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3 SEM TDC GEOH (CBCS) C 5

2023

(Nov/Dec)

GEOLOGY

(Core)

Paper : C-5

(Igneous Petrology)

Full Marks : 53

Pass Marks : 21

Time : 3 hours

*The figures in the margin indicate full marks
for the questions*

UNIT—1

(Marks : 5)

1. Fill in the blanks : 1×2=2

(a) Majority of heat comes from the earth's interior is a result of _____.

(b) Average density of earth's outer core is about _____ gm/cm³.

2. Write briefly about the mechanism of flow of heat from earth's core to the surface. 3

(2)

UNIT—2

(Marks : 7)

3. Define any *three* of the following : 1×3=3
- (a) Viscosity of magma
 - (b) Aa lava
 - (c) Picrobasalt
 - (d) Pillow lava
 - (e) Pele's hair
4. Write short notes on any *two* of the following : 2×2=4
- (a) Pahoehoe lava
 - (b) Gas contents in magma
 - (c) Composition of andesitic magma

UNIT—3

(Marks : 8)

5. What are thermodynamic state functions? Give a brief idea on Gibbs' free energy (G) and Helmholtz free energy (A). What is the basic role of state functions in igneous petrology? 1+(2+2)+1=6

Or

What are the significances of phase rule and phase diagrams? Give an example of two component incongruent phase diagram. 3+3=6

6. Give the mathematical expression for any one of the following : 2
- (a) Phase rule for heterogeneous system
- (b) Phase rule for system at equilibrium

UNIT—4

(Marks : 10)

7. Write True/False for the following statements : 1×3=3
- (a) If the rock contains exceptionally large crystals, the texture is termed as vesicular texture.
- (b) Porphyritic rocks exhibit two distinct crystal sizes within the same rock.
- (c) Laccoliths are dome-shaped intrusions.
8. Write the significances of variation diagrams. 4
9. Write shortly on any one of the following : 3
- (a) Flow differentiation
- (b) Consanguinity

(4)

UNIT—5

(Marks : 5)

10. Describe briefly on any *two* of the following with suitable schematics : $2\frac{1}{2}\times 2=5$
- (a) Phacolith
 - (b) Bysmalith
 - (c) Intergrowth texture
 - (d) Perthite texture

UNIT—6

(Marks : 18)

11. Give classification of any *two* with proper illustrations : $4\times 2=8$
- (a) Pyroclastic rocks
 - (b) Melilitic rocks
 - (c) Ol-Opx-Cpx based classification of ultra basic rocks
12. Give descriptive notes on any *two* of the following : $5\times 2=10$
- (a) Basalt
 - (b) Lamprophyre
 - (c) Komatiite
 - (d) Granite
