

**USGEOT04 - Geology Paper-II : Crystallography and Optical Mineralogy**

P. Pages : 1

Time : Three Hours



**GUG/S/19/11583**

Max. Marks : 50

- Notes :
1. All questions are compulsory and carry equal marks.
  2. Draw neat sketches wherever necessary.

1. What are crystal notations? Describe in detail Miller indices and Weiss parameter with examples.

**OR**

Describe the following:

- i) Laws of crystallography
- ii) Contact goniometer

2. Give a brief account of axial, symmetry element and forms present in Baryte class of orthorhombic crystal system.

**OR**

Describe the following:

- a) Hexoctahedron and trapezohedron
- b) Axial and symmetry elements of zircon class of tetragonal crystal system.

3. Give a brief account of Beryl class of Hexagonal crystal system with reference to axial, symmetry elements and forms present in it.

**OR**

Describe the following:

- a) Axial and symmetry elements of gypsum class of Monoclinic crystal system.
- b) Basal pinacoid, side pinacoid, front pinacoid and hemi prism + ve and – ve of Axinite class.

4. Describe with neat sketches the optical properties of calcite, olivine, Quartz, and muscovite.

**OR**

Write on the following.

- a) Extinction and extinction angle
- b) Interference colours.

5. Write on the following in not more than two sentences: solve **any ten**.

- a) Solid angle
- b) Zone
- c) Edge of a crystal
- d) Cube
- e) Symmetry elements of Galena.
- f) Octahedron
- g) Symmetry elements of Axinite
- h) Name any two minerals crystallize in triclinic system other than axinite.
- i) Name any two minerals crystallize in monoclinic system other than gypsum.
- j) Isotropism
- k) Anisotropism
- l) Name any two minerals which show pleochroism.

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