Total No. of Printed Pages—4

2 SEM TDC GEOH (CBCS) C 3

2024

(May)

GEOLOGY

(Core)

Paper : C-3

(Geochemistry and Optical Mineralogy)

Full Marks : 53
Pass Marks : 21

Time : 3 hours

The figures in the margin indicate full marks for the questions

UNIT—I

(Concept of Geochemistry)

(Marks : 9)

1. Write on chemical bond. Explain its types giving example of each. 2+3=5

Or

What do you mean by atomic environment? What are fundamental elements in the environment? 3+2=5

2. Write a short note on any *one* of the the following : 4

   (a) Geochemical classification of elements

   (b) Periodic table and its uses

UNIT—II

(Earth and Geochemistry)

(Marks : 9)

3. Define radiogenic isotope. Write on application of radiogenic isotopes in geochemistry. 2+4=6

Or

Describe the processes causing variation in magma composition. 6

4. Write a short note on any *one* of the following : 3

   (a) Conservation of mass and its importance in geochemistry

   (b) Isotopic fractionation and the types of isotopic fractionation

UNIT—III

(Element Transport and Geochemical Behaviour of Elements)

(Marks : 9)

5. Define diagenesis and authigenesis. Describe the process of mineral reaction during diagenesis. 2+4=6

(Continued)

Or

Define aqueous geochemistry. Write on the mechanism of speciation in solution. 2+4=6

6. Fill in the blanks : 1×3=3

(a) Transport of a substance or quantity by bulk motion of a fluid is called _____.

(b) Seawater contains _____ % water and _____ % salt and minor amount of other substance.

(c) pH is a quantitative measure of _____ and _____ of aqueous solution.

UNIT—4

(Nature of Light and Optical Properties of Minerals)

(Marks : 13)

7. Define interference colour. What causes interference colour? Write on interference colour chart. 1+2+2=5

Or

Describe the process of polarization of light. Write on the functions of polarizer and analyser. 3+2=5

8. Define pleochroism. Write on the causes of pleochroism and pleochroic scheme. 1+2+2=5

9. Write a short note on any *one* of the following : 3

(a) Relief and Becke line

(b) Behaviour of isotropic and anisotropic minerals under polarizing microscope

UNIT—V

(Descriptive Mineralogy)

(Marks : 13)

10. Write on the classification, physical and optical properties and paragenesis of rock-forming group of *either* feldspar *or* amphibole. 7

11. Describe the physical and optical properties of any *three* of the following rock-forming minerals : 2×3=6

(a) Biotite

(b) Olivine

(c) Microcline

(d) Albite

(e) Hypersthene

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