


Name:	
Enrolment No:	
SAP ID:	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, May 2023

Program: B. Tech. Civil Engineering
Course: Basic of Mechanical Engineering
Max. Marks: 100
Instructions: Attempt all sections.

Semester- II
Course Code: MECH 1008
Time:03 Hours

SECTION A

(5x4 = 20 marks)

Instructions: Answer all questions @ 4 marks

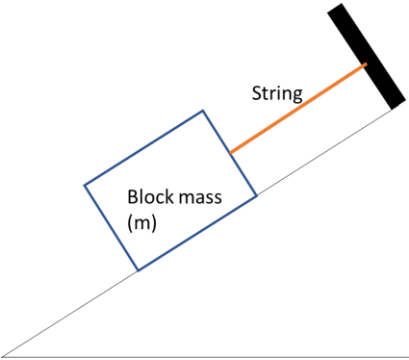
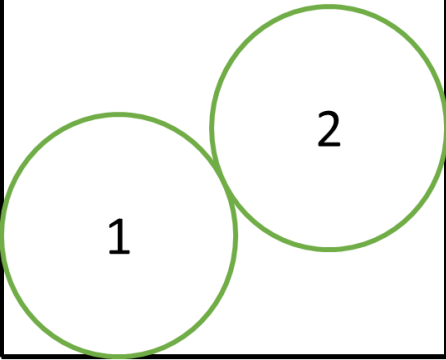
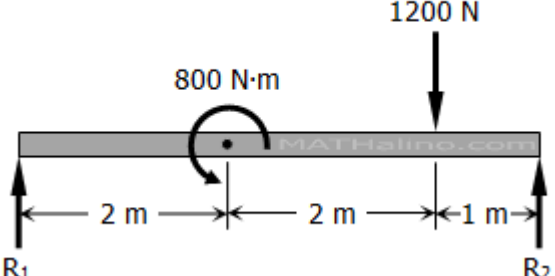
Q 1	A. Define coplanar concurrent force system. B. How many reactions are in fixed support? (a) 1 (b) 2 (c) 3 (d) none C. Define uniform varying load in beam.	2+1+1	CO1
Q 2	Give the difference between Gas welding and Arc welding.	4	CO1
Q 3	The stress-strain curve is obtained by gradually applying load to a test specimen and measuring the deformation. On that basis, define the following terms. (i) Elastic Limit (ii) Hook's law	2+2	CO2
Q 4	Define the following properties of material. Ductility, Brittleness, Strength, Hardness	4	CO3
Q 5	If the two forces, P and Q, are acting at a point in a plane. The angle between the forces is α . Using the method of force resolution, find out the magnitude of the resultant force. If the angle made by resultant force from P force is θ , then find the expression for θ in terms of P, Q and α .	4	CO1

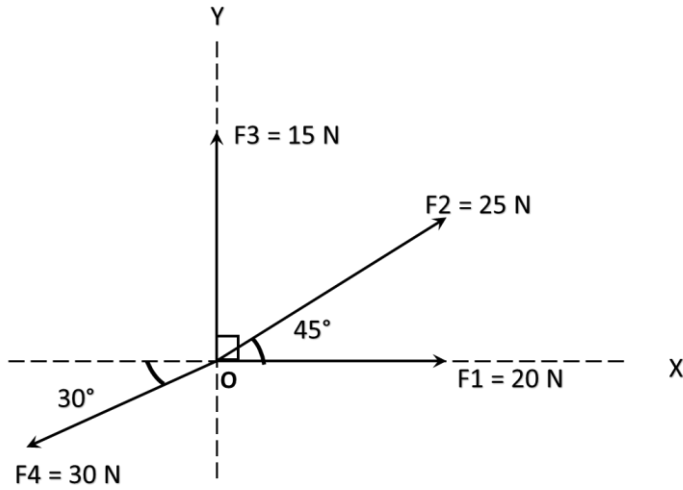
SECTION B

(4x10 = 40 marks)

Instructions: Answer all questions @ 10 marks

Q 1	Describe the various kinds of beams supports with their schematics and reactions.	5+5	CO3
Q 2	Draw the free body diagram of given system of block mass and both balls.	10	CO1

				
<p>Q 3</p>	<p>State the Zeroth and first law of thermodynamics with a suitable example.</p> <p style="text-align: center;">OR</p> <p>Explain the different types of beams with their schematic diagrams.</p>	<p style="text-align: center;">10</p>	<p style="text-align: center;">CO1</p>	
<p>Q 4</p>	<p>Write the difference between belt drives and chain drives.</p>	<p style="text-align: center;">10</p>	<p style="text-align: center;">CO2</p>	
<p>SECTION C</p>		<p>(2x20 = 40 marks)</p>		
<p>Instructions: Answer all questions @ 20 marks</p>				
<p>Q 1</p>	<p>Explain the working of the refrigeration system.</p> <p style="text-align: center;">OR</p> <p>Find out the reaction R_1 and R_2 of given beam.</p> 	<p style="text-align: center;">20</p>	<p style="text-align: center;">CO3</p>	
<p>Q 2</p>	<p>Four forces F_1, F_2, F_3 and F_4 are acting at a point O. The force F_2 and F_4 are applied at angles 45° and 30° from the horizontal X-axis, respectively. Find out the resultant magnitude and angle from X-axis.</p>	<p style="text-align: center;">20</p>	<p style="text-align: center;">CO2</p>	



OR

Explain the working of the two Stroke IC engine.