

CSM : 22

GEOLOGY

PAPER - II

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. (a) State the relationship between space groups, point groups and crystal system. **(10)**
(b) Write brief notes on the symmetry elements of the Normal Class of the Triclinic System and the forms developed. **(10)**
2. What is magma? Describe different factors that lead to generation of magma. Explain the crystallization of diopside-anorthite system with reference to phase rule. **(2+6+12=20)**
3. Explain phase rule and its application in metamorphic studies using ACF diagram. Describe regional metamorphism of pelitic rocks starting from zeolite facies up to granulite facies. **(10+10=20)**
4. Define provenance and its importance in Sedimentology. Describe the provenance indicators to identify different source rocks. **(20)**

PART - B

5. (a) Outline the structural controls on mineralization. **(10)**
(b) Explain how the New Mineral Policy (2019) attempts to ensure responsible mining. **(10)**
6. (a) Name the instruments used in gravity survey. Explain the field procedure for gravity survey. Describe exploration techniques based on gravity studies. **(1+2+5=8)**
(b) What is geochemical prospecting? Explain different types of geochemical exploration technique. **(2+10=12)**
7. (a) Outline how trace elements throw light on the depth of generation of magmas. **(10)**
(b) Write a note on the cosmic abundance of elements. **(10)**
8. Describe the environmental impact due to an open-cast mine in the coalfields of India. What remedial measures are being adopted there? **(20)**