

PRACTICE SET
End Semester Examination, December 2025

Program: B.Tech (MINING)

Semester: V

Subject: MINING MACHINERY I

Subject Code: 8PCCMiE301

Course Outcome:

On the completion of the Course, the students will be able to:

Course Outcomes	Description
CO1	Understand the classification & application of mine machinery.
CO2	Understand the winding system and safety features.
CO3	Able to apply the knowledge of power transmission system and installation in mines.
CO4	Explain the types, selection and uses of mining ropes and able to apply the knowledge of rope capping and splicing.

UNIT I

Section A

1. Discuss the wire rope and explain its primary components.(CO 1) (Understand)
2. Describe the application of wire ropes in mines. (CO 1) (Understand)
3. State mass of rope & strength of ropes. (CO 1) (Remember)
4. Briefly explain causes of deterioration of ropes in underground mines. (CO1) (Understand)

Section B (10 marks)

5. Compare about the Wire ropes on basis of operation & on the basis of construction in brief. (CO 1) (Apply)
6. Discuss about the short notes used in underground mine.
 - (a) Lang lays
 - (b) Regular lays
 - (c) Standing rope
 - (d) Running rope

(CO 1) (Understand)

7. Briefly explain different types of rope used in mining? Mention their field of use fullness. (CO 1) (Understand)
8. Illustrate the use and care of haulage rope in underground mines? Also describe deterioration, protection, & Handling. (CO 1) (Apply)

Section C (20 marks)

9. Have you heard the term rope splicing? Discuss about it. Briefly explain in details the method of splicing a haulage rope with neat sketch diagram. (CO 1) (Apply)
10. Find the diameter of a round strand and a flattened strand rope to wind up a load of 12 tones from a depth of 520 m with a nominal factor of safety 10 the ultimate tensile strength of the wires being 17 tones per sq. cm.(CO 1) (Evaluate)

UNIT II

Section A (5 Marks)

11. Write about the rope capels used in mines. (CO 2)(Remember)
12. State about the advantages & Disadvantages of Koepe or Friction winders. (CO 2)(Remember)
13. Classify and describe the different types of winders with their uses in different conditions. (CO 2) (Understand)
14. Discuss the safety features of Headgear. (CO 2)(Understand)

Section B (10 marks)

15. Explain how the Drum winder & Koepe winder works in whole winding system. Write its working feature and briefly compare between them with neat sketch diagram (CO2) (Apply)
16. Discuss the different types shapes of drum used in Indian mines?(CO 2)(Understand)
17. Briefly explain the advantages and disadvantages of Koepe winding system over drum winding? (CO 2) (Understand)
18. Briefly explain the inspection protocols for winding equipment? (CO 2)(Understand)

Section C (20 marks)

19. Suggest all the fittings of the head gear suspension cages of winding system with neat sketch diagram. (CO 2) (Apply)
20. Suppose you are an Underground Mining engineer and a friction Winder operates, under following conditions:
Capacity of skip = 22 Tones
Mass of skip and the suspension gear = 12 tones
Rope diameter = 29 mm
Mass of rope = 4.74 kg/m
No. of ropes = 4
Angle of contact = 200°
Coefficient of friction= 0.2
Depth of winding = 600 m

Distance from top of the skip to friction wheel = 40 m

$\mu = 0.2$

Decide whether the winding system is stable. (CO 2) (Apply)

UNIT III

Section A (5 marks)

21. Explain the Belt, chain & Gear drive transmission of power. (CO 3) (Understand)
22. Discuss the any three different types of gears used in all over the mines. (CO 3) (Understand)
23. Illustrate all conveyor transport system with diagrams. (CO 3) (Understand)
24. Describe the sources of water in underground mines. (CO 2) (Remember)

Section B (10 marks)

25. Being a mining engineer briefly elaborate the gear transmission system used in mining field. (CO 3) (Understand)
26. Suppose you are using a Mine Pump, what would be the criteria to determine a best selection of pump to be used in Underground mines (CO 3) (Apply)
27. List the various types of air compressors and explain the construction & working function of air compressors. (CO 3) (Remember)
28. Explain about the positive displacement of air compressor also briefly describe reciprocating compressor with it's a neat sketch. (CO 3) (Understand)
29. Differentiate between reciprocating pump & Centrifugal pump. (CO 1) (Understand)

Section C (20 marks)

30. Evaluate three throw ram pump has single acting rams 21.6 cms dia X 25.4 cms stroke.
 - (a) What should be the r.m.s of the pump crank shaft in order to raise 1136 litres of water per minute?
 - (b) What would be about the B.HP of an electric motor to drive the pump if the total head from all causes in 120 meters? (CO 3) (Evaluate)

UNIT IV

Section A (5 marks)

31. State types of Locomotive haulage are? (CO 4) (Remember)
32. What are the advantages and disadvantages of endless rope haulage compared to main and tail rope haulage (CO 4) (Remember)
33. Explain the the causes of derailment in mine haulage systems. (CO 4) (Understand)
34. List the different types of locomotives used in U/g mines (CO 4) (Remember)

Section B (10 marks)

35. Explain how safety devices stop-block, back-stay, and drag-bar operate during haulage failure or tub runaway. (CO 4) (Apply)

36. Summarize the advantages and disadvantages of rope haulage vs. locomotive haulage in coal mines.(CO 4) (Understand)
37. Classify the constructional features of mine tubs & safety features. (CO 4)(Understand)
38. Differentiate State the statutory provisions under Coal Mines Regulations (CMR 2017)? Also explain Gradient of haulage roads, manhole spacing, signalling system, and speed limits. (CO 4) (Apply)
39. Briefly classify the List the various safety appliances used on haulage roads and state their functions?(CO4)(Understand)

Section C (20 marks)

40. Evaluate the classification of haulage systems in underground mines with neat sketches? Also Distinguish between direct, endless rope, main and tail rope, *and* gravity haulage.CO4 (Apply)

Summary Sheet

CO Wise

CO	Q. No	Marks
CO1	1,2,3,4,5,6,7,8,9,10,	100
CO2	11,12,13,14,15,16,17,18,19,20	100
CO3	,21,22,23,24,25,26,27,28,29,30	90
CO4	31,32,33,34,35,36,37,38,39,40	90
Total		380

Unit Wise

Unit	Q. No	Marks
Unit 1	1,2,3,4,5,6,7,8,9,10,	100
Unit 2	11,12,13,14,15,16,17,18,19,20	100
Unit 3	21,22,23,24,25,26,27,28,29,30	90
Unit 4	31,32,33,34,35,36,37,38,39,40	90
Total		380

Blooms Taxonomy Level (BTL) Wise

BTL	Q. No	Marks
LOT	1,2,3,4,11,13,14,16,21,22,23,24,25,26,27,31,32,33,34,36	140
HOT	5,7,8,9,10,15,17,18,19,20,28,29,30,35,37,38,39,40	240
Total		380

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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.