

**PRACTICE SET**

**End Semester Examination, Spring- 2026**

**Program:** B.TECH

**Semester:** VIII

**Subject:** Fuel Technology & Mineral Processing

**Subject Code:** 8PCCMiE408

<b>Course Outcomes</b>	<b>Description</b>
CO1	Apply knowledge of mineral dressing for understanding, formulating and solving problems related with mineral dressing.
CO2	Acquire knowledge and hands-on competence in applying the concepts in the design and development of machines for separating the low grade ore economically.
CO3	Design & understand the various methods for mineral beneficiation.
CO4	Demonstrate the knowledge on leaching and laboratory sampling process.

**UNIT I**

**Section II (10 marks)**

1. Explain the drift and in situ theories of origin of coal. CO1 (Understand)
2. Illustrate the banded constituents of rocks. Discuss their quality. Explain caking index of coal. CO1 (Understand)
3. Define carbonization of coal. Discuss the processes of carbonization of coal. CO1 (Understand)
4. Differentiate between high temperature and low temperature carbonization with different by products. CO1 (Apply)
5. Can you explain the laboratory method for proximate analysis of coal? CO1 (Apply)

**Section III (20 marks)**

6. Coal is of two grades Coking & Non coking Coal. Can you differentiate between coking and non coking coal. Give the grading of coking & non coking coal as notified by Government of India. CO1 (Apply)
7. Coin the term Coke. Differentiate hard coke & soft coke. Compare the various gases produced as by product among in your own words: CO1 (Apply)
  - (a) Coal gas
  - (b) Producer gas
  - (c) Water gas

**UNIT II**

**Section II (10 marks)**

8. Enlist the stages involved in mineral processing. CO2 (Understand)
9. Give a detailed description of Jaw Crusher. Also with a neat sketch, explain its working. CO2 (Apply)
10. Illustrate about grinding. Differentiate between Rod Mill and Ball Mill. CO2 (Understand)
11. Draw a neat sketch of gyratory crush. Explain its working. CO2 (Understand)
12. Is there any difference between gyratory crusher and jaw crusher? Explain CO2 (Apply)
13. Discuss about the primary crusher & secondary crusher. Give example. Discuss its types. CO2 (Understand)

**Section III (20 marks)**

14. The mineral processing is required for every mineral. Give the detailed idea of unit operations which are involved in mineral processing in details with sketch. CO2 (Apply)

**UNIT III**

**Section II (10 marks)**

15. Explain the Gravity concentration method in details. Also brief the types of jig. CO3 (Understand)
16. What is froth flotation method? Discuss in details with diagram. CO3 (Understand)
17. Explain the concept behind the magnetic separation. Name the mineral ore for which magnetic separation is done. CO3 (Understand)
18. Find the grade of copper ore of an underground metal mining in which ore is graded by triangular method. Thickness of hole is assumed to be same and grade of copper is 138 gm/tonne, 156 gm/tonne and 123 gm/tonne. CO4 (Evaluate)
19. Discuss in details the Trommels screen, shaking screen, vibrating screen and Grizzly. CO3 (Apply)
20. Describe Heavy Media separation method. Write the name of liquids used in HMS. CO3 (Understand)

**Section III (20 marks)**

21. If you have been given a mineral ore and you have to extract pure metal by mineral processing. Can you elaborate four step of mineral processing with suitable sketch? CO3 (Analyze)
22. Sizing is a unit operation of mineral processing. Explain in details the sizing method. Also discuss various type of screening method. CO3 (Apply)

**UNIT IV**

**Section II (10 marks)**

23. Find the average grade of gold ore when ore are in vertical section in stope. The grade & length is as follows: CO4 (Evaluate)

GRADE (gm/te)	124	159	113	109	131
Length (m)	9.2	13.6	22	19	11.4

24. Explain the both methods of determination of average grade of ore by polygon method with formula. CO4 (Understand)

25. Discuss the constant distance weighting technique of determination of average grade of ore?

Find the grade of copper ore of an underground metal mining in which ore is graded by triangular method. Thickness of hole is assumed to be same and grade of copper is 138 gm/tonne, 156 gm/tonne and 123 gm/tonne. CO4 (Evaluate)

26. Find the grade of iron ore of an underground metal mining in which ore is graded by triangular method. Thickness of hole and grade of iron is given below: CO4 (Evaluate)

Thickness (mm)	Grade (gm/tonne)
35	41
38	67
44	48

**Section III (20 marks)**

27. Find the average grade of copper ore by constant distance weight method. Distance and the grade of the copper is given below of the stope. CO4 (Evaluate)

Distance (m)	Grade (gm/tonnes)
7.5	34
11.4	67
13	43
17	39
8.6	48
9	39
12.6	56

28. The underground metal mine of copper have ore of different grades are there in stope. The grade and distance between the sampling area and center is given below: Find the average grade by inverse distance weight method. CO4 (Apply)

Distance (m)	Grade (gm/tonnes)
14	47
18	68
12	53
17	46
23	61
27	57
11	71

**Summary Sheet:****CO Wise**

<b>CO</b>	<b>Q. No</b>	<b>Marks</b>
CO1	1,2,3,4,5,6,7	90
CO2	8,9,10,11,12,13,14	80
CO3	15,16,17,18,19,20,21,22	100
CO4	23,24,25,26,27,28	80
<b>Total</b>		<b>350</b>

**Unit Wise**

<b>Unit</b>	<b>Q. No</b>	<b>Marks</b>
Unit 1	1,2,3,4,5,6,7	90
Unit 2	8,9,10,11,12,13,14	80
Unit 3	15,16,17,18,19,20,21,22	100
Unit 4	23,24,25,26,27,28	80
<b>Total</b>		<b>350</b>

**Blooms Taxonomy Level (BTL) Wise**

<b>BTL</b>	<b>Q. No</b>	<b>Marks</b>
LOT	1,2,3,8,10,11,13,15,16,17,24	130
HOT	4,5,6,7,9,12,14,18,19,21,22,25,26,27	220
<b>Total</b>		<b>350</b>

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**Disclaimer:** - This is a Practice set. The Question in End term examination will differ from the Practice set. This Practice set is meant for practice only.