UPES
End Semester Examination, December 2023

Course: Economic Geology   Semester: III
Program: M.Sc PGS   Time   : 03 hrs.
Course Code: PEGS8022   Max. Marks: 100

SECTION A
(5Qx4M=20Marks)

Q 1	Discuss the role of chemical and physical properties of rock in controlling ore localization in hydrothermal deposits	04	CO1
Q 2	Classify Early magmatic deposits with suitable Indian examples	04	CO1
Q 3	Discuss the most common mode of classification of ore deposits	04	CO1
Q 4	Differentiate between stratiform and strata bound deposits	04	CO2
Q 5	Highlight the role of Nilson's hypothesis in choosing the mining method	04	CO2

SECTION B
(4Qx10M= 40 Marks)

Q 6	Analyse the role of scale and how will it differ for a) Reconnaissance, b) Prospecting, c) General Exploration and d) Detailed Exploration	10	CO3
Q 7	Solubility of sulphide minerals controls the secondary sulphide mineralization, defend the same with suitable justification.	10	CO4
Q 8	Examine the effect of chemical and physical characteristics of rock in the localization of hydrothermal ore deposits.	10	CO4
Q 9	List down the suitable locations for placer accumulation. Elaborate the same with due justification emphasizing the role of streams as medium & site of deposition. **OR** Given area of entire pit=3600sq. mtrs, assume each pit is of rectangular shape & is of equal area. Density of Iron: $1.28t/m^3$, Density of Mn: $1.12t/m^3$. Calculate the average grade of the area. 	Fe (height of pit-4mtrs, 1.4% Fe)	Fe (height of pit-3.4mtrs, 1.2% Fe)
Mn (height of pit-3.4mtrs, 2.7% Fe	Mn (height of pit-4mtrs, 3.2% Fe)		10	CO3

SECTION-C
(2Qx20M=40 Marks)

Q 10	Explain the stratigraphic sequence of Bonai-Keonjhar Belt/ Horse-shoe belt emphasizing the mode of mineralization in Eastern Limb. OR Using neat sketch, differentiate between included & extended area methods of Reserve estimation. With the given set of information and Schematic, calculate the ore reserve for deposit **A**	20	CO3

Easting (in mtrs)	Northing (in mtrs)
1100	1200
1500	1200
1100	800

Corresponding thickness= 3, 5 & 4 mtrs respectively.

The average density of ore is 1.5 ton/ m^3.
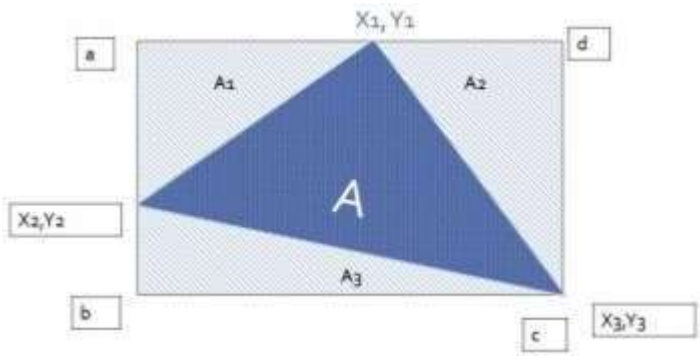
20

Q 11

There is a Pb deposit, which is evaluated based upon 7 boreholes. Find out the average grade of the deposit. The details are as follows

Sample location	Thickness (mtrs)	Area (ft2)	Tonnage Factor	grade
B-1	150	5320	10	1.21
B-2	135	5300	10	0.97
B-3	?	4400	10	?
B-4	175	5520	10	0.75
B-5	155	6800	10	0.82
B-6	180	4960	10	0.66
B-7	?	4520	10	?

20 **CO4**

The max. depth up to which, deposit is encountered is 300. The information for Borehole 7 is as follows.

Each section is at an interval of 50. The respective grade for each section is 0.4, 0.9, 1.2, 1, 1.7 &1.1 of Pb.

For Bore hole 3, the information is as follows-

Thickness	Grade
0-50	0.3
50-100	0.7
100-150	0.5
150-180	1
180-250	0.7
250-300	0.8

Cut-off grade is **0.7%** of Pb