Total No. of Questions :5] *[Total No. of Printed Pages :2*

Roll No .....

MI - 601

B.E. VI Semester

Examination, June 2015

Mining Environment - II

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.

1. a) Explain ascensional and descensional ventilation?
   b) Discuss antitropal and homotropal ventilation?
   c) Compare the central ventilation system with Boundary ventilation system?
   d) Discuss the steps in ventilation planning?

   Or

   Explain the process of quantity estimation in ventilation planning?

2. a) Explain the efficiency of fan?
   b) Discuss the losses in mine fan?
   c) Describe the principle of axial flow fan?
   d) Discuss various factors considered for selection of mine fan?

   Or

   Derive the expression for theoretical head of centrifugal fan?

3. a) Explain the significance of evasee?

   b) Discuss the Auxiliary fan?
   c) Explain the forcing and exhaust ventilation?
   d) A mine consists of two splits A and B. The quantities of air passing through them are 10 and 15 $m^3 s^{-1}$ respectively with the fan generating a pressure of 500 Pa. The resistance of shafts and trunk airways is 0.2 $Ns^2 m^{-8}$. Calculate the of the booster fan to be installed in split A to increase its quantity to 15 m^3/s.

   Or

   A mine has four ventilation districts with 1200 m^3/min of air flowing in each. Three of these districts require a w-g of 25 mm across them while the fourth require a w-g of 50 mm across it. Pressure loss in shafts and trunk air ways is 10mm w-g.
   Calculate the annual saving in ventilation cost that would occur on installation of a booster fan in the high resistance district. Energy cost per KWH is 3 rupees per unit.

4. a) Discuss the object of ventilation survey?
   b) Explain the smoke cloud generator?
   c) Discuss the principle of pitot static tube?
   d) Describe the principle and working of vane anemometer?

   Or

   Discuss the process of mine ventilation survey in detail?

5. a) Explain the silicosis?
   b) Discuss the principles of dust sampling?
   c) Explain the place and duration of sampling.
   d) Describe the principle and working of Gravimetric dust sampler 113A.

   Or

   Describe the principle and working of thermal precipitator in detail?

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