Roll No.												

PRESIDENCY UNIVERSITY

BENGALURU

Mid - Term Examinations – October 2025

Date: 07-10-2025 **Time:** 09.30am to 11.00am

School: SOE	**Program:** B. Tech. (Civil Engineering)	
Course Code: CIV1501	**Course Name:** Elements of Engineering Mechanics	
Semester: I	**Max Marks**: 50	**Weightage**: 25%

CO - Levels	**CO1**	**CO2**
Marks	**20**	**30**

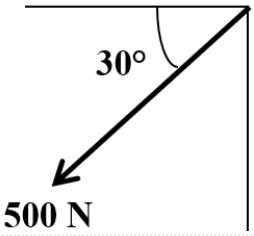
Instructions:

(i) Read all questions carefully and answer accordingly.

(ii) Do not write anything on the question paper other than roll number.

Part A

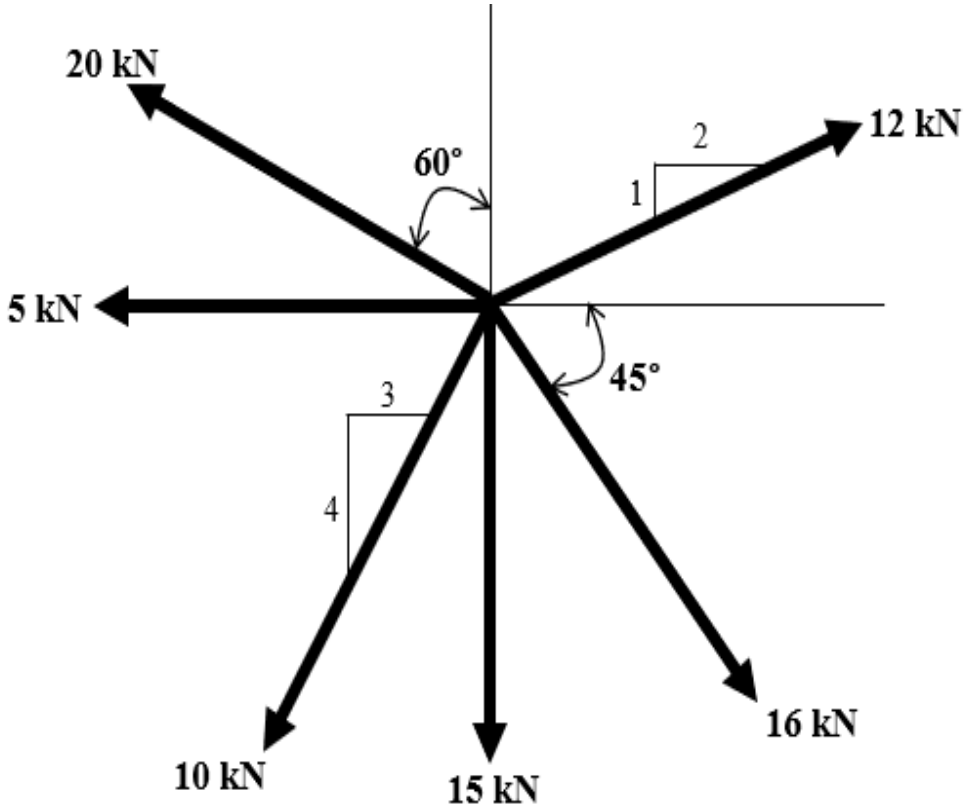
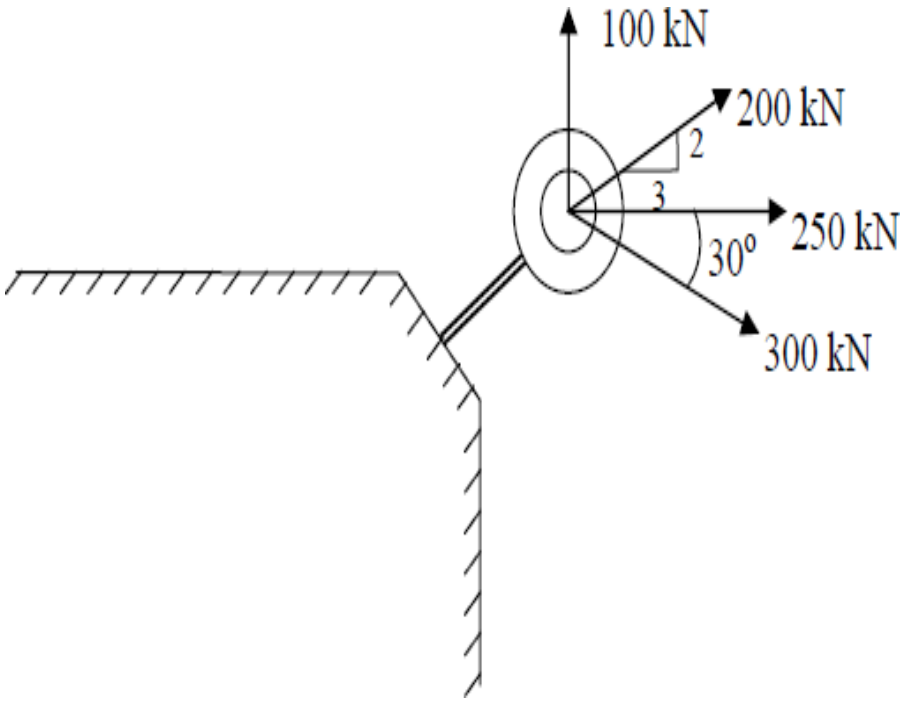
Answer ALL the Questions. Each question carries 2marks. **5Q x 2M=10M**

