



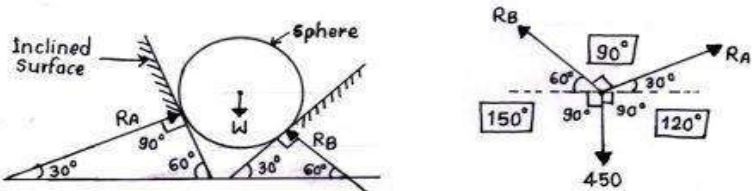
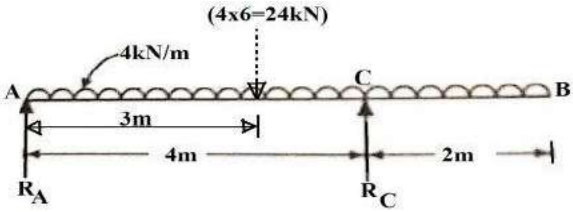
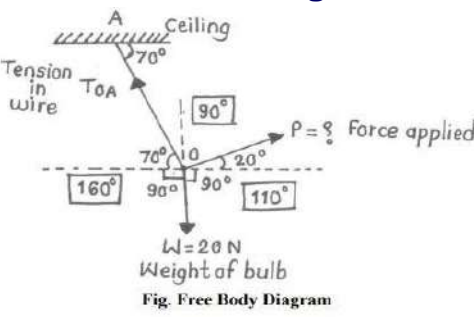
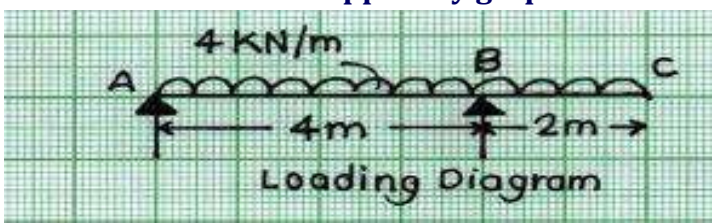
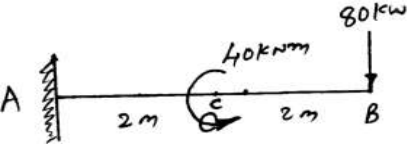
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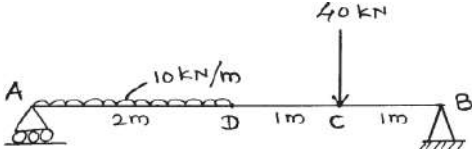
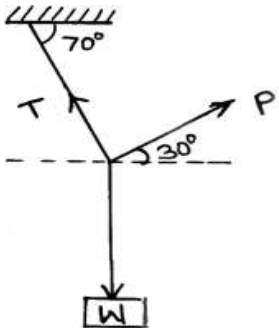
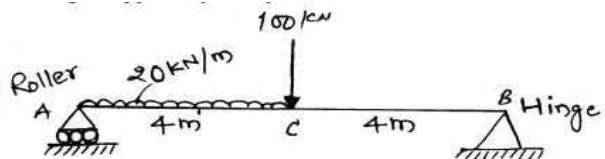
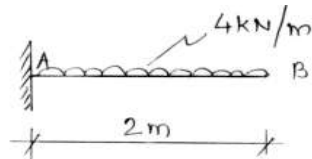
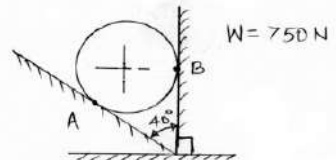
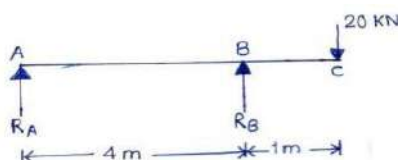
312312 - Engineering Mechanics (Sem II)

