

PRACTICE SET
End Semester Examination, December, 2025

Program: DIPLOMA (MINING)

Semester: V

Subject: MINE VENTILATION

Subject Code: 8D.303

UNIT-I

Section A (5 marks)

1. Discuss the physiological effects of carbon-monoxide gas on miners.
2. Define degree of gassiness of seam and classify it according to Coal Mines Regulation 2017.
3. Discuss the explosibility limit of firedamp, White damp and hydrogen gas found in underground mines.

Section B (10 marks)

4. Explain about the local methane detector and automatic tele-monitor detector.
5. What are the different parts of safety lamp? Differentiate between GL 50 & GL7 Lamp.
6. Briefly explain different type of damp found in underground mine and also write its source of production.
7. Explain in detail the working principle and use of Methanometer with a neat and labelled diagram.
8. Explain the physiological effect of blackdamp and deficiency of oxygen on miners.
9. Discuss in brief about the detection technique for white damp. Briefly explain about Hopcalite detector and Hoolamite detector.

Section C (20 marks)

10. Explain different types of gases found in belowground mines. Write their specific gravity and permissible limit.
11. Explain the percentage test and accumulation test is to be conducted in mines.
B. What do you know about FSL.

UNIT II

Section A (5 marks)

12. State the standard of ventilation according to CMR2017.
13. Enlist different sources of heat in mines.

Section B (10 marks)

14. What is relative humidity? If the dry bulb temperature of underground face is 32°C and wet bulb temperature is 28°C. Find the relative humidity of underground face working.
15. Differentiate between Anemometer & Velometer in details. (Analyse)
16. Brief about Kata Thermometer and its cooling power.
17. What are the effect of heat and humidity on miners?
18. Discuss the source of heat and humidity in underground coal mines and brief about geothermal gradient.

Section C (20 marks)

19. State the minimum velocity of air according to regulation no.160 and maximum velocity of air according to DGMS circular.
20. Which instrument is used for measuring relative humidity in mines mostly? Explain it with a neat diagram.
21. What do you understand by cooling power of mine air and explain the methods of improving the cooling power of mine air.

UNIT III

Section A (5 marks)

22. Define Natural ventilation and Natural ventilation pressure and discuss the effects of seasonal changes on direction of Natural Ventilation.
23. Elucidate Fan laws in brief.

Section B (10 marks)

24. What is the minimum quantity of air required to ventilate an underground district producing 180t of coal per shift employing a maximum of 120 person in a shift.
25. Differentiate centrifugal fan & axial flow fan used for underground ventilation. (Analyse)
26. Define Motive column. How Natural ventilation pressure is calculated with the help of motive column?
27. An anemometer show a reading of 90m in 2 min in airway 5m wide and 3m high. Calculate the quantity of air flowing .Assume the correction factor show in correction chart is +6.
28. Derive the expression for quantity of air for fans in series and fans in parallel.
29. Differentiate between Axial flow fans and Centrifugal fans. (Analyse)

Section C (20 marks)

30. Mean air temp. in D.C shaft 400m deep is 28 degree Celsius and U.C shaft is 38 degree Celsius Calculate {i} the motive column, and {ii} the N.V.P assuming barometric pressure in D.C , shaft to be 750 mm of hg.
31. In a main air way a quantity of 950 cubic meter/min of air is flowing. At a point 700m inbye the velocity of air is 65m per minute, and the height and width at that point are 2m and 4m respectively. How much air is leaking through the stopping and doors between the two point?

UNIT IV

Section A (5 marks)

32. Enlist the various ventilation devices used distribution of air in brief.
33. Define the terms:
 - A.Homotropical ventilation system and
 - B.Antitropical ventilation system (Remember)
34. What do you understand by ventilation survey and state its scope.
35. Differentiate between booster fan and auxiliary fan.
36. Discuss Atkinson's Formula in brief.

Section B (10 marks)

37. Differentiate Ascensional ventilation and Descensional ventilation in details. (Analyse)

38. Write short notes on:-

- i. Ventilation stopping
- ii. Air crossing
- iii. Regulator
- iv. Brattice cloth
- v. Doors

39. What is the purpose of auxiliary fans? Explain the precautions taken before installation of auxiliary fans

40. Explain about ventilation survey. How will you conduct quantity survey in underground mine. Describe its procedure.

Section C (20 marks)

41. Imagine that in an underground mine you observed a gas leakage sound(hissing) from intake roadway to that return roadway. Then what are the safety features you will take to minimize the location.

42. Describe –

- i. The theoretical depression.
- ii. The effective depression.
- iii. The manometric efficiency.
- iv. H.P of ventilation.
- v. Mechanical efficiency.

Prepared By: Kamakhya Narayan

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.