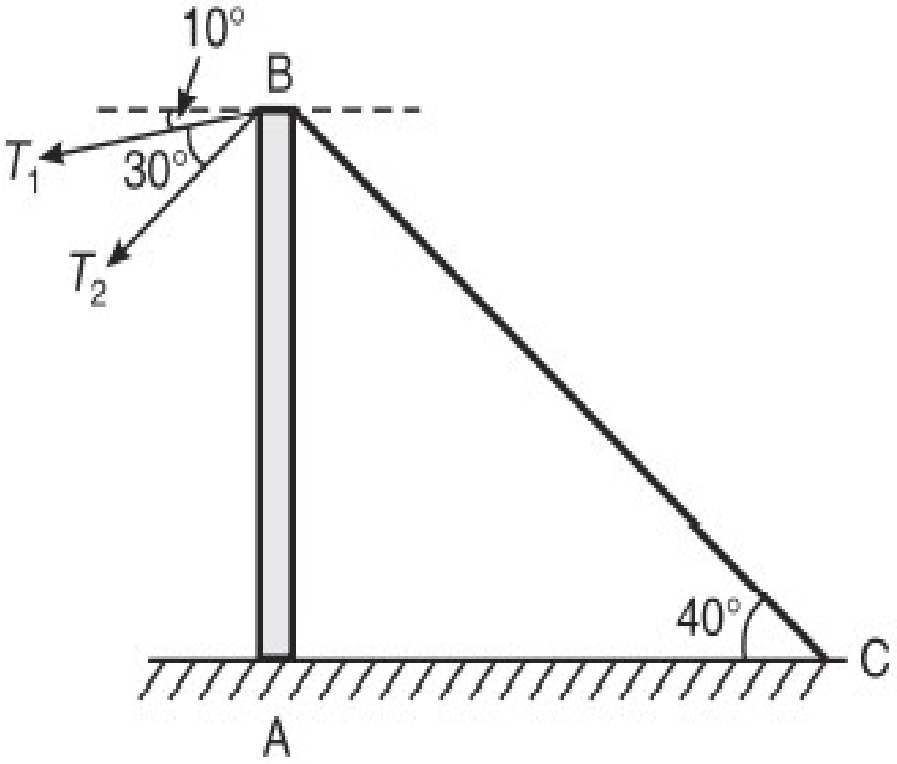
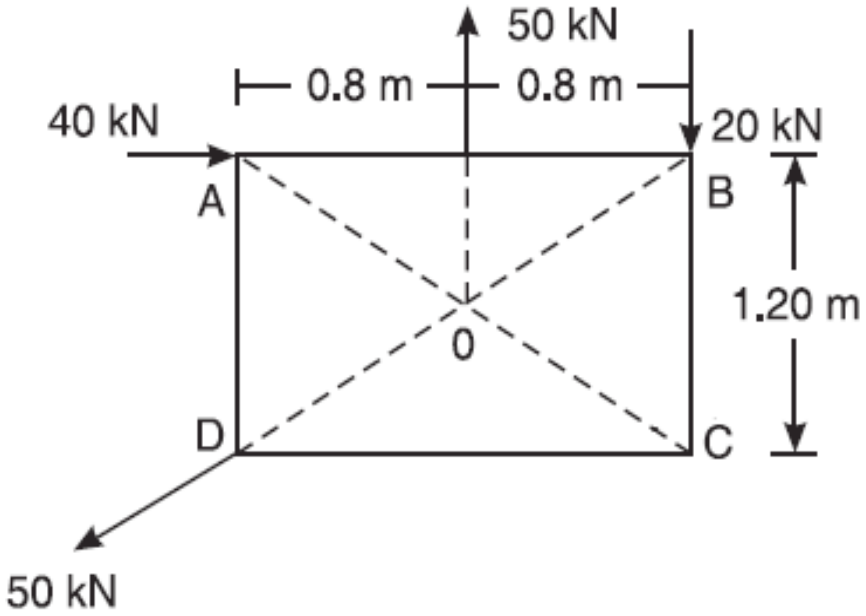
1	Resolve the force shown in Figure into X and Y components 	**2 Marks**	**L2**	**CO1**
2	Define composition of Forces	**2 Marks**	**L1**	**CO1**
3	List the different types of non-coplanar force system	**2 Marks**	**L1**	**CO1**
4	What is a non-concurrent Force system. Define moment of a Force.	**2 Marks**	**L1**	**CO1**
5	State Varignon's theorem.	**2 Marks**	**L1**	**CO1**

