

2026
(Regular)
Geology (Core)
Paper Code : GL-CE-4214
Paper Name : Mineral Science

Time : 2 hours

Full Marks : 45

The figures in the margin indicate full marks for the questions.

1. Choose the correct option : 1×4=4
- a) Which of the following crystal classes belongs to the isometric System ?
- i) $4/m\ 2/m\ 2/m$ ii) $4\ 3\ 2$
iii) 422 iv) None of the above
- b) The extinction angle of the mineral enstatite belonging to the pyroxene group of minerals is -
- i) Parallel extinction
ii) Oblique extinction
iii) Symmetrical extinction
iv) None of the above
- c) Bragg's Law is given by -
- i) $n\lambda = 2d \sin \theta$ ii) $n\theta = 2d \sin \theta$
iii) $n\lambda = d \sin \theta$ iv) $n\lambda = 2d \tan \theta$
- d) Optic axial angle is the angle by the -
- i) Two optic axes
ii) Two crystallographic axes
iii) Two vibration directions X and Z
iv) Two vibration directions X and Y

2. Give very short answer to the following questions : $2 \times 3 = 6$
- What do you understand by plane of symmetry ?
 - What are the uses of accessory plates ?
 - Name the mineral having the following compositions -
 - Mg_2SiO_4
 - $Ca_3Al_2Si_3O_{12}$
 - $CaAl_2Si_2O_8$
 - $K(Mg, Fe)_3(AlSi_3O_{10})(OH)_2$
3. Write short notes on **any three** of the following : $5 \times 3 = 15$
- Parameters and Indices.
 - Physical and optical properties amphibole group of minerals.
 - Different types of silicate structure.
 - Method to determine the pleochroic scheme of biaxial mineral.
 - Physical and optical properties of Epidote.
 - Accessory plates.
4. Answer **any two** of the following : $10 \times 2 = 20$
- Write about the symmetry elements, forms and indices of the normal class of Tetragonal system. $4 + 3 + 3 = 10$
 - What is the silicate structure of feldspar ? Write the chemical, physical and optical characters of feldspar group of minerals. $1 + 3 + 3 + 3 = 10$
 - What do you understand by the term space lattice ? Discuss the different Bravais lattices with suitable diagram. $2 + 8 = 10$
 - How can uniaxial interference figures be generated under polarising microscope ? How can optic sign of a uniaxial mineral section be determined under cross-nicols ? $3 + 7 = 10$