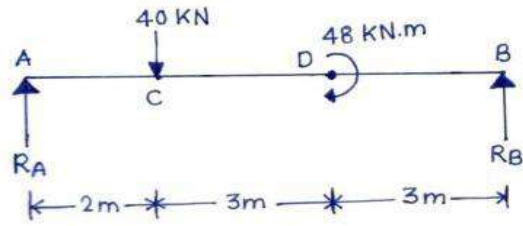
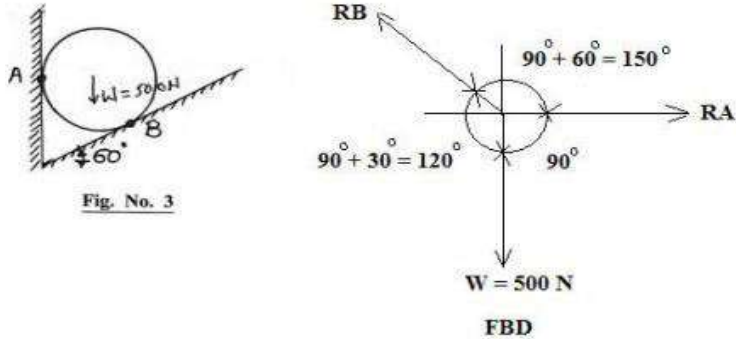
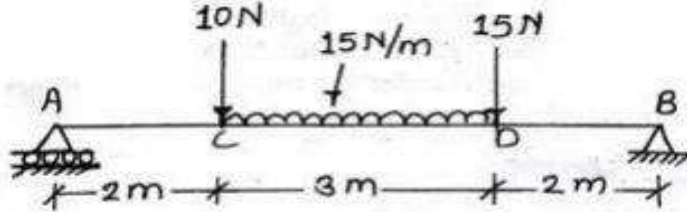
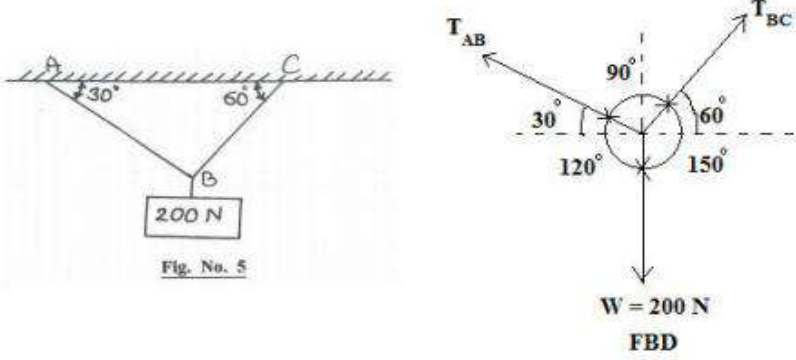
As per MSBTE's K Scheme

