UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End-Semester Examination, December 2019

Programme: B.Tech. (Mining Engineering) **Semester: V**
Course: Methods of sub-surface Mining **Time: 03 hrs.**
Course Code: PEMI 3001 **Max. Marks: 100**

SECTION A: 20 MARKS

S. No.	Statement of the Questions	Marks	CO
Q1.	Explain the importance of Shaft pillar in U/G Coal Mining.	**4**	**CO1**
Q2.	Differentiate between Longwall Advancing and Longwall Retreating methods.	**4**	**CO2**
Q3.	What are the advantages and disadvantages of a double unit Longwall face?	**4**	**CO2**
Q4.	State the parameters that govern Load Bearing Capacity of wooden props.	**4**	**CO5**
Q5.	What are the conditions for Hydraulic stowing?	**4**	**CO6**

SECTION B: 40 MARKS

Q6. a)	Draw and explain the pit-top layout with a cage and tub combination.	**5**	**CO1**
b)	What are the Problems of Depillaring?	**5**	**CO3**
Q7. a)	Explain the controlling factors for a Longwall face.	**6+4**	**CO4**
b)	Draw Longwall face and identify the various elements?		
Q8. a)	State the favourable conditions for Depillaring with stowing.	**7+3**	**CO6**
b)	Differentiate between Pneumatic and Mechanical stowing.		
Q9. a)	Illustrate the working factors for coal face mechanization.		
b)	State the CMRs for the withdrawal of supports.	**6+4**	**CO5**
	OR		
c)	State the SSR applicable in U/G coal mining as per CMR?	**4+6**	**CO5**
d)	Interpret the load characteristics graph of a power support with a diagram.		

SECTION-C: : 40 MARKS

Q10. a)	Discuss the CMRs for Strata Control and its Monitoring plan.	**10**	**CO3**
b)	Explain various steel props and roof-bolts used in coal mines.	**4+6**	**CO5**
Q11. a)	Based on AFC-DERDS combination, explain the coal extraction for a Longwall Advancing face? Use different sketches. Assume any other conditions.	**12**	**CO4**
b)	Discuss the pressure arch theory for a narrow roadway in underground.	**8**	**CO5**
	OR		
c)	Based on AFC-DERDS combination, explain the coal extraction for a Longwall Retreating face? Use different sketches. Assume any other conditions.	**12**	**CO4**
d)	Discuss the Modern theory for strata behavior in a Longwall working.	**8**	**CO5**