

Name:	
Enrolment No:	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

Online End Semester Examination, June- 2021

Course Name: Ore & Mining Geology	Semester: II
Programme Name: M.Sc (Petroleum Geosciences)	Time: 03 hrs
Code: PEGS 7015	Max. Marks: 100

SECTION A (30 Marks)

Q 1	<p>i. Asbestos of the amphibole group are :</p> <p>(a) Amosite and Actinolite. (b) Amosite, Actinolite and Chrysolite. (C) Anthophyllite, Crocidolite, Tremolite and Chrysolite. (d) Amosite, Actinolite, Anthopilylite, Crocidolite and Tremolite</p> <p>ii. Chrysolite asbestos result from the :</p> <p>(a) Magmatic liquid (b) Alteration of serpentine (c) Alteration of olivine to serpentine (d) Hydrothermal solutions.</p> <p>iii. Which are the richest Lead-Zinc deposits in India, known so far?</p> <p>(a) Agnigundala deposits (b) Ambulate deposits (c) Rampura-Agucha deposits. (d) Sargipaili deposits.</p> <p>iv. Pb-Zn mineralisation in Zawar belt of Rajasthan occurs at :</p> <p>(a) Mocha Magma (b) Barai Magma (c) Zawar Maia hills (d) All-the above.</p> <p>v. The deposits that have formed simultaneously with the enclosing rock are called</p> <p>a) Syngenetic b) Epigenetic c) Syncgenetic d) Sinclongenetic</p>	05	CO1
Q 2	<p>i. Mineral which contains a metallic element which can be economically exploited known as ----</p> <p>a) Ore mineral b) Metallic mineral c) Eco-ore d) Eco-mineral</p> <p>ii. The non-metallic minerals associated with ore minerals are called ____</p> <p>a) Non-metallic minerals b) Metallic minerals c) Gangue minerals d) Flux minerals</p> <p>iii. Which of the following is not an essential condition for hydrothermal deposits?</p> <p>a) Highly active fluids b) Highly enriched fluids c) Highly inactive fluids d) Suitable pathways</p> <p>iv. The term used for the rock hydrothermal deposits that occur in veins of exceptionally small size, but in good number is __</p> <p>a) Fissure-veins b) Ladder-veins c) Gash-vein d) Stock works</p>	05	CO1

	v. Type of veins, which are bodies of tubular shape in pre-existing fissures? a) Fissure-veins b) Ladder-veins c) Gash-veins d) Stock works																																										
Q 3	Examine the role of colloids in botryoidal nature of Psilomelane.	05	CO4																																								
Q 4	Differentiate between stratiform & Podiform chromite deposits	05	CO2																																								
Q 5	Highlight the role of temperature & pressure in replacement & open space filling texture.	05	CO3																																								
Q 6	Discuss the conditions defining the selection of mining method (opencast/ underground/ combination of both)	05	CO2																																								
SECTION B (10*5=50 Marks)																																											
Q 7	Discuss in detail the origin, properties and transport of hydrothermal fluids. Analyze the transportation of metals in hydrothermal fluid.	10	CO2																																								
Q 8	Differentiate between Epigenetic VS Syngenetic deposits Stratiform VS Podiform chromite	5*2 =10	CO3																																								
Q 9	With neat sketch, demarcate the features of opencast mine.	10	CO1																																								
Q 10	Define placer deposits & factors affecting their formation. Classify them and name four minerals that commonly form placer deposits.	10	CO2																																								
Q 11	Operating cost for a gold mine is Rs. 60/ Ton. Price of gold is Rs.400/ oz & recovery rate is 60% Using the information, calculate the breakeven cut-off grade OR Define Chromite Pod & discuss the structure classification of Chromite Pod.	10	CO3																																								
SECTION C (20 Marks)																																											
Q 12	There is a Platinum deposit, which evaluated based upon 7 boreholes. Find out the average grade of the deposit. The details are as follows <table border="1" style="margin-left: auto; margin-right: auto;"><thead><tr><th>Sample location</th><th>Thickness</th><th>Area</th><th>Tonnage Factor</th><th>grade</th></tr></thead><tbody><tr><td>B-1</td><td>150</td><td>5320</td><td>10</td><td>1.21</td></tr><tr><td>B-2</td><td>135</td><td>5300</td><td>10</td><td>0.97</td></tr><tr><td>B-3</td><td>?</td><td>4400</td><td>10</td><td>?</td></tr><tr><td>B-4</td><td>175</td><td>5520</td><td>10</td><td>0.75</td></tr><tr><td>B-5</td><td>155</td><td>6800</td><td>10</td><td>0.82</td></tr><tr><td>B-6</td><td>180</td><td>4960</td><td>10</td><td>0.66</td></tr><tr><td>B-7</td><td>?</td><td>4520</td><td>10</td><td>?</td></tr></tbody></table> 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 Pt.	Sample location	Thickness	Area	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
Sample location	Thickness	Area	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	?																																							

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

All units (Length) are in Feet & cut-off grade is 0.5% of Pt

OR

Discuss the various theories behind the formation of Banded Iron formation, suggesting the most suitable one.