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6 SEM TDC GEO M 3

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(May)

GEOLOGY

(Major)

Course : 603

**(Geological, Geochemical and Geophysical
Exploration)**

Full Marks : 48

Pass Marks : 19

Time : 2 hours

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

UNIT—21.1

(Geological Exploration)

(Marks : 16)

1. (a) Answer the following : 1+1=2

(i) State two important functions of drilling mud.

(ii) Name one borehole log that gives information regarding porosity of subsurface formations.

(2)

(b) Answer any *two* of the following : $2\frac{1}{2} \times 2 = 5$

- (i) Explain the importance of coring in geological exploration.
- (ii) Write a comparative note on geological criteria and geological guide.
- (iii) Write briefly about the procedure for documentation of exploration data.

2. What is sampling? Highlight the significance of sampling in geological exploration. Discuss briefly the methods used for calculation of average grade of an economic mineral deposit with suitable diagrams. $1+2+6=9$

Or

Write explanatory notes on the following : $4\frac{1}{2} \times 2 = 9$

- (a) Stages of geological exploration
- (b) Different methods of geological mapping

UNIT—21.2

(**Geochemical Exploration**)

(Marks : 16)

3. (a) Define the following : $1+1=2$

- (i) Geochemical mobility
- (ii) Geochemical cycle

(3)

(b) Write short notes on any *two* of the following : $2\frac{1}{2} \times 2 = 5$

- (i) Pathfinder elements
- (ii) Geochemical anomaly
- (iii) Geochemical association of elements

4. What is geochemical dispersion and what are its types? Discuss the factors controlling geochemical dispersion citing suitable examples. $1 + 1 + 7 = 9$

Or

Name the different methods of geochemical exploration for mineral deposits. Discuss elaborately the techniques used in either hydro-geochemical or geochemical soil survey. $2 + 7 = 9$

UNIT—21.3

(Geophysical Exploration)

(Marks : 16)

5. (a) Answer/Fill in the blank of the following : $1 \times 2 = 2$

- (i) State the name of the geophysical method applied to know the thickness of a sedimentary basin.
- (ii) Presence of groundwater in sub-surface formations can be determined by — method.

(b) Answer any *one* of the following : 4

(i) Explain how the geophysical methods of exploration are more advantageous over other methods of mineral exploration.

(ii) Discuss how various geophysical properties of rocks could be utilized for mineral exploration.

6. Discuss either the magnetic or the gravity method of exploration in terms of the following : $2 \times 5 = 10$

(a) Principle of the method

(b) Instruments used

(c) Field techniques for data acquisition

(d) Interpretation of data

(e) Reliability of results
