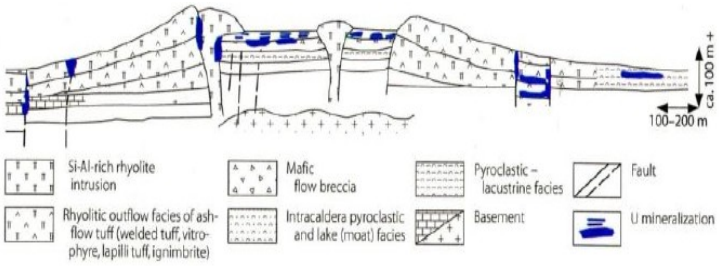
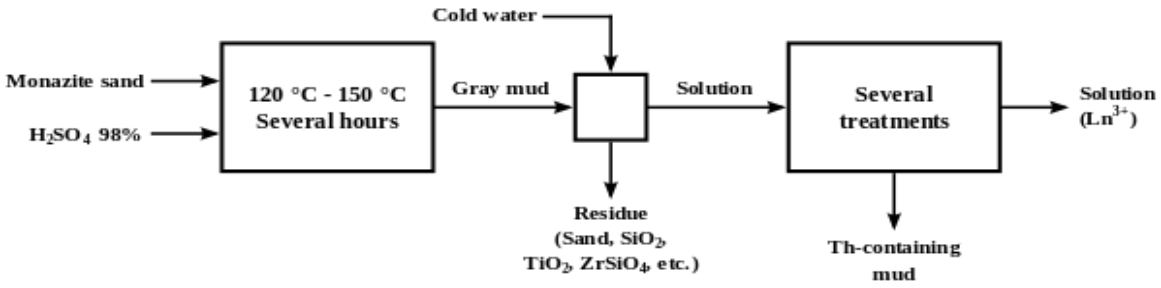
Name: Enrolment No:	UPES

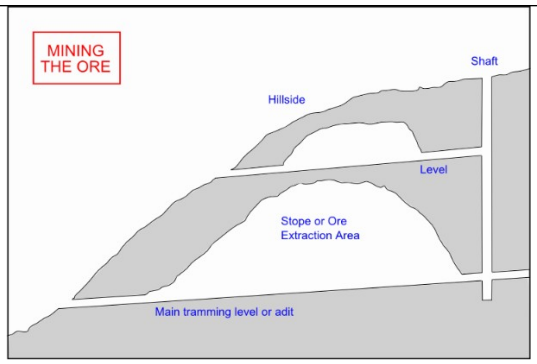
UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, May, 2019

Programme Name: B. Tech (Mining Engineering) **Semester : VIII**
Course Name : Radioactive Mineral Deposits & Valuation **Time : 03 h**
Course Code : MIEG 421 **Max. Marks : 100**
Nos. of page(s) : 2 (two)
Instructions: Use figure wherever it is required.

SECTION A

S. No.			Marks	CO
1.		Adjacent image is about volcanic related Uranium deposits. Redraw the image and show structure bound and strata bound mineralisations? What is strata-bound mean?	2+3	CO1
2.		Give context for the above image? Examine importance of the residue and its industrial use?	3+2	CO4

3.	 Identify the physiographic features? Explain geological conditions that enable for such mining of polymetallic deposits?	**5**	**CO4**
4.	What are the depositional sites for placer deposits?	**5**	**CO1**
5.	What are the different Uranium and Thorium bearing minerals?	**5**	**CO2**
6.	What are Eluvial/ Alluvial/ Aeolian placers?	**5**	**CO1**
	SECTION B		
7.	How Open-pit followed by underground is usually executed? Give advantages?	**6+4**	**CO4**
8.	List of applications of REEs? What are the ways adapted in REEs exploitation?	**6+4**	**CO3**
9a.	Develop Flowchart for uranium bioprocessing? What are the differences between bioleaching and chemical leaching?	**4+6**	**CO4**
	(OR)		
9b.	How microbial leaching of uranium is important? How microbial leaching is economically viable?	**5+5**	**CO 4**
10.	Draw neat sketch for a) between ripples, b) behind bars, c) inside streams? How a) b) and c) are related to radioactive mineral deposits?	**6+4**	**CO2**
	SECTION-C		
	Generally, Uranium orebodies are either vein type, massive, or tabular in shape, and both the shape and ore thickness influence the mining method used. Vein-type orebodies usually dip steeply, and this steepness can be used during mining with the ore being allowed to fall to lower levels to an extraction accessway. Uranium orebodies are often narrow and irregular. The strength of the ore material and the surrounding host rocks, as well as the ore grade and the distribution of the ore, influences the ore removal method.		

