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**UNIVERSITY OF PETROLEUM
AND ENERGY STUDIES**



End Semester Examination, December 2017

Program: B. Tech (Mining Engg)

Semester –VIIth

Subject (Course): Mine Hazard & Rescuing operation

Max. Marks: 100

Course Code : MIEG 441

Duration : 3 Hrs

No. of page/s: 02

Instructions:

- a. Answers should carry the equations and diagrams, wherever necessary
- b. In Section A B & C, all questions are compulsory

Section: A

20 Marks

Each question carries 02 marks

(10*2=20 Marks)

1.
 - a) Define Ignibility/ liability index of coal
 - b) What is the significance of section 46 of Mines Act?
 - c) Which type of dust sampler is recommended for Indian Mines & its specification?
 - d) What should be the sample frequency & threshold in drivages > 30 mtrs long?
 - e) What is the advancement in Gravimeter dust sampler?
 - f) What is the composition of foaming agent?
 - g) What are the specifications of Arch dam radius?
 - h) What is the difference between base & secondary emission?
 - i) Why & how silica gel is used in gas masks?
 - j) What is tidal volume?

Section: B

(8*5= 40 Marks)

2. List down the various means to study to measure spontaneous heating of coal emphasizing Crossing Point temperature method
3. Examine the superiority of gypsum stopping over Sand stopping? In proper sequence & specifications summarize how it is being erected/ constructed?
4. Examine the nature of graphs obtained in DTA method to spontaneous heating of coal
5. Outline the mandatory fittings at fire stopping?

6. Hydraulic filling is a mean of fire isolation but why it's not recommended?

Or

What are the possible causes of inundation in mine? Suggest remedial measures to check flooding of main entries in mine? (2+3)

7. List down the CMR regulation intended to deal with inundation, specifically the one dealing with INUNDATION DUE TO SURFACE WATER. (2+3).

8. Wooden stopping is permanent/ temporary in nature? Discuss the various types of wooden stoppings & their disadvantages.

9. Discuss the role of direct blast & backlash in mine explosion.

Section: C

(2*20=40 Marks)

10. Why Self-contained closed circuit breathing apparatus is regenerating in nature? Discuss its design components & classification in detail (5+10+5)

11. How to distinguish between coal dust & firedamp? Suggest suitable techniques to handle dust accumulation & propagation (10+10)