

**The Assam Royal Global University, Guwahati**

**Royal School of Environment and Earth Sciences**

**B.Sc. (Hons.) Geology 1st Semester**

**Semester End Examination, February 2022**

**Course Title: Mineral Science**

**Course Code: GEOL162C102**

**Time: 3 Hours**

**Maximum Marks: 70**

**Note: Attempt all questions as per instructions given.**

*The figures in the right-hand margin indicate marks.*

**Section – A**

1. Attempt **all** questions. (Maximum word limit 50) 2 x 8
- a. Mention the significance of Pauling's rules.
  - b. Mention the most important factors controlling crystal size and perfection.
  - c. What is Hermann-Mauguin system of notation?
  - d. Mention the different crystal systems based on symmetry?
  - e. Why are cations not usually considered for classifying minerals?
  - f. Differentiate between Phyllosilicates and Inosilicates.
  - g. Write a note on polarization of light.
  - h. How does a mineral in thin section obtain colour?

**Section – B**

2. Attempt **any two** of the following: 6 x 2
- a. Explain FCC, HCP and BCC atomic arrangements of crystals. 6
  - b. What is meant by the term solid solution? Justify it with the help of an example of solid solution series. 2+4
  - c. Write short notes on Polymorphism and Pseudomorphism. 3+3
3. Attempt **any two** of the following: 7 x 2
- a. Write a note on crystal parameters and indices.
  - b. Explain the symmetry elements of Tetragonal system.
  - c. Explain how stereographic projection of crystal faces is done?
4. Attempt **any two** of the following: 7 x 2
- a. Write a note on the physical and optical properties of Feldspar Group of minerals. 3+4
  - b. Write a brief account of the composition of common rock forming minerals.
  - c. Write a detailed note on Silicate structures.
5. Attempt **any one** of the following: 14 x 1
- a. Explain the theory of light propagation in Anisotropic minerals. Add suitable diagrams. 14
  - b. With the help of diagram explain the working of petrological microscope. 14