

Name:

Enrolment No:



UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
Online End Sem. Examination, May 2021

Course: Mine Hoisting
Programme: B. Tech (Mining Engineering)
Course Code: PEMI4008

Semester: VIII
Time: 03 hrs.
Max. Marks: 100

SECTION A

1. Each Question will carry 5 Marks

2. Instruction: Complete the statement / Select the correct answer(s)

Sl. No.	Question	CO
Q 1	<p>(A) Which of the following is used to change the direction of an applied force and reduce the force needed to lift a weight?</p> <ul style="list-style-type: none">(i.) Shaft(ii.) Pulley(iii.) Gear(iv.) Gear Train <p>(B) Combining a fixed pulley with a movable pulley or another fixed pulley of a different diameter is used for?</p> <ul style="list-style-type: none">(i.) Gaining Mechanical Advantage(ii.) Lower the tension(iii.) Increase the speed(iv.) All <p>(C) The mechanical advantage M is determined as?</p> <ul style="list-style-type: none">(i.) $M = W/F$(ii.) $M = F/W$(iii.) $M = W * F$(iv.) $M = W - F$ <p>(D) Pulleys or wheels, which are used for driving purposes on haulages, must have its throat so shaped to give?</p> <ul style="list-style-type: none">(i.) Less surface area(ii.) Necessary grip(iii.) More surface area(iv.) High tension <p>(E) The tape in clipton pulley is?</p> <ul style="list-style-type: none">(i.) 1 in 8(ii.) 1 in 12(iii.) 1 in 18(iv.) 1 in 10	CO1
Q 2	<p>(A) In which pulley rope enters the pulley at larger diameter & leave the pulley at smaller diameter?</p>	

	<p>(i.) V-grooved pulley (ii.) Clifton pulley (iii.) Fowler's Pulley (iv.) All</p> <p>(B) Which is an example of clip pulley? (i.) V-grooved pulley (ii.) Clifton pulley (iii.) Fowler's Pulley (iv.) All</p> <p>(C) When a series of gears are connected in such a way that two or more gears rotate about an axis with the same angular velocity is known as? (i.) Compound Gear Train (ii.) Reverted gear Train (iii.) Planetary gear train (iv.) Simple Gear Train</p> <p>(D) The speed limit for double drum direct rope haulage is (i.) 10 to 20 kmph (ii.) 8 to 12 kmph (iii.) 12 to 18 kmph (iv.) 10 to 12 kmph</p> <p>(E) Endless rope haulage is suitable for (i.) 1 in 16 gradient (ii.) 1 in 12 gradient (iii.) 1 in 8 gradient (iv.) 1 in 10 gradient</p>	CO1
Q 3	<p>(A) Which of the following safety arrangement is placed at the top of the inclination (i.) Stop Block (ii.) Buffer (iii.) Back Catch (iv.) Pointer Plate</p> <p>(B) Which of the following safety arrangement is used for the arresting of the tub axel in backward movement (i.) Drop Warrick (ii.) Back Catch (iii.) Back Stay (iv.) Stop Block</p> <p>(C) Run way switch is used in (i.) Endless rope Haulage (ii.) gravity haulage (iii.) Main and Tail rope haulage (iv.) None</p> <p>(D) Which of the following is the advantage of the gear drive (i.) It transmit exact velocity ratio (ii.) It has reliable service (iii.) It has compact layout (iv.) All</p>	CO1

