

Name:	
Enrolment No:	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, May 2019

Course Name: Mine Machinery	Semester : IV
Programme Name: B.Tech Mining Engg	Time : 03 hrs
Course Code : PEMI 2004	Max. Marks : 100

Instructions: Draw suitable sketches wherever necessary

SECTION A All questions are compulsory

S. No.		Marks	CO
Q 1	a. Justify the gap specifications in headgear. b. Explain the cage attachments in ascending sequence, starting from Cage itself. c. Discuss the superiority of multi-stage over single-stage compressor. d. Describe the precautionary measures need to be taken during rope capping using white metal	05*4= 20	CO1

SECTION B All questions are compulsory

Q 2	In a U/g coal mine, production per day per shift is 200tons. Strata is undulating in nature. There is provision for gathering haulage and it is desired to transport coal to the surface on everyday basis. Being the shift in-charge, kindly suggest both modes of haulage.	10	CO2
Q 3	Standard life span of wire rope is 3.5 yrs. Is it possible to discard the wire rope before this stipulated period? Support your answer with justifications	10	CO4
Q 4	Judge the performance of both Shuttle car & gemonod system. Suggest the most suitable one for polymetallic nodules.	10	CO6
Q 5	Analyse Ripper as an essential/ ancillary equipment or combination of both in surface mining. Illustrate with suitable example. <p style="text-align: center;">OR</p> Differentiate between ripper & clamshell and suggest which will be the most suitable for surface mine operation as excavator	10	CO3

SECTION-C All questions are compulsory

Q 6	<p>i. Analyze the condition of super elevation in rail transport system. With the given set of information find out super elevation locomotive travels around a curve of 40m radius Speed of locomotive: 40kmph, Rail Gauge is 1 mtr</p> <p>ii. What are the demerits of direct rope haulage? To overcome those demerits, which modified system needs to be implemented, suggest</p>	<p>10*2= 20</p>	<p>CO5</p>
Q 7	<p>Trucks are conventionally used as the most effective mode of transport in mining industry. Compare its effectiveness with other modes & give a possible substitute to the conventional mode of transport with due justification.</p> <p style="text-align: center;">OR</p> <p>Design main and tail rope haulage system for an underground mine working, emphasizing the importance of haulage rope length in the same.</p>	<p>20</p>	<p>CO6</p>

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SECTION A

All questions are compulsory

S. No.		Marks	CO
Q 1	a. Justify the structure of headgear corresponding to its need b. Explain the cage attachments in ascending sequence, starting from Cage. c. Discuss the types of ripper blade tips. d. Discuss the diagnostic feature of CLB system.	05*4= 20	CO1

SECTION B

All questions are compulsory

Q 2	Elaborate the various types of stress in winding rope & find out the possible cause for the same.	10	CO4
Q 3	a. Discuss why Inter-coolers are mandatory in compressors b. Explain why gravity haulage is considered as the secondary mode of transportation?	05*2= 10	CO2
Q 5	Discuss the non-suitability of CLB system in deep sea mining with valid reasons.	10	CO6
Q 6	Describe the various types of ripper blades available and suggest the best one for excavation of granitic terrain.	10	CO3

SECTION-C

All questions are compulsory

Q 7	Discuss the need of safety features in direct haulage system. Out of all available safety features, which one you feel should be mandatory in direct haulage.	20	CO5
Q 8	a. Discuss the factors need to be considered before selecting the mine car. b. Differentiate between Granby car & rocker dump.	10*2= 20	CO6