Name: Enrolment No:	UPES

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, May, 2019

Programme Name: B. Tech (Mining Engineering) **Semester : VIII**
Course Name : Commercial Polymetallic Mining & Simulation **Time : 03 h**
Course Code : MIEG 351 **Max. Marks : 100**
Nos. of page(s) : 2 (two)
Instructions: Use figures wherever it is required.

SECTION A

S. No.		Marks	CO
1.	How Alumina is different from Bauxite?	**5**	**CO3**
2.	Using suitable examples, differentiate Primary and Secondary commodities	**5**	**CO3**
3.	According to Lindgren's Classification, what are Hypothermal ore deposits?	**5**	**CO1**
4.	Give suitable examples for ores that form by the accumulation of minerals that crystallize directly from magma? Options: a) Phosphorites, b) Chromite, c) Skarn Deposits, d) Banded Iron Ore Formations. Choose suitable option(s) and Justify?	**5**	**CO1**
5.	 What is the adjacent machinery is known for? What is its purpose?	**5**	**CO2**
6.	What is commoditization of metals?	**5**	**CO3**

SECTION B

7.	Give subsea profile for polymetallic deposits? What are the stages in subsea mining?	**10**	**CO4**
8.	What are the different options available to invest in precious metals?	**10**	**CO4**
9a.	What are PGMs? Critique on their applications?	**10**	**CO2**
	(OR)		
9b.	How LCA of Platinum Group Metals is important to the Mining Industry?	**10**	**CO2**

10.	Give brief account on Pegmatite Deposits? What are the differences between LCT and NYF families?	**10**	**CO1**

SECTION-C

Read the following text and answer Q 11 a) and Q11 b)
The following paragraph is taken from https://www.sciencedirect.com/science/article/pii/0301420788900050 for academic purpose.

Competitive cost analysis is a powerful tool that can be used to evaluate mineral projects, predict the behaviour of individual producers within an industry and, under appropriate conditions, give indications of future prices. Cumulative cost curves can be determined for an industry and linked theoretically to true industry supply curves. The key to competitve cost analysis is to determine costs in a consistent and rigorously defined manner for all firms within an industry. Accomplishing this is sometimes difficult because classifications of costs vary among firms and change over time. Marginal variable costs are particularly difficult to determine although these costs, under conditions of perfect competition, do form the theoretical basis of the industry supply curve. It is, however, possible to determine net, cash break even and total costs for each firm in an industry, and use these costs in meaningful ways to construct cumulative cost curves that approximate industry supply curves. Each of these curves can be generated for actual and full capacity production rates. The curve showing the most predictive ability, both in theoretical and applied terms, is the cash break-even curve at full capacity. The existence of two supply schedules, one for increasing prices and an expanding industry and one for decreasing prices and a shrinking industry, has not been widely recognized. Entry and exit costs plus managerial expectations create the two supply schedules. The two curves create the situation in which changes in prices over certain ranges do not result in changes in quantities produced by the industry. Different methods must be used in determining costs for producers selling homogeneous products, such as cathode nickel, and for producers with heterogeneous products, such as coal. In the case of commodities such as coal, user costs must be included in the analysis. Competitive costs of the nickel industry have been determined during a five-year period. While exit and entry costs were not adequately treated, the resulting industry cash break-even curve did indicate which producers were likely to stay in business and which were likely to shut down. In addition, the cash break-even curve, in conjunction with an estimate of primary nickel demand, did give indications of future nickel prices.

11 a)	What are Cumulative Cost Curves? Explain?	**15**	**CO4**
11 b)	Statement: Different methods must be used in determining costs for producers selling homogeneous products, such as cathode nickel, and for producers with heterogeneous products, such as coal? Do you agree? Justify?	**15**	**CO4**

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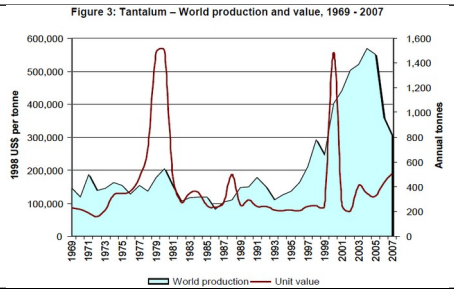
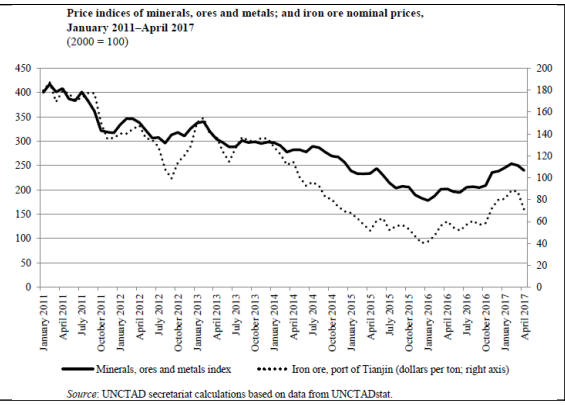
SECTION A

S. No.		Marks	CO
1.	Platinum placers consist of alluvial deposits that contain in workable amounts the alloys of the six platinum metals, and it is worthy of note that no analogous deposits of platinum minerals have ever been found. What are alluvial placers? Use Figure(s)?	**5**	**CO3**
2.	How Measuring Efficiency of PGM Recycling is done?	**5**	**CO3**
3.	Examine basis for fundamentals of commodity pricing?	**5**	**CO1**
4.	Give suitable examples for ores that form by weathering? Options: a) Banded Iron Ore Deposits, b) Chromite, c) Bauxite, d) Limestone. Choose suitable option(s) and Justify?	**5**	**CO1**
5.	 What are the inferences that may be drawn from adjacent image? Why the value of Tantalum is not very supportive to the World production?	**5**	**CO2**

6.		The adjacent figure shows Y-axis (Left side): Price indices for Minerals, Ores and Metals; Y-axis (Right side): Price indices for Iron ore; X-axis: Year 2011 to Year 2017 Give 2-constructive observations from the image that support importance of time-series data of metal commodities	**5**	**CO3**
SECTION B				
7.	What are the differences among Inferred, Indicated and Measured Mineral Resource?		**10**	**CO4**
8.	Critique on Advantages and Disadvantages for a) Exchange Traded Portfolios and b) Certificates?		**5+5**	**CO3**
9a.	How Mechanical Systems and Hydraulic Systems differ in sub-sea mining?		**10**	**CO3**
(OR)				
9b.	How Continuous Line Bucket and Air-lift System differ in sub-sea mining?		**10**	**CO3**
10.	Examine any 1 (one) classification of Ore-deposits? a) Magmatic, or b) Tectonic?		**10**	**CO1**
SECTION-C				
11.	Critically examine Target Mineral Distribution in sub-sea conditions? What are the sustainable deep-sea mining challenges?		**7+8**	**CO4**
12.	Using suitable figures, evaluate importance of Pegmatite Deposits? What are the different mining methods useful in Pegmatite Deposits?		**7+8**	**CO4**