	<p>(E) Which of the following is an example of parallel gear</p> <ul style="list-style-type: none"> (i.) Spur Gear (ii.) Bevel Gear (iii.) Both (iv.) None 	
<p>Q 4</p>	<p>(A) The source of energy for reciprocating motion in the single acting ram pump is</p> <ul style="list-style-type: none"> (i.) steam (ii.) compressed air (iii.) electric motor (iv.) all <p>(B) The reciprocating pump is used for pumping of water up to the following height</p> <ul style="list-style-type: none"> (i.) 130 to 150 m (ii.) 90 to 120 m (iii.) 130 to 180 m (iv.) 200 to 350 m <p>(C) A Quadruplex pump is an example of</p> <ul style="list-style-type: none"> (i.) ram pump (ii.) centrifugal pump (iii.) face pump (iv.) mono pump <p>(D) The mechanical efficiency of three throw ram pump is</p> <ul style="list-style-type: none"> (i.) 90 percent (ii.) 80 percent (iii.) 85 percent (iv.) 95 percent <p>(E) Which of the following is the controlling unit of three throw ram pump is</p> <ul style="list-style-type: none"> (i.) gate valve (ii.) foot valve (iii.) by-pass valve (iv.) all 	<p>CO2</p>
<p>Q 5</p>	<p>(A) Which of the following equipment is required in pump house</p> <ul style="list-style-type: none"> (i.) lighting transformer (ii.) statutory notice (iii.) flame safety lamp (iv.) all <p>(B) The hybrid product of the ram pump and turbine pump is called</p> <ul style="list-style-type: none"> (i.) face pump (ii.) mono pump (iii.) megator pump (iv.) all <p>(C) Maximum head of the drill pump is</p> <ul style="list-style-type: none"> (i.) 50 m (ii.) 32 m (iii.) 15 m (iv.) 12 m <p>(D) Maximum head of the mono pump is</p>	<p>CO2</p>

	<ul style="list-style-type: none"> (i.) 150 m (ii.) 75 m (iii.) 110 m (iv.) 85 m <p>(E) Which of the following is the parts of the long wall coal cutter</p> <ul style="list-style-type: none"> (i.) the cutting unit (ii.) the hauling unit (iii.) the drilling unit (iv.) all 	
Q 6	<p>(A) The length of jib in coal cutting machine varies from</p> <ul style="list-style-type: none"> (i.) 0.95 to 10 m (ii.) 0.95 to 20 m (iii.) 0.95 to 30 m (iv.) 0.95 to 40 m <p>(B) The reversible pick is replaced after</p> <ul style="list-style-type: none"> (i.) 50 to 100 cut (ii.) 100 to 200 cut (iii.) 150 to 300 cut (iv.) 90 to 120 cut <p>(C) Which pump is used to deal with gritty water</p> <ul style="list-style-type: none"> (i.) centrifugal pump (ii.) drill pump (iii.) both (iv.) none <p>(D) Which pump is used for the face drainage</p> <ul style="list-style-type: none"> (i.) megator pump (ii.) mono pump (iii.) drill pump (iv.) turbine pump <p>(E) Short wall coal cutting machine is used in</p> <ul style="list-style-type: none"> (i.) board and pillar method (ii.) long wall method (iii.) when jib is shorter (iv.) none 	CO2
SECTION B		
<p>1. Each question will carry 10 marks</p> <p>2. Instruction: Write short / brief notes</p>		
Q 7	<p>Discuss the following tensioning arrangement in details and draw the neat sketch?</p> <ul style="list-style-type: none"> (a) Fixed tension (b) Mobile tension (c) Gradient operated mobile tension <p style="text-align: center;">OR</p> <p>Write in details about the following rope haulage and their advantages as well as disadvantages:</p> <ul style="list-style-type: none"> (a) Single drum direct rope haulage (b) Double drum direct rope haulage 	CO1
Q 8	Write in details about the following safety devices used in mines:	CO2

	(a) Drop Warrick (b) Spring Catch (c) Backstays	
Q 9	Write in details about the mono pump used in mines and its application, advantages and disadvantages	CO3
Q 10	(a) Write in details about the diesel locomotive used in mines and its application, advantages and disadvantages (b) Write in details about the exhaust conditioner and flame trap	CO3
Q 11	Write in details about the following coal cutting machine: (a) Short Wall Coal Cutting Machine (b) Long Wall Coal Cutting Machine	CO3
SECTION-C		
1. Each Question carries 20 Marks.		
2. Instruction: Write long answer.		
Q 12	(a) Write advantages, disadvantages and application of three-throw ram pump (b) Describe water hammer and its cause as well as remedies (b) Describe Suction Air-Vessel with neat sketch <p style="text-align: center;">OR</p> Write the following in details with neat sketch: (a) Arc wall coal cutter (b) Arc-shearer (c) Percussive coal cutters	CO4