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(NEP—2020)

(5th Semester)

GEOLOGY (MAJOR2)

(Mining and Exploration Geology)

Full Marks : 75

Time : 3 hours

The figures in the margin indicate full marks for the questions

(SECTION : A—OBJECTIVE)

(Marks : 10)

Tick (✓) the correct answer in the brackets provided :

1×10=10

1. The hanging wall in a mineral deposit is

- (a) the wall lying below the ore body ()
- (b) the wall lying above the ore body ()
- (c) the surface exposure of ore ()
- (d) the boundary between two lithologies ()

2. Longwall mining is most commonly applied in

- (a) limestone quarries ()
- (b) gold placers ()
- (c) coal seams ()
- (d) deep metallic ores ()

3. Which one of the following is an alluvial deposit?
- (a) Placer gold ()
 - (b) Bauxite ()
 - (c) Chromite ()
 - (d) Kimberlite ()
4. The size range of microfossils generally falls within
- (a) < 1 mm ()
 - (b) 1–10 cm ()
 - (c) > 10 cm ()
 - (d) 1–10 m ()
5. Which one of the following is a horizontal entrance to the mining site?
- (a) Drift ()
 - (b) Adit ()
 - (c) Stope ()
 - (d) Winze ()
6. What is the typical sequence of stages in geological investigation?
- (a) Detailed, general, reconnaissance, prospecting ()
 - (b) Prospecting, detailed, reconnaissance, general ()
 - (c) Reconnaissance, prospecting, general, detailed ()
 - (d) General, detailed, prospecting, reconnaissance ()
7. The main objective of geological exploration is to
- (a) study fossils ()
 - (b) discover and evaluate mineral deposits ()
 - (c) make geological maps only ()
 - (d) determine groundwater flow ()
8. Magnetic survey is particularly useful in exploration of
- (a) bauxite ()
 - (b) iron ore ()
 - (c) lignite ()
 - (d) limestone ()

9. Which element is a pathfinder for gold exploration?

- (a) Arsenic ()
- (b) Magnesium ()
- (c) Calcium ()
- (d) Potassium ()

10. *Equisetum arvense* is an indicator plant for

- (a) zinc ()
- (b) copper ()
- (c) uranium ()
- (d) gold ()

(SECTION : B—SHORT ANSWERS)

(Marks : 25)

Answer/Write short notes on *five* of the following, taking at least *one* from each

Unit :

5×5=25

UNIT—I

1. What is strip mining?
2. Decline in underground mining

UNIT—II

3. What are radiolarians and what is their skeletal composition?
4. Write the ecology of Ostracoda.

UNIT—III

5. Gravity method of exploration
6. Applications of geophysical exploration techniques

UNIT—IV

7. Geochemical profile
8. Define pathfinder element with example.

(SECTION : C—DESCRIPTIVE)

(Marks : 40)

Answer *four* questions, taking *one* from each Unit :

10×4=40

UNIT—I

1. Write a detailed note on different underground bulk mining methods. 10
2. Write notes on the following : 5+5=10
 - (a) Duty of geologists in mining industry
 - (b) Alluvial mining method

UNIT—II

3. Explain the morphological characteristics and ecology of Foraminifera. 10
4. Write notes on the following : 5+5=10
 - (a) Spores and pollens
 - (b) Coccolithophores and their application in biostratigraphy

UNIT—III

5. Define geological exploration. Discuss its objectives and stages. 2+8=10
6. Explain the seismic method of exploration with a note on reflection and refraction techniques. 10

UNIT—IV

7. Write a detailed note on geobotanical and geozoological indicators in mineral exploration. 10
8. Write notes on the following : 5+5=10
 - (a) Assay map
 - (b) Anomaly map
