Name: **Enrolment No:**	UPES

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, December- 2019

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)

S. No.		Marks	CO
Q 1	Classify dust according to their location of deposition in respiratory tract	**05**	**CO3**
Q 2	Compare the role of direct blast & backlash in mine explosion.	**05**	**CO2**
Q 3	List down the CMR regulation intended to deal with inundation, specifically the one dealing with INUNDATION DUE TO SURFACE WATER	**05**	**CO4**
Q 4	What are the challenges in the usage of water as dust suppressing agent?	**05**	**CO5**
SECTION B (40 Marks)			
Q 5	a. What is the difference between base & secondary emission? b. Why & how silica gel is used in gas masks? c. What is the time gap between permanent & temporary stopping construction? d. Deduce the formula to find out methane/ fire damp emission rate e. What is tidal volume? f. Define lag on ignition g. What is the composition of Hoolamite tube? h. What is the dual advantage of using N_2 gas for fire isolation? i. What is Nugas-Firex? j. What is MOWOTWOS?	**1*10= 10**	**CO3**
Q 6	Discuss the role of direct blast & backlash in mine explosion.	**10**	**CO1**
Q 7	a. Critically examine the superiority of gypsum stopping over Sand stopping. Device flowchart in Gypsum stopping construction? b. Oxygen-complex theory proved to be authentic for determining CPT of Jharia coal, Elaborate	**05** **05**	**CO2**
Q 8a	How Fire Damp explosion may lead to coal dust explosion, Predict.	**10**	**CO2**
OR			
Q 8b	"Fire Damp explosion doesn't occur at fire seat only", Defend the same		

SECTION-C (40 Marks)			
Q 9	Explain how fire happen in U/g mines. List Regulations connecting to prevention of fire in U/g coal mines	**10+10**	**CO4**
Q 10	Recommend a hazard mitigation plan for the following conditions Presence of CO_2 > 6%, CO > 3% and 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 OR a. Statement: Self-contained closed circuit breathing apparatus is regenerating in nature. Build suitable arguments either in favour or not in favour b. The Chasnala disaster caused the death of 372 workers. Considering the mining condition and all assumptions behind the disaster, find out the root cause of the same. Being a Mining Engineer, suggest the remedial measure.	**5+5+ 10=20** **10+10**	**CO5**