

Roll No. ....

Total No. of Pages : 3

**1(CCE.M)3**  
**Geology-II**  
**(11)**

Time : Three Hours]

[Maximum Marks : 300

**INSTRUCTIONS**

- (i) Answers must be written in English.
- (ii) All questions carry equal marks.
- (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 (x) 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. Enumerate the essential differences between crystalline and non-crystalline substances. Add a note on lattice symmetry.
2. Write notes on any **two** of the following :
  - (a) International system of crystallographic notation
  - (b) Crystal imperfections
  - (c) X- ray crystallography.

#### SECTION–B

3. Briefly explain the various optical and physical properties of minerals that can be observed in thin sections under a transmitting polarizing microscope.
4. Write notes on the following :
  - (a) Isotropism
  - (b) Pleochroism

#### SECTION–C

5. Describe the different kinds of interatomic bonds that may form between different atoms in a crystal lattice. Give examples.
6. Write detailed notes on any **two** of the following :
  - (a) Classification of silicates
  - (b) Polymorphism
  - (c) Pseudomorphism.

#### SECTION–D

7. What is magmatic differentiation ? Explain , with examples, as to how differential crystallization of a magma may give rise to a variety of igneous rocks.
8. What is meant by 'Texture of a rock' ? Describe the important textures of igneous rocks and their genetic significances.
9. Describe the petrography and petrogenesis of some important metamorphic rocks.

#### SECTION–E

10. Briefly describe the important processes of ore formation.
11. Write notes on any **two** of the following :
  - (a) Forms and structure of ore deposits
  - (b) Metallogenic epochs
  - (c) Hydrocarbon resources of India.

#### SECTION–F

12. Describe the various methods used for the exploration of metallic mineral deposits.
13. Write notes on any **two** of the following :
  - (a) Ore dressing and beneficiation
  - (b) Application of geology in civil engineering applications
  - (c) Use of aerial photographs in geological investigations.