Name: **Enrolment No:**	UPES UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
Online End Semester Examination, December 2020

Course: Underground Metal Mining **Semester: VII**
Programme: B. Tech (Mining Engineering) **Time: 03 hrs.**
Course Code: PEMI 4002 **Max. Marks: 100**

SECTION A

1. Each Question will carry 5 Marks
2. Instruction: Complete the statement / Select the correct answer(s)

Sl. No.	Question	CO
Q 1	(A) The mining methods adopted in Sindeswar Khurd Lead Zinc mine: a) Room and Pillar stoping b) Blast Hole stoping c) Sublevel open stoping. d) All the above. (B) Costliest Mining Method a. Sublevel Open Stoping b. Square Set stoping c. Sublevel Caving d. Room and Pillar Stoping (C) Track less Mining can be carried out in a. Sublevel Caving b. Horizontal Cut and Fill Stoping c. Room and Pillar d. All the above (D) If the RQD of the ore and wall rock are low the method of stoping selected will be a. Room and Pillar Method b. Sublevel stoping c. Shrinkage stoping d. Block Caving (E) Percentage of solids in Paste fill for cut and fill stoping operation is a. 50% b. 60% c. 80% d. 70%	**CO1**
Q 2	(A) Vertical Crater Retreat is used in a. Ramp Development b. Drift Development c. Raise Development d. Raise Boring	

	(B) In India underground mining is carried for a. Limestone, gold, diamond b. Iron ore, granite, chromite c. Copper, Lead-zinc, Uranium d. Coal, Magnesite, Manganese (C) Finger Raises and grizzly level are applicable in a. Block Caving Method b. Room and Pillar Method c. Shrinkage Stoping d. Square set Stoping (D) Method suitable for variable ground conditions and variable ore-waste boundaries provides maximum selectivity: a. Room and Pillar b. Top Slicing c. Sublevel open stoping d. Cut and fill Stoping (E) Normally lowest productivity of 5 -10 tonnes per man shift is in one of the following method a. Sublevel open stoping b. Room and Pillar c. Shrinkage Stoping d. Block Caving	**CO1**
Q 3	(A) Blast hole rings are blasted towards space created by a. Drift b. Crown Pillar c. Filled stope d. Slot (B) In Indian mines with jumbo drills maximum advance obtained is a. 2m b. 7m c. 4m d. 6m (C) 15 Crown Pillar of is kept in which method a. Room and Pillar b. Sublevel stoping c. Sublevel Caving d. Block Caving (D) LPDT equipment in mines is used for a. Drilling and scaling b. Dumping and Trucking c. Loading, hauling and Dumping d. Blasting Truck (E) Jaduguda Uranium Mines used the following methods a. Stull Stoping b. Cut and fill stoping c. Shrinkage Stoping	**CO1**

	d. All of them	
Q 4	(A) Square Set Stoping was practiced in India for which minerals a. Copper b. Lead and zinc c. Manganese d. Uranium (B) India's deepest mine existed upto what depth a. 2000m b. 600 m c. 1000 m d. 500 m (C) Lowest cost of mining by which method a. Horozontal Cut and fill b. Block Caving c. Sublevel Caving d. Sublevel Stoping (D) A steeply inclined, with strong walls and strong ore 1m wide ore body is to be mined, outside filling material is not available, in that case how will you mine the valuable orebody a. Squareset b. Shrinkage c. Resuing d. Room and Pillar (E) Capital cost is high and takes very long to develop a. Shrinkage stoping b. Square set stoping c. Block Caving d. Cut and fill stoping	**CO2**
Q 5	(A) Post Pillar Stoping method has post as a. After stoping operations b. Supporting role c. Taken out after stoping operations d. Left out from mining operation (B) Ramp connecting two levels has gradient is normally a. 1:7 b. 1: 1 c. 1:2 d. 1:4 (C) Cemented Backfill can be exposed in vertical walls up to 40 metres wide and --------- height a. 20m b. 40m c. 30 m d. Unlimited (D) In Shrinkage stoping miners drill under ---roof a. Unsupported b. Permanently supported by concrete	**CO2**

	c. Temporary support by rock bolts d. By filled material (E) Distance between rings in a sublevel is called as a. Spacing b. Ring Burden c. Ring length d. Ring height	
Q 6	(A) Characterstics of ore is Ore Strength-Moderate, Rock Strength-Moderate, Deposit Shape, Thickness of Orebody-3.5 m, Dip of Orebody 25 degree. Choose a mining method: a. Shrinkage stoping b. Cut and fill c. Room and Pillar d. Sublevel stoping (B) Match the following Method of mining — Stope support — Ore loading P. Shrinkage stoping — 1. Insitu pillar — a. Overhead mucker Q. 2 Blasthole stoping — 2. Broken ore — b. Pneumatic autoloader R. Top slicing — 3. Timber mat — c. Load haul dumper a. P-2-a, Q-1-c, R-3-b b. P-2-a, Q-3-c, R-1-b c. P-2-b, Q-3-c, R-1-a d. P-3-c, Q-2-a, R-1-b (C) Which of the following is the component of Ore genesis theories a. Source b. Transport or conduit c. Trap d. All (D) Which of the following is associated with ore pass problem a. Blockages b. Hang-ups c. Both d. None (E) Which of the following factor is considered for design of shaft station a. Type of deposit b. Hoisting of ore in the shaft c. Mining equipment d. All	**CO2**
SECTION B **1. Each question will carry 10 marks** **2. Instruction: Write short / brief notes**		
Q 7	Describe in details the Classification of Mineral resources with suitable diagram. OR Describe in details the Formation of ore deposits/ore genesis with suitable diagram.	**CO1**
Q 8	Describe in details the Jora raising method with suitable diagram	**CO2**

Q 9	(a) Explain how rock mass movement due to stoping affect ore dilution in different stoping operations? (b) What technical information is needed for preliminary mine planning?	**CO3**
Q 10	(a) Write in details about Cut-and-Fill Stoping method with neat sketch (b) Write in details about features, advantages, disadvantages and applications of Cut-and-Fill Stoping method	**CO3**
Q 11	(a) Write in details about VCR Stoping Method with neat sketch (b) Write in details about Diameter, Length and Inclination of Blast holes in VCR Stoping Method	**CO3**
SECTION-C **1. Each Question carries 20 Marks.** **2. Instruction: Write long answer.**		
Q 12	Write detailed notes on the following (a) Alimak Raising Method with neat sketch (b) Cycle of Operation in Alimak Raising Method (c) Drive Units used in Alimak Raising Method (d) Safety features in Alimak Raising Method OR Write detailed notes on the following (a) Ore pass system with neat sketch (b) Ore pass construction (c) Ore pass section inclination (d) Ore pass section shape	**CO4**