22375

**12425**

**3 Hours / 70 Marks** Seat No. | | | | | | | | |

***Instructions :*** (1) All Questions are *compulsory.*

(2) Illustrate your answers with neat sketches wherever necessary.

(3) Figures to the right indicate full marks.

(4) Assume suitable data, if necessary.

(5) Use of Non-programmable Electronic Pocket Calculator is permissible.

(6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

(7) Use of Steam tables, logarithmic, Mollier's chart is permitted.

**Marks**

**1. Attempt any FIVE of the following :** **10**

(a) Define cone and chute.

(b) Define sill and dyke.

(c) Define hanging wall and footwall.

(d) Define overhand and underhand stoping.

(e) Define draw point.

(f) Define crown pillar and sill pillar.

(g) Define Borehole surveying.

**2. Attempt any THREE of the following :** **12**

(a) Illustrate the factors which are to be considered while locating a shaft.

(b) Explain Breast stoping with a suitable layout showing the particulars.

(c) Compare shrinkage stoping with sublevel stoping.

(d) Explain in brief with neat sketches :

(i) Walling Scaffold (ii) Sinking Rider

**3. Attempt any THREE of the following :** **12**

(a) Define Level Interval and explain the factors considered while deciding level interval.

(b) Illustrate the classification of stoping methods as per the U.S. Bureau of Mines.

(c) Explain the sublevel caving method with its applicability condition, preparatory arrangements and cycle of operations with a suitable layout.

(d) Classify the different boring methods and illustrate the various purposes of boring.

**4. Attempt any THREE of the following :** **12**

(a) Explain Alimak Raise Climber method of raise boring with a well-labelled diagram.

(b) Compare Overhand stoping with Underhand stoping method.

(c) Explain the working of cut and fill method of stoping with its applicability conditions, cycle of operations, preparatory arrangements with a suitable layout.

(d) Describe Temporary lining of shaft with a neat sketch.

(e) Classify the special methods of shaft sinking and explain forced drop shaft method.

**5. Attempt any TWO of the following :** **12**

(a) Explain the block caving method with its advantages & disadvantages.

(b) Explain the following with well-labelled sketches :

(i) Shaft-centering arrangement

(ii) Arrangement for maintaining the verticality of shaft.

(c) Enlist & explain the drill bits used for rotary boring.

**6. Attempt any TWO of the following :** **12**

(a) Justify the meaning of the term "Shrinkage" in shrinkage stoping. Explain the working of shrinkage stoping method and state its merits.

(b) Elaborate the working procedure for deepening and widening an idle shaft.

(c) Explain the working of the following with neat sketches :

(i) Single Tube Core Barrel

(ii) Double Tube Core Barrel

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