Roll No												

PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING

MAKE-UP EXAMINATION – JAN 2023

Course Code: CIV1003

Course Name: Elements of Engineering Mechanics

Program & Sem: B. Tech. (Civil Engineering) & II semester

Date: 24 Jan 2023

Time: 1.00PM – 4.00PM

Max Marks: 100

Weightage: 50%

Instructions:

(i) Read the all questions carefully and answer accordingly.

(ii) Use of Scientific Calculator is permitted

Part A

Answer all the Questions. Each question carries 05 marks. (5Q x 4M= 20M)

1. List and sketch any 4 types of beams indicating their support reactions.

2. State and prove Lami's Theorem

3. Define Couple. List the properties of a couple and also mention the sign convention adopted for couple.

4. Two forces 20 N and 40 N act at an angle of 120º. Determine the resultant force both in magnitude and direction.

5. Define: i) Angle of Friction ii) Angle of Repose iii) Cone of friction iv) Coefficient of Friction.

Part B

Answer all the Questions. Each question carries 10 marks. (5Qx10M=50M)

6. Locate the centroid for the section shown in Fig -1

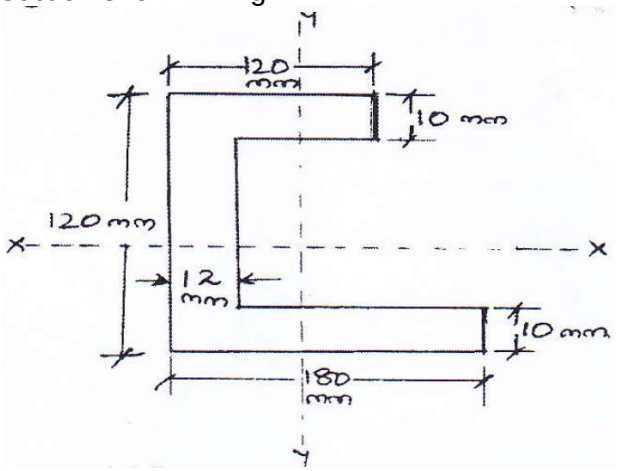

Fig -1 (C.O.No.3) [Comprehension]

7. Compute the tensile forces induced in all the segments of cable when two loads are suspended at B and C as shown in Fig – 2.

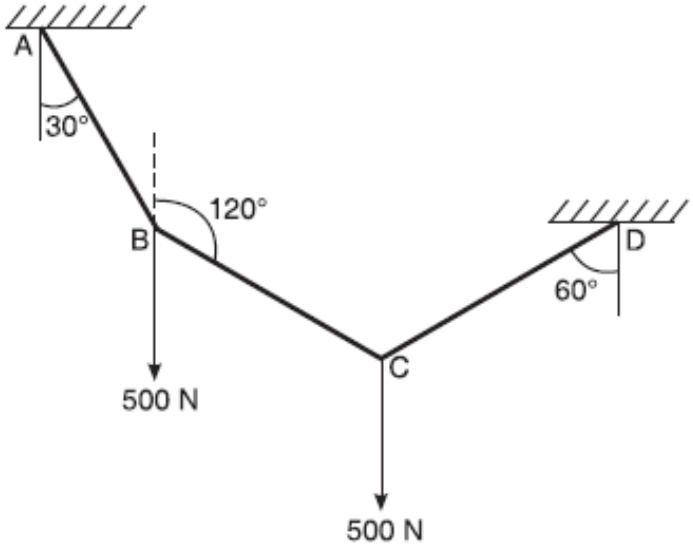

Fig – 2 (C.O.No.2) [Comprehension)

