2018

2nd Semester

GEOLOGY

PAPER—C3T

(Honours)

Full Marks : 40

Time : 2 Hours

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

Group—A

Answer any *five* questions. 5×2

1. What is CCD ?

2. Why is the density of the outer core less than the inner core ?

3. When does a trace element get 'admitted' in the crystal lattice of a major element ?

4. What do you mean by large ion lithoplite elements ? Give example.

5. Why early formed mafic minerals of basaltic magma is rich in Fe^{2+} ?

6. What is the residence time of Na and K in seawater ?

7. Define the term gravitational Seggregation.

8. How the changes in the Eh and Ph effect the mobility of iron in natural water ?

Group—B

Answer any *four* questions. 4×5

1. Write a short note on the significance of $^{87}Sr/^{86}Sr$ ratio in the process of evolution of Earth's mantle and crust. 5

2. (a) "BIF's are mainly Archean in age"—Explain.

   (b) Why deep old waters of sea are enriched in Silica ? 3+2

3. What are siderophile elements ? Discuss the behaviour of such elements during core formation of earth. 5

4. (a) Derive the relation between half-life and decay constant from the law of radio active decay.

(b) What do you mean by isochron dating method ?

3+2

5. Write a short note on which way temperature, pressure and the nature of the source rock controls the variability of the chemical composition of the primary melts. 5

6. What are the different types of ionic substitution ? Describe with example ? 5

Group—C

Answer any *one* question. 1×10

1. (a) Write about different types of hydrothermal reactions.

(b) State how nutrients are recycled several times before reaching the bottom of the ocean floor. 7+3

2. What is Polymorphism ? What are the different types of polymorphic transformations observed in mineral ? Discus the various polymorphic forms of SiO_2 and their stabilities in P-T Space. 2+4+4