11.	What are the fav[redacted]d useful if Uranium is a vein-type orebody? Give suitable dia[redacted]plain.	**5+10**	**CO4**
12.	[redacted]		
	Above flow charts are examples for REE recovery from Coal deposits Combine both the flow charts and bring out a single model? Give list of Cost estimates towards recovering REEs from Coal mining?	**5+10**	**CO4**

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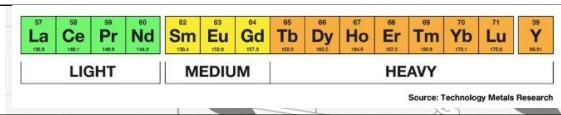
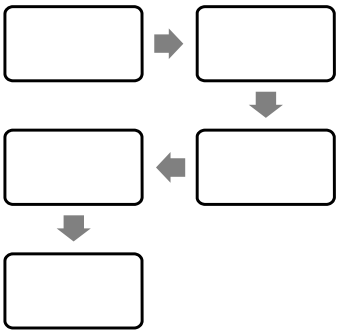
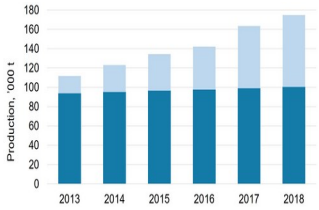
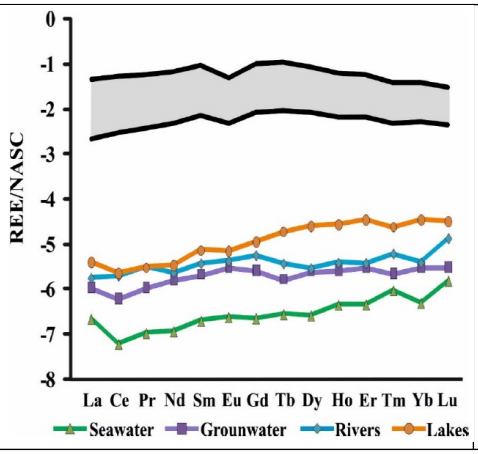
1.		Give one application against any 5 REEs?	**5**	**CO1**
2.	What are the different Uranium and Thorium Deposit types?		**5**	**CO2**
3.	Show how placer deposits form?		**5**	**CO1**
4.		Critically examine adjacent figure and evaluate the mining methods? Source for academic purpose: (http://viewpointmining.com/article/going-underground-in-china)	**5**	**CO4**

5.		Use the adjacent image. The sequencing of the boxes is **<u>incorrect</u>**. Re-arrange the text boxes in sequence and construct suitable sentence after re-arrangement? Give context for the sentence?	**3+2**	**CO4**
6.		Adjacent image shows, REE production for different years, 2013 to 2018. 2-colours were used in the stacked bar chart. How do you interpret significance of two colours? Choose one option and justify? Options: a) Uses, b) Country, and c) REE recovery	**5**	

SECTION B			
7.	How Coal is useful as a promising source of critical elements? Justify?	**10**	**CO4**
8.	Examine salient differences between in-situ leaching and heap-leaching?	**10**	**CO4**
9a.	 What is the suitable title for the shaded area (top) of the adjacent figure? Examine importance of the shaded area?	**10**	**CO3**
(OR)			
9b.	How waste rocks and mine tailings are important for REEs recovery?	**10**	**CO 3**
10.	Explain different factors that enable microbial leaching of uranium?	**10**	**CO4**
SECTION-C			
11.	What are the favourable and not so favourable conditions for Open-pit mining of Uranium?	**15**	**CO4**
12.	What are the mechanisms through which bacteria can biotransform and influence mobilization and immobilization of metals?	**15**	**CO4**