

Name:	
Enrolment No:	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, December- 2018

Programme Name: B. Tech, Mining Engg

Semester: VII

Course Name: Mining Hazard & Rescue Operation

Time: 03 hrs

Course Code: MIEG 441

Max. Marks: 100

Nos. of page(s):02

SECTION A (20 Marks)
All Questions are compulsory

S. No.		Marks	CO
Q 1	Classify dust according to their location of deposition in respiratory tract	05	CO3
Q 2	Discuss the use of silicate fiber mat & wool. What are the prime disadvantages?	05	CO1
Q 3	Compare the role of direct blast & backlash in mine explosion.	05	CO2
Q 4	List down the CMR regulation intended to deal with inundation, specifically the one dealing with INUNDATION DUE TO SURFACE WATER	05	CO4

SECTION B (40 Marks)

First two are compulsory & attempt any 1 from Q-7

Q 5	a. Define Ignibility/ liability index of coal b. What is the composition of foaming agent? c. What is the difference between base & secondary emission? d. Why & how silica gel is used in gas masks? e. Discuss the demerits of PDMs f. What is the time gap between permanent & temporary stopping construction? g. Deduce the formula to find out methane/ fire damp emission rate h. Justify the use of smoke tube i. What is tidal volume? j. What is non-collagenous Pneumoconiosis	2*10= 20	CO3
Q 6	Critically examine the superiority of gypsum stopping over Sand stopping? Device flowchart in Gypsum stopping construction?	10	CO1
Q 7	How Fire Damp explosion may lead to coal dust explosion, Predict. OR “Fire Damp explosion doesn’t occur at fire seat only”, Defend the same	10	CO2

SECTION-C (40 Marks)

Attempt any 1 from Q 9

Q 8	Recommend a hazard mitigation plan with following condition Presence of CO ₂ is beyond 6%, CO > 3% & CH ₄ > 10%. The handling of situation must include 1. Detection of gases 2. Remedial measures to attain threshold value & 3. Establishing the relationship between CH ₄ & permitted explosive	5+5+ 10=20	CO5
Q 9	Self-contained closed circuit breathing apparatus is regenerating in nature. Defend the same. Organize its design components & develop your arguments with justifications OR a. Instead of CO ₂ , liquid Nitrogen is used for fire quenching, why? Is it possible to use liquid nitrogen directly on fire seat, if yes/no, justify? b. Coal dust explosion is a single/ multi-stage phenomenon, summarize your argument in favor or against?	20	CO6
		10+10 =20	

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SECTION A (20 Marks)

All Questions are compulsory

S. No.		Marks	CO
Q 1	While constructing stopping, identify the necessary precautionary measures?	05	CO3
Q 2	Discuss post and loam stopping? List their advantages	05	CO1
Q 3	Differentiate between primary & secondary flame?	05	CO2
Q 4	List down the CMR regulation with water inundation? Which CMR regulation deals with construction of stopping & sampling techniques?	02+03	CO4

SECTION B (40 Marks)

Q 5	a) Which type of dust sampler is recommended for Indian Mines? Give its specification? b) If drivage > 30 mt. long, what sample frequency and threshold is suitable? c) Discuss the advantages of Gravimeter dust sampler? d) What are the specifications of Arch dam radius? e) What do you mean by stoichiometric composition for explosion?	2*5= 10	CO2
Q 6	Nature of DTA graphs govern auto-oxidative tendencies of coal. Justify using different DTA graphs?	10	CO2
Q 7	During fire isolation, hydraulic filling is one of the useful methods. Support your arguments on why it is not recommended?	10	CO1
Q 8	If a Safety officer advises to construct Permanent and Temporary stoppings simultaneously, do you support such advise? Defend your arguments either in favor or against it? OR Examine the reason behind selective location of Packwall stopping construction	10	CO3

