/or rock structure. **(4+6=10)**  
(b) Briefly state five basic concepts of geomorphology. **(10)**
3. Define an aquifer. Describe different types of aquifers. Give an explanation on different artificial recharge methods. **(1+9+10=20)**
4. Discuss the mechanical properties of the foundation rocks that are determined prior to construction in an engineering project. **(20)**

**PART - B**

5. Define stress. Write on stress vector. Discuss state of stress at a point. Describe Mohr's circle diagram. **(1+3+6+10=20)**
6. Explain the uses of microfossils in correlation of rocks and in petroleum exploration. **(10+10=20)**
7. What are lithostratigraphic units? Can fossils be used as a lithostratigraphic tool? Outline the hierarchy of lithostratigraphic units. **(3+3+14=20)**
8. Describe *any two* of the following: **(2×10=20)**
  - (a) Briefly describe the structure and tectonic history of the Himalayas.
  - (b) Cretaceous-Tertiary boundary and its geological significance.
  - (c) Discuss the Permian-Triassic boundary problem in stratigraphy.