Tatyasaheb Kore Institute of Engineering & Technology, Warananagar
(An Autonomous Institute)
F.Y. B. Tech (Sem-I), In Semester Examination –I, Sept. 2023

ENGINEERING MECHANICS

**Day and Date: Thursday, 28 September 2023**   **Marks: 30**

Time : 9.15 am to 10.45 am

Instructions: i) Use of non programmable calculator is allowed.
**ii) Figures to the right indicate full marks.**

		Unit	No	CO	
Q.1	**Attempt any 3 from the following questions.**				
a)	Define force and explain its characteristics.	1		1	**5**
b)	Explain different systems of forces.	1		1	**5**
c)	Find out resultant of a force system shown in fig. 1.1.	1		1	**5**
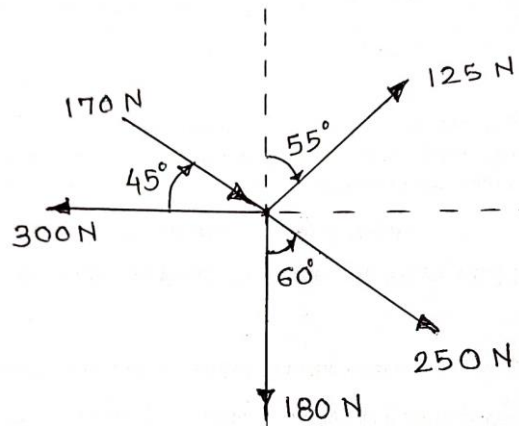
		Unit	No	CO	
d)	Find out magnitude of Resultant (R) and direction of Resultant (α) for a force system shown in fig. 1.2. Square block of size 3m x3m. Also find out location of resultant (x,y OR d) about point 'A'.	1		1	**5**
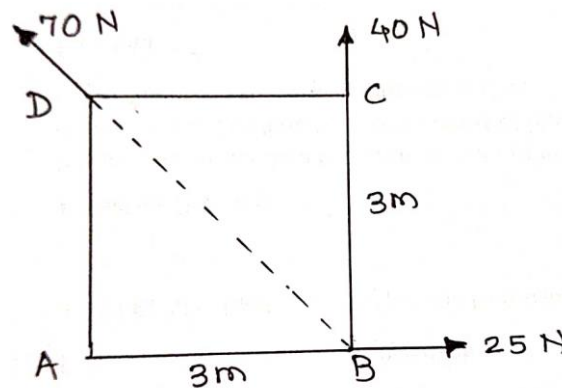
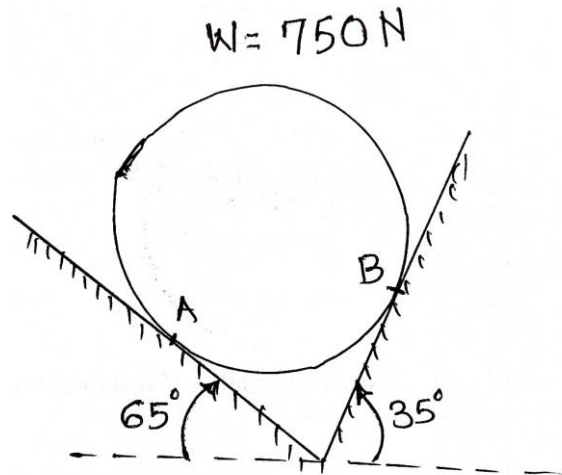|		Unit	No	CO	
Q.2	**Attempt any 3 from the following questions.**				
a)	What is an equilibrium and explain its equations.	2		2	**5**
b)	Explain Free Body Diagram and Lami's theorem.	2		2	**5**

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c) A body of weight 360 N is hung by means of a string to the ceiling. Determine the pull (P) required and tension (T) in the string has an inclination 50° with the ceiling and pull is applied horizontal. Refer fig. 2.1.   2   2   **5**
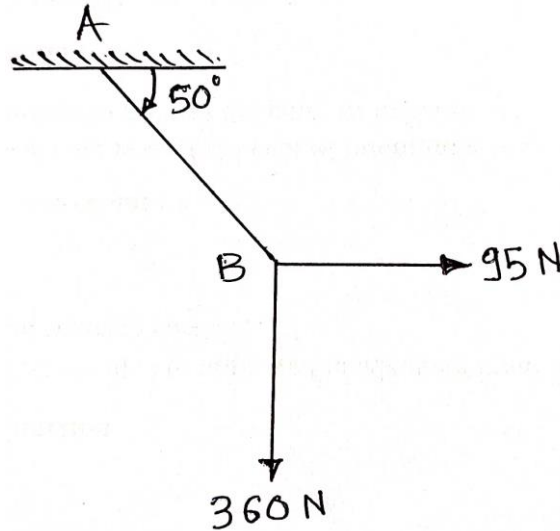
d) A sphere weighing 750 N is fitted in a right angled notch as shown in fig.2.2 below. If all contact surfaces are smooth, determine the reactions at contact surfaces.   2   2   **5**

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