

(4)

Ex./M.Sc.-II/G-II/XII/6/2017

- (c) In development of an open cast coal mine, how do the working face advance in process of day to day production ?
- (d) What is 'back filling' in process of mining ? Describe how this back filling operates in open cast and underground mining during advancement.
- (e) Discuss techniques of recovery of pillars during retreat phase in underground mining.
- (f) What are the basic requirements to develop a longwall mining ? How are roof taken care of during this mining system ?
- (g) Discuss why pollution for open cast mining is considered as "short time" pollution.

5. Write short notes on any **two** : 2x2=4
- (a) Crown Pillar and Rib Pillar.
 - (b) Mining of a disseminated ore body.
 - (c) Ore pass system in underground mine.

— X —

MASTER OF SCIENCE EXAMINATION, 2017

(2nd Year, 1st Semester)

APPLIED GEOLOGY

Paper : XII

Geochemical Exploration, Drilling Method, Mineral Beneficiation and Mining

Time : Two hours

Full Marks : 50

GROUP - A (10 marks)

Geochemical Exploration

1. Answer any **one** question. 10
- (a) In a largely phyllitic terrain where phosphatic mineralization is indicated, how would you proceed for geochemical exploration ?
 - (b) What are the steps for carrying out geochemical exploration for gold ?
 - (c) How would you carry out pedogeochemical prospecting for base metals in a tropical climatic region ?

(Turn Over)

(2)

GROUP - B (10 marks)

Drilling Methods

2. Answer any **two** questions.

(a) What is 'Wire-line' method of drilling? What are its advantages compared to conventional method? Describe the instrumental technique of core recovery that differs from conventional type.

1+2+2=5

(b) After drilling a depth of 100m, with NQL type drilling accessories, a zone of crushed and broken rocks is encountered for a length of 20m, from where continuous collapse of rock pieces in the borehole occurred. Discuss technique(s) to be applied to extend drilling up to 200 m.

5

(c) During exploration of a copper deposit occurring between a depth of 70 m and 100 m, with NQL type drill equipments, borehole core recovery is 70%. Calculate the average assay value of Cu-ore, if the assay of core is 1.0 and that of sludge is 1.5 (Inner and outer diameter of the drill bit is 5.70 cm and 5.50 and those of reaming shell are 5.9 and 5.50 respectively).

5

(3)

GROUP - C (10 marks)

Mineral Beneficiation

3. Answer any **one** question.

10

(a) Prepare a plan for beneficiating stratabound polymetallic ore containing galena, sphalerite and magnetite as major ore minerals in association with phyllite and quartzite.

(b) How can the ore containing chromite, magnetite, chalcopyrite and pyrite as major minerals in association with serpentinite be beneficiated from ROM?

(c) What are the steps for preparing geochemical anomaly map in a rocky area of tropical climate?

GROUP - D (20 marks)

Mining

4. Answer any **four** questions.

4x4=16

(a) What are the advantages of open cast mining over underground mining process?

(b) What is 'cut off' grade of an ore? Discuss the economic considerations for development of an open cast mine.

(Turn Over)