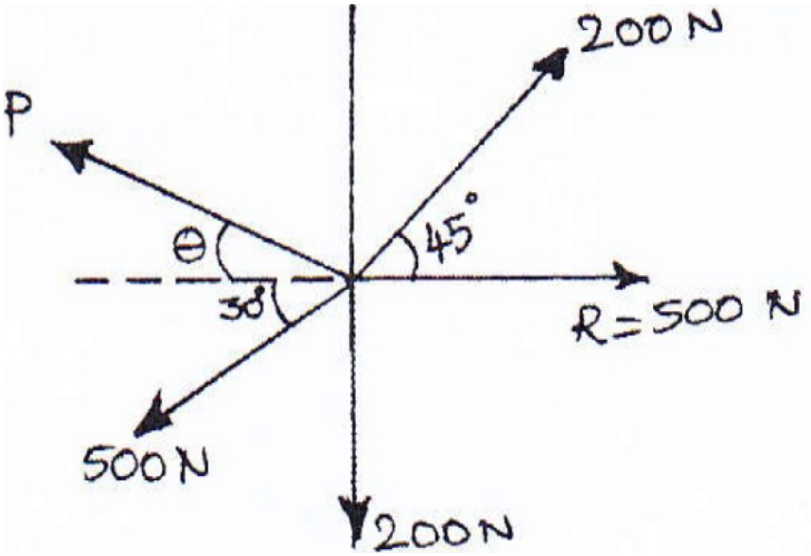
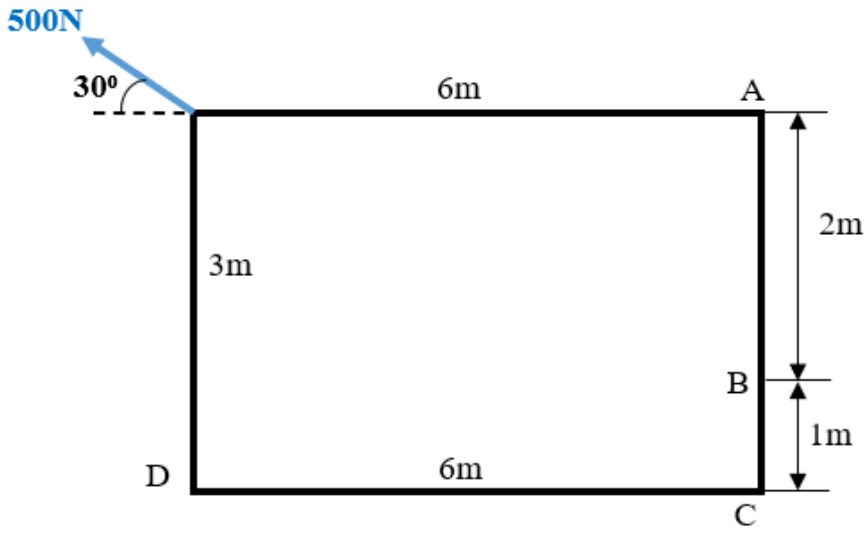
Part B

Answer the Questions. **Total Marks 40M**

6.	**a.**	State and explain Principle of Transmissibility	**05 Marks**	**L2**	**CO1**
	b.	Define a couple. Mention its properties	**05 Marks**	**L2**	**CO1**
		Or			
7.	**a.**	State and prove the parallelogram law of forces	**10 Marks**	**L2**	**CO1**

8.	**a.**	Determine the resultant of the four forces acting on a particle as shown in Fig. 8(a)  **Fig. 8(a)**	**10 Marks**	**L3**	**CO2**
	b.	Four forces are acting on a bolt shown in Fig. 8 (b). Determine the magnitude and direction of the resultant  **Fig. 8(b)**	**05 Marks**	**L3**	**CO2**
Or					

9.	**a.**	Two cables which have known tensions **T1 = 2 kN** and **T2 = 4 kN** are attached at the point **B** of a mast **AB** as shown in Fig. 9(a). A third cable **BC** is used as a guy wire and is attached at **B.** Determine the required tension in cable **BC,** so that the resultant of the forces exerted by the three cables will be vertical. Also find the magnitude of the resultant.  **Fig. 9(a)**	**15 Marks**	**L3**	**CO2**
10.	**a.**	Determine magnitude, direction and point of application of the resultant force for the system of coplanar forces as shown in Fig. 10(a) w.r.t. point A.  **Fig. 10(a)**	**15 Marks**	**L3**	**CO2**
		Or			
11.	**a.**	Four coplanar forces acting at a point are shown in Fig. 11 (a). One of	**11 Marks**	**L3**	**CO2**

		the forces is unknown and its magnitude is shown by P. The resultant has a magnitude of 500N and is acting along the x-axis. Determine the unknown force P and its inclination with x-axis  **Fig. 11(a)**			
	b.	Find the moment of 500N force about the points A and D as shown in Fig. 11(b)  **Fig. 11(b)**	**04 Marks**	**L3**	**CO2**