

SEMESTER VI
MAJOR COURSE – MJ 12
ECONOMIC AND EXPLORATION GEOLOGY

Full Marks: 75 Time: 3 Hours

GROUP – A

Q1. Choose the correct answer:

1. The unwanted mineral associated with an ore is called:
(a) Gangue (b) Ore (c) Tenor (d) Grade **(1 mark)**
2. The term 'grade' of an ore refers to its:
(a) Gangue (b) Concentration of valuable constituent (c) Lode (d) Reserve **(1 mark)**
3. Which is an endogenous ore-forming process?
(a) Magmatic concentration (b) Residual enrichment (c) Placer formation (d) Mechanical weathering **(1 mark)**
4. Which method is primarily used to investigate subsurface physical properties?
(a) Fossil distribution (b) Geophysical exploration (c) Rock colour (d) Crystal shape **(1 mark)**
5. Which of the following is a non-metallic mineral deposit?
(a) Limestone (b) Iron (c) Copper (d) Manganese **(1 mark)**

Q2. Define ore, gangue, tenor and grade. Explain their significance in economic geology. (5 marks)

Q3. Describe the major geological, geophysical and geochemical methods used in mineral exploration. (5 marks)

GROUP – B

Answer any four questions. (4 × 15 = 60)

- Q4. Explain the processes of ore formation. Discuss magmatic concentration, skarn, greisen and hydrothermal deposits with suitable examples. (15 marks)**
- Q5. Describe exogenous ore-forming processes, including weathering, residual and sedimentary deposits, supergene enrichment and placer deposits. (15 marks)**
- Q6. Discuss the mode of occurrence, chemical composition, uses and distribution in India of iron, aluminium, copper and manganese deposits. (15 marks)**
- Q7. Explain mineral exploration techniques in detail. Discuss geological, geophysical and geochemical exploration and their applications. (15 marks)**
- Q8. Discuss sampling and sampling techniques in mineral exploration. Explain mean, median, mode, variance and standard deviation in the evaluation of sampling data. (15 marks)**
- Q9. Explain the principles of reserve estimation. Discuss density, bulk density, factors affecting reliability and geometrical methods such as square, rectangular, triangular and polygonal block methods. (15 marks)**