


Name:	
Enrolment No:	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End-Semester Examination, December, 2018

Programme Name: B. TECH. IN MINING ENGINEERING

Semester : III

Course Name : MINE DEVELOPMENT (PEMI 2001)

Time : 03 hrs

Max. Marks : 100

Instructions: As stated in the sections.

SECTION A: 20 MARKS

		Marks	CO
Q1. a)	Explain: a) District, b) Barrier, c) Gallery, d) Pillar	[4]	CO1
b)	Write the exceptional conditions of CMRs where two modes of access are not needed.	[4]	CO2
c)	According to the CMRs, list the types of explosives.	[4]	CO4
d)	Name different shaft sinking methods and explain ANY ONE.	[4]	CO6
e)	Write a short note on Permanent lining in shaft.	[4]	CO6

SECTION B: 40 MARKS

Q2. a)	Draw a plan view of a mining district and show: Level gallery, Dip-rise gallery, Face(s), Barrier, Coal pillar.	[5]	CO1
b)	Illustrate the conditions given in CMRs applicable for working shafts.	[5]	CO2
Q3. a)	Differentiate between Rotary and Percussive drilling methods.	[6+4]	CO3
b)	List application of drilling fluids.		
Q4. a)	Compare ANFO and Slurry explosive properties.	[6+4]	CO4
b)	What are the advantage of NONEL detonation over electrical detonation?		
Q5. a)	List governing factors for design of blasting pattern in cut faces.	[6+4]	CO5
b)	Write a note on Wedge cut pattern.		

OR

Q6. a)	Summarize the possible damages occurred by blasting.	[6+4]	CO5
b)	Compare Fan cut and Burn cut based on design parameters and give applications.		

SECTION-C: 40 MARKS (ANSWER 7 AND EITHER 8 OR 9)

Q7. a)	Discuss about the different Permitted class of explosives used in mines.	[6]	CO4
b)	In Solid Blasting, what are the governing conditions for coal?	[7]	CO5
c)	What are the surface arrangements needed for shaft sinking?	[7]	CO6
Q8. a)	Elaborate the CMRs for Misfires during blasting.	[10]	CO4
b)	Discuss ANY TEN parameters for Blast design in benches.	[10]	CO5
OR			
Q9. a)	Write ANY SIX tests of an explosive for its use.	[6+4]	CO4
b)	Discuss shortly ANY ONE special blasting techniques.		

c)	Write the controlling factors for cast blasting.	[10]	CO5
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SECTION A: 20 MARKS (ANSWER ALL)

S. No.	Statement of question	Marks	CO
Q1. a)	Define: Heading, Inset, Shot-firer, Face.	[4]	CO1
b)	Write different modes of access for reaching the deposit.	[4]	CO2
c)	What are the reasons for deviations of borehole?	[4]	CO3
d)	Write the essential characteristics of an Explosive.	[4]	CO4
e)	Explain briefly about temporary lining in shafts.	[4]	CO6

SECTION B: 40 MARKS (ANSWER 2, 3, 4 AND EITHER 5 OR 6)

Q2. a)	Discuss briefly the unit operations for production.	[6+4]	CO1
b)	Write and define the different phases of a mine.		
Q3. a)	Write the SIX advantages of Incline over Shaft for accessing the deposit.	[6+4]	CO2
b)	When Two numbers of access are not needed in mines as per CMR?		
Q4.	Discuss with a diagram, either Rotary or Percussive drilling methods highlighting the surface arrangements, suitable conditions and operation.	[4+3+3]	CO3
Q5. a)	Discuss the properties of an explosive.	[7+3]	CO4
b)	What are the advantage of Delay detonators?		
OR			
Q6.	Discuss the various parameters of blast design.	[10]	CO4

SECTION-C: 40 MARKS (ANSWER 7 AND EITHER 8 OR 9)

Q7. a)	Explain ANY TEN CMRs for drilling/ charging/ stemming / firing of shot-holes.	[10]	CO4
b)	What are the surface arrangements needed for shaft sinking?	[10]	CO6
Q8. a)	Elaborate the CMRs for Misfires in blasting.	[8]	CO4
b)	Discuss ANY THREE blasting pattern used in mines.	[12]	CO5
OR			
Q9. a)	What are the conditions for Solid Blasting?	[8]	CO4
b)	Explain the damages due to blasting.	[6+6]	CO5
c)	Discuss about ANY TWO controlled blasting techniques.		

