2022/TDC/ODD/SEM/GELSEC-501T/134

TDC (CBCS) Odd Semester Exam., 2022

GEOLOGY

(5th Semester)

Course No. : GELSEC-501T

(Geochemistry)

Full Marks : 50

Pass Marks : 20

Time : 3 hours

The figures in the margin indicate full marks for the questions

UNIT—I

1. Answer any *three* of the following questions :

$1 \times 3 = 3$

(a) What is ionic radius?

(b) Define homodesmic crystal with example.

(c) What is the coordination number of Si in SiO_4 tetrahedra?

(d) Define radius ratio.

J23/**310** (Turn Over)

(2)

2. Answer any *one* of the following questions : 2

  (a) Define residual bond.

  (b) How is bonding related to the physical property of mineral?

3. Answer any *one* of the following questions : 5

  (a) Discuss colloids in geological systems with proper examples.

  (b) Describe the various branches of geochemistry and their applications.

UNIT—II

4. Answer any *three* of the following questions : 1×3=3

  (a) What is ring of Saturn?

  (b) Define cosmic abundance unit.

  (c) What is geochemical sink?

  (d) Mention the subsystems of the earth supersystem.

5. Answer any *one* of the following questions : 2

  (a) Define magic number.

  (b) State Oddo-Harkins rule of cosmic abundance.

J23/310 (Continued)

(3)

6. Answer any *one* of the following questions : 5

  (a) Write an account on the composition of planets.

  (b) Discuss the early geochemical evolution of the earth.

UNIT—III

7. Answer any *three* of the following questions : 1×3=3

  (a) What is chalcophile element?

  (b) Define major element.

  (c) What is geochemical affinity?

  (d) Where does the lithophile element occur?

8. Answer any *one* of the following questions : 2

  (a) What is the basis of Goldschmidt's geochemical classification of elements?

  (b) What is chemical sedimentary rock?

9. Answer any *one* of the following questions : 5

  (a) Write in detail the composition of volatile matter in igneous rocks. Add a note on the role of volatiles in magmatic process.

J23/310 (Turn Over)

(4)

(b) Discuss the principles governing the distribution of trace elements in igneous rocks.

UNIT—IV

10. Answer any *three* of the following questions :

1×3=3

(a) What is free energy?

(b) State the first law of thermodynamics.

(c) Define isostructuralism.

(d) What is enthalpy?

11. Answer any *one* of the following questions : 2

(a) Define isomorphous series with example.

(b) Define magma as a thermodynamic system.

12. Answer any *one* of the following questions : 5

(a) Describe the various mechanisms of polymorphic transformation with necessary sketches.

(b) Write an account on radioactive isotope geochemistry.

(5)

UNIT—V

13. Answer any *three* of the following questions :

1×3=3

(a) What is the composition of earth's core?

(b) Define camouflage.

(c) Mention one major reservoir of carbon in the earth's crust.

(d) What is partition coefficient of an element?

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

(a) Differentiated and undifferentiated meteorites

(b) Geochemistry of earth's crust

15. Answer any *one* of the following questions : 5

(a) Describe the composition of meteorites.

(b) Write an account on the biochemical classification of elements.

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