

1(CCEM)0**Geology****(11)****Paper—II**

Time : Three Hours]

[Maximum Marks : 300

- Note** :— (i) Answers must be written in English.
(ii) All questions carry equal marks.
(iii) Part/Parts of the same question must be answered together and should not be interposed between answers to other questions.
(iv) The answer to each question or Part thereof should begin on a fresh page.
(v) Your answers should be precise and coherent.
(vi) Candidates should attempt **six** questions only. Candidates must answer at least **one** question from each Section.
(vii) If you encounter any typographical error, please read it as it appears in the text-book.

SECTION—A

1. Discuss various types of crystal irregularities and imperfections observed in crystals. Comment upon their origin.
2. Write short notes on any **two** of the following :
 - (a) Crystallographic notations.
 - (b) Symmetry of a Tetrahedral class
 - (c) Axis of symmetry in cubic system.

SECTION-B

3. Define 'pleochroism'. Discuss and explain with the help of neat diagram about the phenomenon of pleochroism in case of uniaxial and biaxial anisotropic crystals. Comment upon pleochroic haloes.
4. Write short notes on any **two** of the following :
 - (a) Use of gypsum plate or porcelain plate in the study of crystals.
 - (b) Isogyres.
 - (c) Extinction angle.

SECTION-C

5. Discuss physical, chemical and optical properties of feldspar group of minerals. Comment upon their occurrence.
6. Write short notes on any **two** of the following :
 - (a) Tectosilicates and sorosilicates.
 - (b) How would you distinguish augite and hornblende under the microscope ?
 - (c) Ionic and coordination bonds.

SECTION-D

7. Give historical resume about the classification of igneous rocks. Discuss IUGS classification of Plutonic, hypabasal and volcanic rocks in detail.
8. Write short notes on any **two** of the following :
 - (a) Granulites and eclogites
 - (b) Current bedding and ripple marks
 - (c) Classification of arenaceous rocks.

SECTION-E

9. Discuss characteristic features of the following minerals deposits :
 - (a) Early and late magmatic deposits.
 - (b) Contact metasomatic and contact metamorphic deposits
 - (c) Mesothermal and Telethermal deposits.
10. What are the different constituents of Coal ? Give commercial classification of coal in India. Comment upon conservation methods of coal in India.

SECTION-F

11. Mention only about various methods of geophysical and geochemical exploration. Discuss seismic method for petroleum exploration in detail. Indicate the limitations of geophysical method.
12. Discuss in detail about any **two** of the following :
 - (a) Darcy's law and its range of validity
 - (b) SPOT-2 and SPOT-4 images
 - (c) Dip facets.