

**End Semester/ Reappear (Semester V) Examination December, 2024**

**Programme: Diploma (MiE)**

**Course: Mine Ventilation**

**Course Code: 8D.304**

**Enrolment no. \_\_\_\_\_**

**Full Marks: 70**

**Time: 3 Hrs.**

**Section I**

**1. Short Answer type questions. Answer any four.**

**4 x 5 = 20**

- a. Define degree of gassiness of seam and classify it according to Coal Mines Regulation 2017.
- b. Enlist different sources of heat in mines.
- c. Differentiate between booster fan and auxiliary fan.
- d. Define Natural ventilation and Natural ventilation pressure and discuss the effects of seasonal changes on direction of Natural Ventilation.
- e. Enlist the various ventilation devices used distribution of air in brief.
- f. Differentiate between GL 50 & GL 60 Lamp.

**Section II**

**Long Answer type questions. Answer any three.**

**3 x 10 = 30**

2. The split in parallel, of similar cross-section and same types of roadways surface, are respective 300m, 600m and 900m long. Calculate the quantity of air which would flow in each if the total quantity is 200mcu.per min.
3. An anemometer show a reading of 90 m in 2 min in airway 5 m wide and 3 m high. Calculate the quantity of air flowing .Assume the correction factor show in correction chart is +6.
4. What is relative humidity? If the dry bulb temperature of underground face is 24°C and wet bulb temperature is 21°C. Find the relative humidity of underground face working.
5. Discuss in brief about the detection technique for white damp. Briefly explain about hopcalite detector and hoolamite detector.
6. Explain in detail the working principle and use of Methanometer with a neat and labelled diagram.

**Section III**

**Application based questions. Answer any one.**

**1 x 20 = 20**

7. A mine is ventilated by a fan producing 6000mcube per min at 75mm w.g .The fan runs at 300 r.p.m and absorb 160 B.H.P. To increase the volume of air flowing through the mine, the fan speeded up to 400 r.p.m Calculate – {i} Volume of air at new fan speed, {ii} New w.g., B.H.P., and efficiency of the fan.
8. 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.
9. Which instrument is used for measuring relative humidity in mines mostly? Explain it with a neat diagram.

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