

**Parvatibai Chowgule College of Arts and Science
Autonomous**

Repeat B.Sc. Semester End Examination, January 2022

Semester : III

Subject : Geology

Course Title: Optical and Systematic Mineralogy (Core)

Duration : 02 hours

Maximum Marks: 45

Instructions:

1. All questions are compulsory.
 2. figures to the right indicate maximum marks
 3. Every main question must begin on a new page
 4. Draw neat-labelled diagrams wherever essential.
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QI Answer **ANY THREE** from the following: **(09)**

- a. Why do minerals show different relief under a petrological microscope?
- b. Why is Aluminium (Al^{3+}) absent in olivine structure?
- c. Why do micas show one set of cleavage?
- d. Why is there no quartz structure for nepheline?

QII. Answer **ANY TWO** from the following: **(12)**

- p. Using a gypsum plate, how will you determine the optic sign of a biaxial negative mineral?
- q. Relate the number of cleavages in pyroxene with its structure.
- r. Citing examples, differentiate between reconstructive and displacive transformation in the silica group of minerals.

QIII. Answer **ANY TWO** from the following: **(12)**

- m. Discuss the indicatrix for an orthorhombic mineral.
- n. Classify amphiboles based on their elemental abundances.
- o. Classify feldspars associated with basaltic magmas.

QIV Answer **ANY ONE** from the following: **(12)**

- A. With respect to the system Albite-Anorthite;
- a. Draw and explain the phase diagram. **(06)**
 - b. Why is it called solid-solution series? **(03)**
 - c. Mention its petrological significance **(03)**

OR

- B. With respect to the system Diopside-Anorthite;
- p. Draw and explain the crystallisation trend of the system. **(06)**

- q. Mention the significance of lowest and highest temperatures within the system. **(03)**
- r. Explain the petrological significance of the system. **(03)**
