

6/H—26 (viii) (Syllabus-2015)

2019

(April)

GEOLOGY

(Honours)

[Applied Geology (Exploration Mining and Engineering Geology)]

(GELH-604)

Marks : 56

Time : 3 hours

The figures in the margin indicate full marks for the questions

Answer four questions, selecting one from each Unit

UNIT—I

(Exploration Techniques)

1. (a) What is geological prospecting? What are the stages of geological prospecting? Write very briefly on any four guides that geologists may use as indicators of mineral deposits for further investigations. 2+2+5=9

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(Turn Over)

- (b) Explain the relevance of drilling in geological prospecting for mineral deposits. (100A)

5

2. Write short notes on any four of the following :

$$3\frac{1}{2} \times 4 = 14$$

- (a) Detailed geological survey
(b) Core drilling
(c) Channel sampling
(d) Project report
(e) Development of a mineral deposit

UNIT—II

(Geochemical Exploration and Geophysical Methods)

3. (a) What is geochemical prospecting? Explain a geochemical anomaly and interpretation of geochemical anomalies.

$$2+7=9$$

- (b) Write a note on the principles of gravity survey.

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4. Write short notes on any four of the following :

$$3\frac{1}{2} \times 4 = 14$$

- (a) Principle of seismic survey
(b) Primary halo

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- (c) Interpretation of magnetic survey data
(d) Principle and interpretation of SP method

- (e) Radiometric survey

UNIT—III

(Mining Geology)

5. (a) Explain the longwall method of coal mining. Draw a suitable sketch.

$$8+1=9$$

- (b) Distinguish between raise and winze, adit and level. Draw suitable sketches.

$$2+2+1=5$$

6. Write short notes on any four of the following :

$$3\frac{1}{2} \times 4 = 14$$

- (a) Hydraulic mining
(b) Disadvantages of underground mining
(c) Shafts
(d) Opencast mining operations
(e) Mine development

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(Turn Over)

UNIT—IV

(Engineering Geology)

7. (a) Explain the feasibility of tunnelling in folded rocks. Draw suitable sketches to supplement your answer. $7+1=8$
- (b) Explain two major causes of landslides. 6
8. Write short notes on any four of the following : $3\frac{1}{2} \times 4 = 14$
- (a) Tunnel linings
- (b) Construction of roads along strike of rocks in hilly areas
- (c) Requirements for a perfect dam site
- (d) Compressive strength of rocks
- (e) Young's modulus and Poisson's ratio

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(April)

GEOLOGY

(Honours)

(Remote Sensing and Hydrogeology)

(GELH-601)

Marks : 56

Time : 3 hours

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

Answer four questions, selecting one from each Unit

GROUP—A

(Remote Sensing)

UNIT—I

1. (a) Define remote-sensing platforms. 2

(b) Describe briefly the main satellite orbits
that are important for remote sensing
observation of the earth. 8

(Turn Over)

(2)

- (c) Write notes on geotechnical elements applied to study features on the earth's surface.

4

2. Write explanatory notes on any *two* of the following :

7×2=14

- (a) Characteristic of sensors resolution types
(b) Mapping of igneous rock from satellite images
(c) IRS (Indian Remote Sensing Satellite)

UNIT—II

3. (a) What is photogrammetry?

2

- (b) Name the important measurements that can be obtained from a single vertical aerial photograph.

2

- (c) Describe the different types of aerial photographs with diagram.

6

- (d) What are fiducial point, principal point and perspective centre in aerial photographs?

4

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(Continued)

(3)

4. Write explanatory notes on/Answer any *two* of the following :

7×2=14

- (a) What are spatial and non-spatial data?
(b) General capabilities of GIS
(c) Elements of GIS

GROUP—B

(Hydrogeology)

UNIT—III

5. (a) What is an aquifer? Explain the characteristics of the different types of aquifers.

2+7=9

- (b) What are springs? Highlight the basic features of the different types of springs.

1+4=5

6. (a) Write explanatory notes on the various hydrologic properties of rocks.

10

- (b) Write a short note on the origin of groundwater.

4

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(Turn Over)

UNIT—IV

7. Explain any two methods of induced groundwater recharge. 14
8. Write explanatory notes on any *two* of the following : $7 \times 2 = 14$
- (a) Precambrian crystalline groundwater province
 - (b) Groundwater pollution
 - (c) Geologic methods of exploration for groundwater
