

Roll No .....

**MI - 402****B.E. IV Semester**

Examination, June 2015

**Mining Environment - I****Time : Three Hours****Maximum Marks : 70**

**Note:** i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.

ii) All parts of each questions are to be attempted at one place.

iii) All questions carry equal marks, out of which part A and B (Max.50 words) carry 2 marks, part C (Max.100 words) carry 3 marks, part D (Max.400 words) carry 7 marks.

iv) Except numericals, Derivation, Design and Drawing etc.

- a) Enlist different sources and effects of heat and humidity in mine atmosphere.
- b) Explain in brief, the procedure of calibration of mine gases detectors.
- c) How comfort conditions are assessed in mine environment.
- d) Explain the procedure of analysis of mine air by "Haldane Apparatus".

OR

Describe "Gas chromatography".

2. a) How location of openings are decided in mines?
- b) Enlist various methods of mine ventilation.
- c) Define:
  - i) Inclines
  - ii) Drifts
  - iii) Adits

- d) Explain in detail the procedure of loading and transportation of muck during drive of inclines/adits/drifts.

OR

Discuss in detail, organizational setup and cycle of operations during drivages of inclines/adits/drifts.

3. a) Enlist different special methods of shaft sinking.
- b) Explain in short "Laws of ventilation".
- c) Write the procedure of "Deepening and Widening of shafts".
- d) Write "Chezy's and Atkinson's Equations" and explain their utility.

OR

How "Flow of Air in Ducts and mine Roadways" is maintained? Explain.

4. a) How "Air current" is managed in mines?
- b) What is meant by "Air Locks" in mines?
- c) What are different types of doors and stoppings are provided in mines?
- d) Explain thermodynamics involved in natural ventilation of mines?

OR

Describe the method of distribution and control of Air current in mines.

5. a) How "Flame safety lamp" is examined, for its proper functioning?
- b) What are different steps taken for maintenance of "Flame safety Lamp"?
- c) How will you conduct illumination survey in mines?
- d) What are different standards of illumination for open cast mining?

OR

Sketch "Flame safety Lamp" giving constructional details, functioning and Gas testing method.

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