15042

M.Sc. DEGREE EXAMINATION, OCTOBER/NOVEMBER 2019

FIRST SEMESTER

Geology

Paper II — CRYSTALLOGRAPHY, MINERALOGY AND OPTICAL MINERALOGY

Time : Three hours Maximum : 75 marks

(No additional sheet will be supplied)

PART A — (5 × 3 = 15 marks)

Answer any FIVE questions.

Each question carries 3 marks.

Each answer should not exceed 1 page.

1. Symmetry elements.
2. Herman – Maughn symbol.
3. Briefly note the structure of silicates.
4. Explain the terms "Isomorphism and Polymorphism".
5. Explain the types of garnet mineral.
6. Al_2SiO_5 polymorphs.
7. Explain the refringence and birefringence.
8. Extinction angle.

PART B — (4 × 15 = 60 marks)

Answer ALL questions.

Each question carries 15 marks.

Each answer should not exceed 6 pages.

9. Explain the derivation of the 32 crystal classes.

Or

10. What is mean by twinning and types of twin and common twin laws?

11. Explain the various physical properties for the identification of Minerals.

Or

12. Give an account of silicate structure, chemical composition, properties and paragenesis of zeolite mineral group.

13. Give an account of structure, chemical composition, physical, chemical optical properties and paragenesis of olivine minerals.

Or

14. Write brief account of Mica group of minerals describing their structure, physicals chemical and optical properties.

15. Explain the term 'interference figures'. How is it obtained? Explain use its determining the optic sign of uniaxial and biaxial minerals.

Or

16. What are accessory plates? Explain them in details. And also about their use in optical mineralogy.