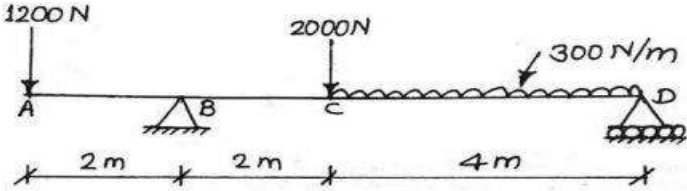
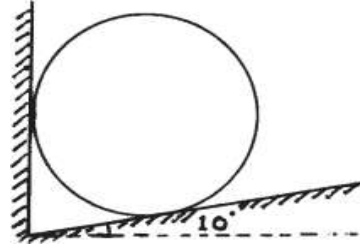
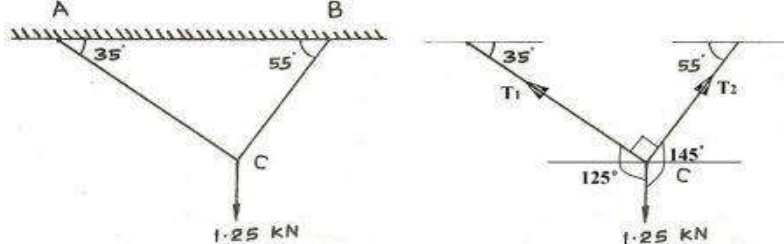
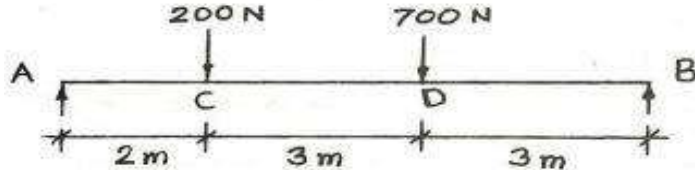
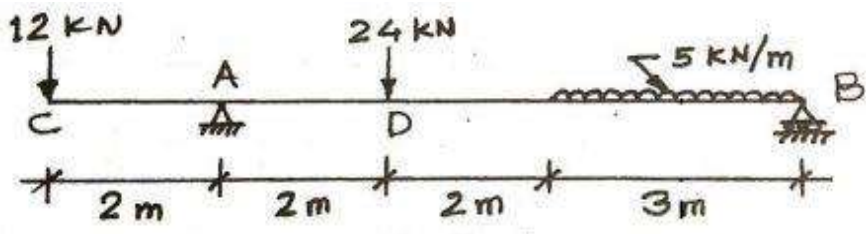
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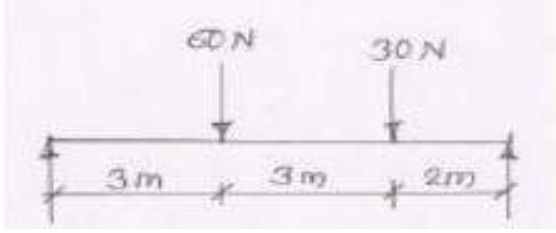
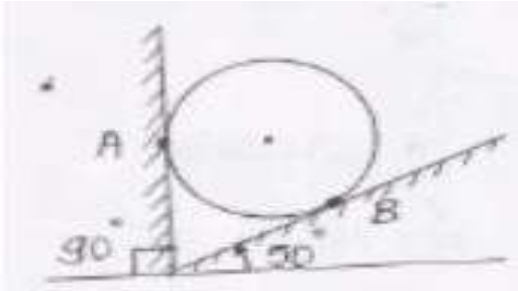
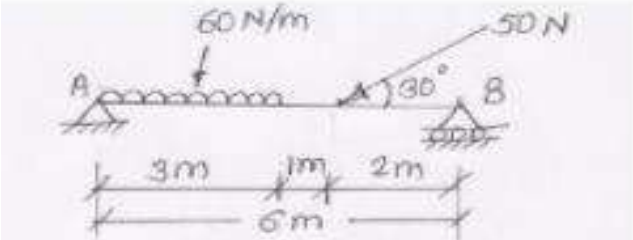
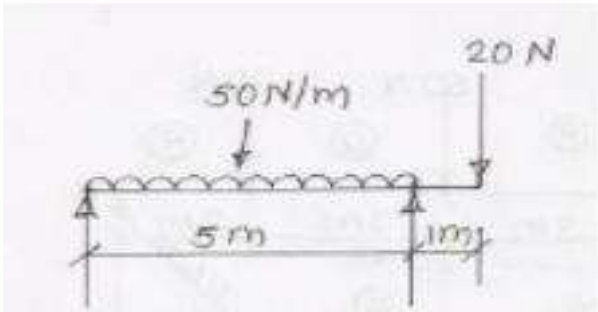
Unit III		Equilibrium of forces	Marks - 14	
S. N.	MSBTE Board Asked Questions		Exam Year	Marks
1.	Write the condition of equilibrium for non-concurrent co-planer force system.		W-23	2M
2.	State two types of beam with diagram of each.		W-23	2M
3.	Find the reactions offered by two surfaces of a sphere weighing 1000 N. Refer Fig.		W-23	4M
4.	A simply supported beam of 4 m. span is loaded with an UDL of 5 KN/m for 2 m from left end and a point load of 30 KN at 1 m from right end. Find support reactions using graphical method.		W-23	4M
5.	Find analytically the reactions at roller and hinges support of a beam loaded as shown in Fig.		W-23	4M
6.	A simply supported beam is subjected to point load of 100 kN and couple of 50 kNm as shown in Fig. Determine the reactions at support A and B.		W-23	6M

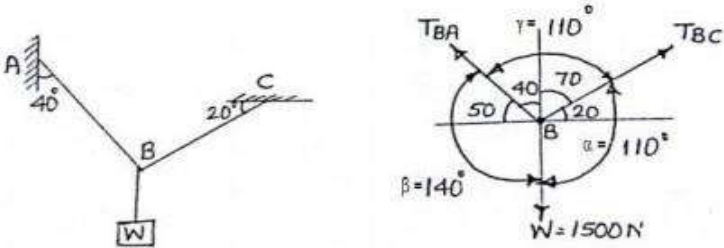
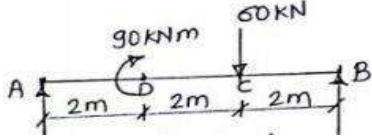
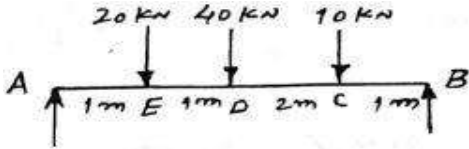
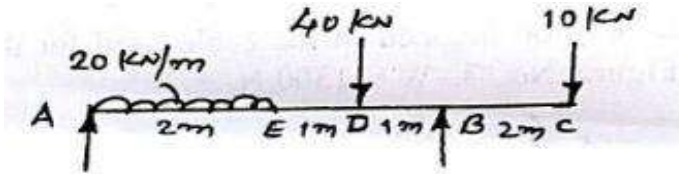
7.	Define beam and state types of beam	S-23	2M
8.	Define equilibrant.	S-23	2M
9.	State Lami's theorem.	S-23	2M
10.	<p>A sphere of weight 450 N rests in a groove of smooth inclined surfaces which are making 60° and 30° inclination with horizontal. Find the reactions at the contact surfaces.</p> 	S-23	4M
11.	<p>A beam AB, 6 m long rests on two supports 4 m apart the right hand end is overhanging by 2 m, the beam carries a udl of 4 kN/m, over entire span. Determine the reactions of support.</p> 	S-23	4M
12.	<p>Calculate magnitude of force P and tension in the wire OA, if an electric bulb of weight 20 N hangs vertically from a ceiling as shown in Fig.</p>  <p>Fig. Free Body Diagram</p>	S-23	4M
13.	<p>Calculate the reactions of support by graphical method for</p> 	S-23	6M
14.	State the types of beam with sketch (any two).	S-22	2M
15.	Write the reactions at support when simply supported beam of span 'L' carrying a point load 'W' at the centre.	S-22	2M
16.	<p>A cantilever is loaded as shown in Fig.. Find the support reaction.</p> 	S-22	4M

