

**1(CCE.M)2**  
**Geology—II**  
**(11)**

Time : Three Hours]

[Maximum Marks : 300

**INSTRUCTIONS**

- (i) Answers must be written in English.
- (ii) The number of marks carried by each question is indicated at the end of the question.
- (iii) The answer to each question or part thereof should begin on a fresh page.
- (iv) Your answer should be precise and coherent.
- (v) The part/parts of the same question must be answered together and should not be interposed between answers to other questions.
- (vi) Candidates should attempt **six** questions, selecting **one** question from each Section.
- (vii) If you encounter any typographical error, please read it as it appears in the text-book.
- (viii) Candidates are in their own interest advised to go through the General Instructions on the back side of the title page of the Answer Script for strict adherence.
- (ix) No continuation sheets shall be provided to any candidate under any circumstances.
- (x) Candidates shall put a cross (×) on blank pages of Answer Script.

(xi) No blank page be left in between answer to various questions.

(xii) No programmable Calculator is allowed.

(xiii) No stencil (with different markings) is allowed.

#### SECTION–A

1. What is Bragg's law ? Discuss powder X-ray diffraction method. Comment upon its application in crystal studies. 50
2. Write short notes on any **two** of the following :–
  - (a) Twin laws in the feldspar
  - (b) Mathematical relationship between stereographic and spherical projections.
  - (c) Centre of symmetry. 50

#### SECTION–B

3. What do you understand by "Interference Figure" ? Discuss various types of interference figures observed in case of anisotropic crystals. 50
4. Write short notes on any **two** of the following :
  - (a) Birefringence
  - (b) Pleochroism
  - (c) Optic axial angle ( $2v$ ), citing an example of augite. 50

#### SECTION–C

5. Discuss physical, chemical and optical properties of Feldspathoid Group of minerals. 50
6. Write short notes on any **two** of the following :
  - (a) Isomorphism and polymorphism.
  - (b) Nesosilicates and inosilicates.
  - (c) Mineralogy of a hydrothermally altered holos. 50

#### SECTION–D

7. What do you understand by texture of an igneous rock ? Discuss various types of textures found in igneous rocks. Comment upon their petrogenetic significance. 50
8. Write short notes on any **two** of the following :
  - (a) Facies and grades of metamorphism.
  - (b) Sphericity and roundness.
  - (c) ACF and AKF diagrams. 50

#### SECTION–E

9. Discuss metallogenetic epochs and provinces with special reference of India. Add a note on the uranium mineralization in Peninsular India. 50
10. Write short notes on any **two** of the following :
  - (a) Proximate and ultimate analysis of coal.
  - (b) Coking coal and caking coal.
  - (c) Structural and stratigraphic oil traps. 50

#### SECTION–F

11. Discuss about the geochemical methods used in the exploration of sulphide ore deposits. Comment upon orientation surveys. 50
12. Write short notes on any **two** of the following :
  - (a) Geobotanical and biogeochemical exploration.
  - (b) Mechanical properties of soil.
  - (c) Tone and texture of arial photography. 50