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4. Write in detail on different parts of petrological microscope and their function.

Or

What are the important optical properties of minerals ?

5. Write on parameter and indices in crystals.

Or

Give a tabular illustration of symmetry characters of monoclinic system.

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Roll No.....

M.Sc. I Semester Examination, April-2021

GEOLOGY

Paper I

(Mineralogy, Mineral Optics and Crystallography)

Time : 3 Hours]

[Maximum Marks : 80

Note : All questions are compulsory. Question Paper comprises of 3 sections. **Section A** is objective type/Multiple Choice questions with no internal choice. **Section B** is short answer type with internal choice. **Section C** is long answer type with internal choice.

SECTION 'A'

1×10=10

(Objective Type Questions)

Choose the correct answer :

- Minerals which exhibit constant and characteristic colouration are known as :
 - Pseudochromatic
 - Allochromatic
 - Idiochromatic
 - Nanochromatic
- The properties hardness and toughness respectively corresponds to :
 - resistance to abrasion and breaking in minerals

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Or

Hardness in diamond is highest but in graphite is low, explain.

2. In Bowen's reaction series from top to bottom colour in minerals becomes lighter. Explain why ?

Or

Explain luminescence and thermal properties in minerals with suitable example.

3. Write on different uses of micas with rationale correlation with their properties.

Or

Give the classification of felspar group of minerals.

4. Write on general principles of optics and polarisation of light.

Or

Why all the cubic system minerals are isotropic under crossed nicol condition ?

5. Write on laws of Crystallography.

Or

Write on symmetry characters, forms and normal class of Hexagonal crystal system.

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8. Difference polymorphs of the same substance exhibit :

- (a) Different physical properties but identical chemical properties
- (b) Different chemical properties but identical physical properties
- (c) Different physical and chemical properties
- (d) Identical physical and chemical properties.

9. In Bowen's reaction series from olivine to quartz atomic structure becomes :

- (a) Simple to complex
- (b) Complex to simple
- (c) Remains stable
- (d) If has no relation with atomic structure

10. Heavy spar is a name given to mineral Barite where in the Specific Gravity is higher this high specific Gravity is due to :

- (a) Barium
- (b) Sulphur
- (c) Oxygen
- (d) Iron.

SECTION 'B'

5×4=20

(Short Answer Type Questions)

Note : Answer the following questions in 250 words.

1. Why cleavage is absent in mineral quartz ?

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- (b) resistance to breaking and abasion in minerals
- (c) resistence to conductivity and pressure
- (d) resistance to pressure and conductivity

3. The Molis scale of hardness is a/an :

- (a) Arithmetic scale (b) Geometric scale
- (c) Logmarithic scale (d) Arbitrary scale

4. The refractive index of Canada Balsam is :

- (a) 1.50 (b) 1.54
- (c) 1.486 (d) 1.65

5. The only symmetry that a triclinic crystal display is

- (a) Centre of symmetry (b) Plane of symmetry
- (c) Axes of symmetry (d) None of the above

6. Which of the following is matched correctly :

- (a) Diamond–Cubic cleavage
- (b) Halite–Octahedral cleavage
- (c) Calcite–Rhombohedral cleavage
- (d) Pyroxem–Prismatic Cleavage

7. Which of the following properties is not observed under ordinary light ?

- (a) Colour (b) Inclusion
- (c) R.I. (d) Pleochroism

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SECTION 'C'

10×5=50

(Long Answer Type Questions)

Note : *Answer the following questions in 500 words.*

1. Write on physical properties of mineral with examples therein.

Or

What is polymorphism and psudomorphism ? Give with examples.

2. How any why physical and other properties changes in felspars group ? Illustrate your answer with suitable examples.

Or

Write in detail on Garnet group of minerals.

3. How and why structure, chemistry, physical and optical properties changes in alumino silicates ?

Or

Write on peragenesis of cordierite and talc group of minerals.

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