17.	<p>Calculate graphically the reactions of beam at the support as shown in Fig.</p> 	S-22	4M
18.	<p>A body of weight 50kN is hung by means of a string to the ceiling. Determine the pull required and tension in the string when string has an inclination 70° with the ceiling and pull is applied at 30° with the horizontal.</p> 	S-22	4M
19.	<p>For a beam as shown in Fig, calculate reaction at roller and hinge support by analytical method</p> 	S-22	6M
20.	<p>State analytical conditions of equilibrium for coplanar non concurrent force system.</p>	W-22	2M
21.	<p>Calculate reaction and reactive moment for a cantilever beam loaded</p> 	W-22	2M
22.	<p>A sphere of weight 750 N is placed between two surface as shown in Fig. Calculate contact reactions offered by the surfaces.</p> 	W-22	4M
23.	<p>Determine the support reactions of a beam loaded as shown in Fig.</p> 	W-22	4M

24.	<p>Calculate analytically the support reactions of the beam loaded as shown in Fig.</p> 	W-22	4M
25.	<p>Determine analytically the reactions of the beam loaded as shown in Fig. Also show the direction of reaction at hinged end.</p>	W-22	6M
26.	<p>State Lami's theorem.</p>	S-19	2M
27.	<p>Write analytical conditions of equilibrium for concurrent force system.</p>	S-19	2M
28.	<p>Calculate the reactions offered by planes. Refer Fig. A sphere weighs 500N is supported by two planes, one plane is vertical and other is inclined at 60° to the horizontal.</p> 	S-19	4M
29.	<p>Calculate graphically the reactions of a beam loaded as shown in Fig.</p> 	S-19	4M
30.	<p>Calculate tension in the strings AB and BC if a weight of 200 N is attached by two strings as shown in Fig.</p> 	S-19	4M

31.	<p>Calculate the reactions using analytical method for a beam shown in Fig.</p> 	S-19	6M
32.	Define free body diagram	W-19	2M
33.	State two limitations of Lami's theorem.	W-19	2M
34.	<p>A sphere having diameter 350mm and 750 kN as weight is placed as shown in figure Calculate the reaction at point of contacts.</p> 	W-19	4M
35.	<p>A weight of 1.25 kN is attached by two ropes as shown in figure Calculate the tension in the ropes.</p> 	W-19	4M
36.	<p>A beam is loaded as shown in figure Calculate its support reactions using graphical method only</p> 	W-19	4M
37.	<p>Calculate the support reactions of beam loaded as shown in figure Use analytical method only.</p> 	W-19	6M
38.	State analytical conditions of equilibrium of concurrent force system.	W-18	2M
39.	Write relation between resultant and equilibrant	W-18	2M

40.	State and explain Lami's theorem with sketch.	W-18	4M
41.	<p>Calculate graphically the reactions of a beam loaded as shown in Figure</p> 	W-18	4M
42.	<p>Calculate reactions offered by surface as shown in Figure, if a cylinder weighing 1000 N is resting on inclined surfaces at 90° and 50° with horizontal</p> 	W-18	4M
43.	<p>A simply supported beam of 6 m span has subjected to loading as shown in Figure Find support reactions by analytical method.</p> 	W-18	4M
44.	<p>Calculate the reactions of beam loaded as shown in Figure by analytical method.</p> 	W-18	6M
45.	State Lami's theorem.	S-18	2M
46.	State any two types of beam along with sketch	S-18	2M

47.	<p>Calculate the tension induced in the cable used for the assembly shown in Figure $W = 1500\text{ N}$.</p> 	S-18	4M
48.	<p>Calculate the reaction of beam loaded as shown in Figure</p> 	S-18	4M
49.	<p>Calculate the reaction of beam loaded as shown in Figure use graphical method</p> 	S-18	4M
50.	<p>Calculate reactions of beam loaded as shown in Figure</p> 	S-18	6M

Thank You

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