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# PRESIDENCY UNIVERSITY

BENGALURU

## Mid - Term Examinations - MARCH 2026

Date: 11-03- 2026

Time: 09:30am - 11:00am

<b>School:</b> SOE	<b>Program:</b> B. TECH	
<b>Course Code:</b> MEC2500	<b>Course Name:</b> ENGINEERING MECHANICS	
<b>Semester:</b> II	<b>Max Marks:</b> 50	<b>Weightage:</b> 25%

CO - Levels	C01	C02	C03	C04	C05	C06
Marks	26	24	-	-	-	-

### Instructions:

- (i) Read all questions carefully and answer accordingly.
- (ii) Do not write anything on the question paper other than roll number.

### Part A

Answer ALL the Questions. Each question carries 2marks.

5Q x 2M=10M

1	Define Engineering Mechanics.	2 Marks	L1	C01
2	List the assumptions of Engineering Mechanics.	2 Marks	L1	C01
3	List the characteristics of force.	2 Marks	L1	C01
4	Explain the principle of superposition of force	2 Marks	L2	C02
5	Explain co planar concurrent forces give one example	2 Marks	L2	C02

### Part B

Answer the Questions.

Total Marks 40M

6.	a.	State and explain the procedure of principle of resolution	10 Marks	L2	C01
Or					
7.	a.	Explain the Classification of Force systems	10 Marks	L2	C01

<p>8.</p>	<p>Four forces acting on a hook are shown in Figure 8. Determine the direction of the force 150 N such that the hook is pulled in the X - direction. Determine the resultant force in X - direction</p>	<p>10 Marks</p>	<p>L3</p>	<p>CO2</p>
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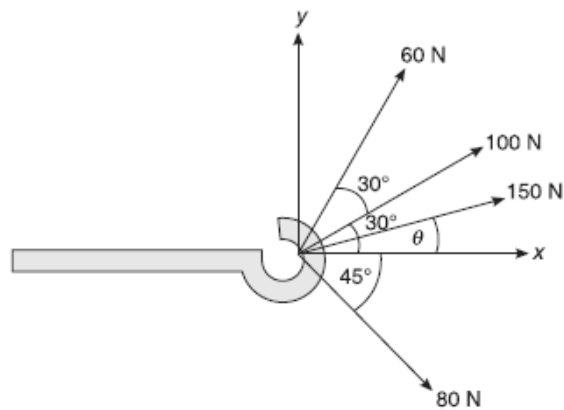


Fig 8

Or

<p>9.</p>	<p>Determine the magnitude &amp; direction of the resultant of the coplanar concurrent force system shown in Figure 9 below.</p>	<p>10 Marks</p>	<p>L3</p>	<p>CO2</p>
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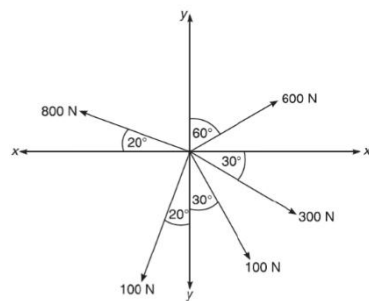


Fig 9

<p>10.</p>	<p>Determine the forces induced in the members AC and BC of the structure shown in Figure 10 below.</p>	<p>10 Marks</p>	<p>L3</p>	<p>CO1</p>
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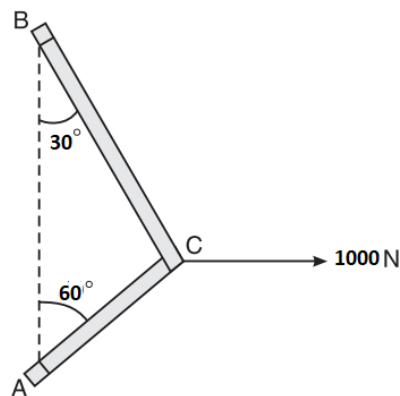
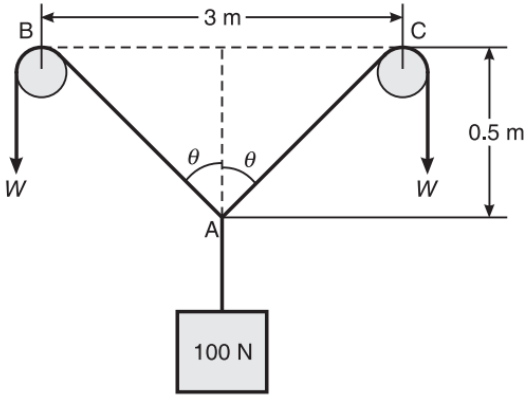
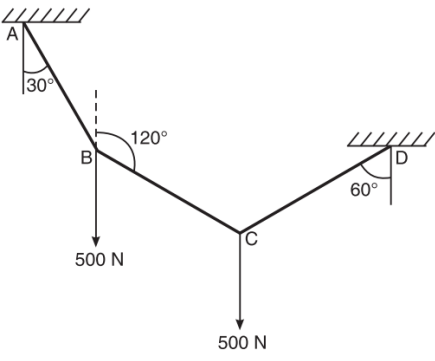


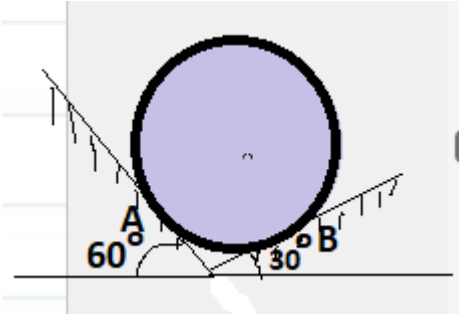
Fig 10

Or

<p><b>11.</b></p>	<p>Find the value of <math>W</math>, which is required to maintain equilibrium configuration as shown in Figure 11.</p>  <p style="text-align: center;">Fig 11</p>	<p><b>10 Marks</b></p>	<p><b>L3</b></p>	<p><b>CO1</b></p>
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<p><b>12.</b></p>	<p>A string ABCD attached to two fixed points A and D has two equal weights 500 N attached to it at B and C (Figure12). The weights rest with portions AB and CD inclined at angles of <math>30^\circ</math> and <math>60^\circ</math> respectively with the vertical. Find the tensions in the portions AB, BC, and CD of the string. The inclination of BC with vertical is <math>120^\circ</math>.</p>  <p style="text-align: center;">Fig12</p>	<p><b>10 Marks</b></p>	<p><b>L3</b></p>	<p><b>CO2</b></p>
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Or

<p><b>13.</b></p>	<p>A sphere weighing 100N is fitted in a right-angled notch as shown in Figure 13. If all contact surfaces are smooth, determine the reaction at contact surfaces.</p>  <p style="text-align: center;">Fig. 13</p>	<p><b>10 Marks</b></p>	<p><b>L3</b></p>	<p><b>CO2</b></p>
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