1. Write the correct answer using code [(i) or (ii) or (iii) or (iv)]

   (a) The Mid-Atlantic Ridge System is an area of: (1½)
       (i) Shear Plate Boundary.
       (ii) Consuming Plate Boundary.
       (iii) Accreting Plate Boundary.
       (iv) Stable Plate Boundary.

   (b) Sand-dunes migrate in the : (1)
       (i) Leeward direction.
       (ii) Windward direction.
       (iii) Both leeward and windward directions.
       (iv) None of the above.
(c) Schuppen structures are associated with (1½)
   (i) Normal faulting.
   (ii) Reverse faulting.
   (iii) Thrust faulting.
   (iv) Recumbent folding.

(d) Nummulites were the abundant rock-building foraminifers during (1)
   (i) Silurian period.
   (ii) Jurassic period.
   (iii) Permian period.
   (iv) Eocene epoch.

(e) Which of the following is a fundamental rock unit? (1)
   (i) Group
   (ii) Formation
   (iii) Member
   (iv) Bed

(f) An impermeable formation that neither contains nor transmits water is called (1)
   (i) Aquifer
   (ii) Aquiclude
   (iii) Aquifuge
   (iv) Aquitard

(Contd. 3)
(g) Leucoxene is a variety of
   (i) Tourmaline
   (ii) Talc
   (iii) Topaz
   (iv) Sphene

(h) The process of crystallization in a binary magma of eutectic proportions takes place in
   (i) Three stages
   (ii) Two stages
   (iii) A single stage
   (iv) None of the above

(i) The evaporite that is typical of non-marine environment is
   (i) Gypsum
   (ii) Halite
   (iii) Trona
   (iv) Calcite

(j) Kudremukh in Karnataka is famous for
   (i) Copper deposite
   (ii) Iron deposite
   (iii) Gold deposite
   (iv) Pb-Zn deposite

(Contd. 4)
(k) A horizontal entry into an ore-body is called (1½)
(i) Adit
(ii) Shaft
(iii) Bench
(iv) Pit
(l) Rubidium is commonly found dispersed in (1½)
(i) K-rich minerals
(ii) Ca-rich minerals
(iii) Na-rich minerals
(iv) Al-rich minerals

(Contd. 5)
SECTION - A

2. Write descriptive notes on the following: \(4 \times 3\frac{1}{2} = 14\)
   (a) Interior of the Earth.
   (b) Sea-floor spreading.
   (c) Solar system.
   (d) Volcanic belts.

3. (a) Explain how geomorphology is useful in mineral exploration citing suitable examples. \(7\)
   (b) Discuss broad geomorphic features of Indian subcontinent \(7\)

4. (a) Give a detailed classification of folds. \(7\)
   (b) Discuss in detail and with suitable sketches the mechanics of faulting. \(7\)

5. (a) Elucidate the evolutionary trends in Equidae. \(7\)
   b) Discuss Cretaceous-Tertiary boundary citing Indian examples. \(7\)

6. Write explanatory notes on any four of the following \(4 \times 3\frac{1}{2} = 14\)
   (a) Movement of subsurface water
   (b) Water bearing properties of rocks.
   (c) Ground water recharging.
   (d) Earthquake resistant structures.
   (e) Alkali-aggregate reaction.

(Contd. 6)
7. Write short notes on any seven of the following: 
   \((7 \times 2 = 14)\)
   
   (a) Pleochroism
   (b) Extinction angle
   (c) Double refraction
   (d) Birefringence
   (e) Twinning
   (f) Optic axis
   (g) Nicol prism
   (h) Symmetry elements
   (i) Bragg’s law
   (j) Crystal defects

8. Write Petrological notes on any four of the following: 
   \((4 \times 3\frac{1}{2} = 14)\)
   
   (a) Reaction Principle
   (b) Magmatic differentiation
   (c) Magmatic assimilation
   (d) Granitisation
   (e) Migmatites
   (f) Metasomatism

(Contd. 7)
9. Give tectonic classification of sedimentary basins of India citing Indian examples for each type. (14)

10. (a) Define the following: (4×1=4)
    (i) Ore
    (ii) Ore minerals
    (iii) Gangue
    (iv) Tenor of ore

(b) Write one most important ores for each the following metals: (10×½=5)
    (i) Aluminium
    (ii) Chromium
    (iii) Copper
    (iv) Gold
    (v) Lead
    (vi) Zinc
    (vii) Manganese
    (viii) Uranium
    (ix) Iron
    (x) Thorium

(c) Write descriptive notes on the following: (2×2½=5)
    (i) National Mineral Policy
    (ii) Law of Sea

(Contd. 8)
11. (a) Define the following: \(4 \times 1 = 4\)
   (i) Trace Elements
   (ii) Coordination number
   (iii) Isomorphism
   (iv) Polymorphism

(b) Discuss the following: \(4 \times 2 \frac{1}{2} = 10\)
   (i) Environmental impact of urbanization
   (ii) Radioactive waste disposal
   (iii) Dumping of mine waste and fly-ash
   (iv) Legislative measures of environmental protection in India.