

[This question paper contains 2 printed pages.]

Sr. No. of Question Paper : 899

E

Your Roll No.....

Unique Paper Code : 219606

Name of the Course : B.Sc. (H) Geology

Name of the Paper : Introduction to Geochemistry [ET-4]

Semester : VI

Duration : 3 Hours

Maximum Marks : 75

**Instructions for Candidates**

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt any **FIVE** questions in all.
3. **All** questions carry equal marks.
4. Question **ONE** is compulsory.

1. (a) Match the following relative atomic abundances of the **five** most common elements that comprise 97% of the Earth's mass (5)

S.No	Elements	Weight (%)
1	Si	32.9
2	Fe	1.4
3	Mg	15.5
4	O	14.2
5	Al	30.07

- (b) Name any **five** large ion lithophile (LIL) elements. (5)

- (c) Arrange the following high field strength (HFS) elements in increasing order of incompatibility

U, Ce, Zr, Hf and Ti (5)

2. Discuss origin of elements with particular reference to Lee Cycle. (15)

P.T.O.

3. What do you understand about Stable and Radiogenic isotopes? Discuss application of  $^{14}\text{C}$  in radiometric dating. (10+5= 15)
4. Meteorites are the cosmochemical source of data. Justify the statement. (15)
5. Write short note on any **three** of the followings : (5×3=15)
- (i) Role of Si during dia genesis
  - (ii) Role of volatile elements in the hydrothermal reactions
  - (iii) Partial melting of mantle
  - (iv) Balance of salt in sea water
6. Discuss any **two** of the following pairs : (7.5×2=15)
- (a) Isomorphism and Polymorphism
  - (b) Advection and diffusion of elements
  - (c) Relationship between hydrogen ion concentration and oxidation potential
7. Discuss any **two** of the following : (7.5×2=15)
- (a) K-Ar System
  - (b)  $\text{Be}^{10}$  system
  - (c) Isotopic fractionation
8. What makes the stable isotopes useful? Derive the following equation :
- $$\alpha_{\text{A-B}} - 1 = (\delta_{\text{A}} - \delta_{\text{B}}) / (1000 + \delta_{\text{B}}). \quad (7.5 \times 2 = 15)$$