8. Determine the magnitude and direction of the resultant for the concurrent force system shown in Figure 3.

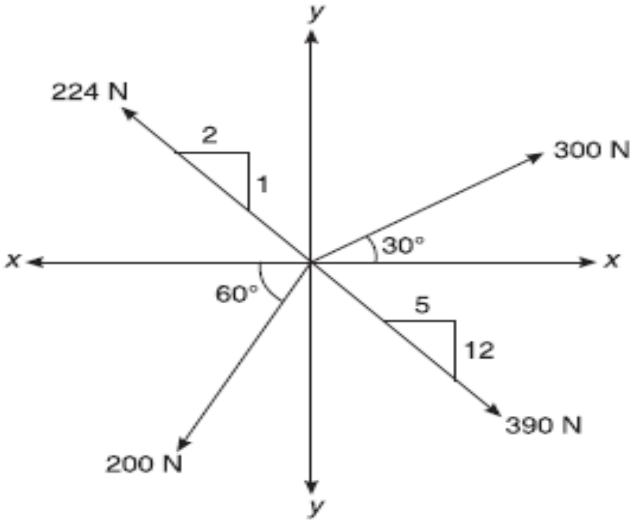

Fig – 3 (C.O.No.1) [Comprehension)

9. Determine the magnitude, direction of the resultant force for the force system shown in Fig. 4. Locate the resultant force with respect to point D.

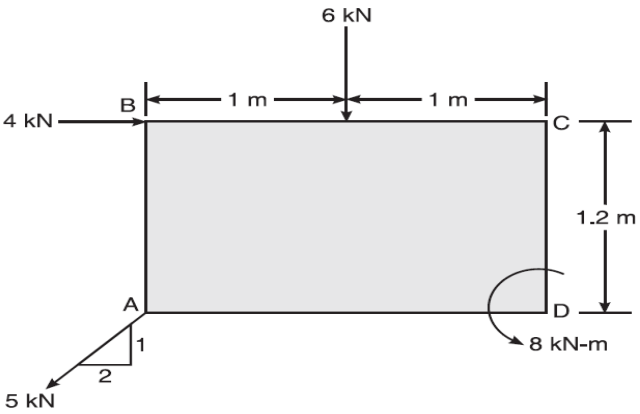

Fig – 4 (C.O.No.1) [Comprehension)

10. Determine the resultant for the concurrent force system shown in Figure 5.

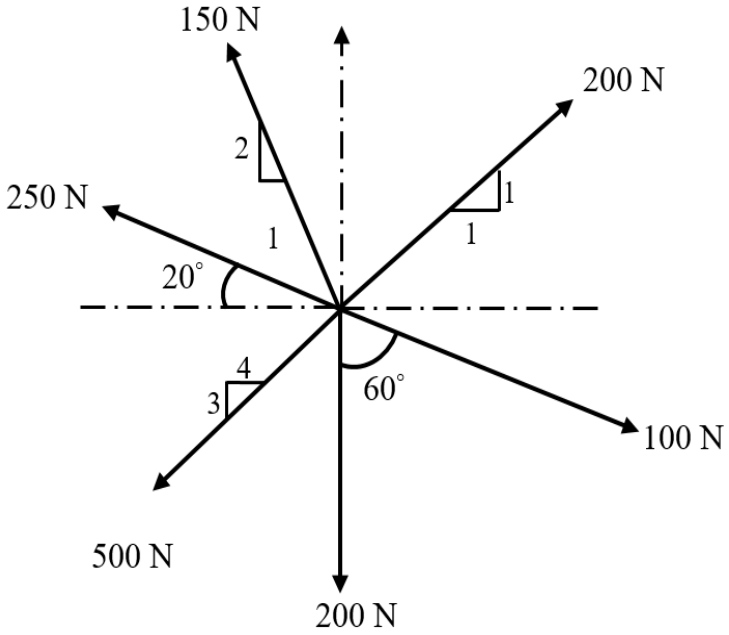

Fig – 5 (C.O.No.1) [Comprehension)

Part C

Answer all the Questions. Each question carries 15 marks. (2Qx15M=30M)

11. Calculate the support reactions for a simply supported beam loaded as shown in the Fig – 6.

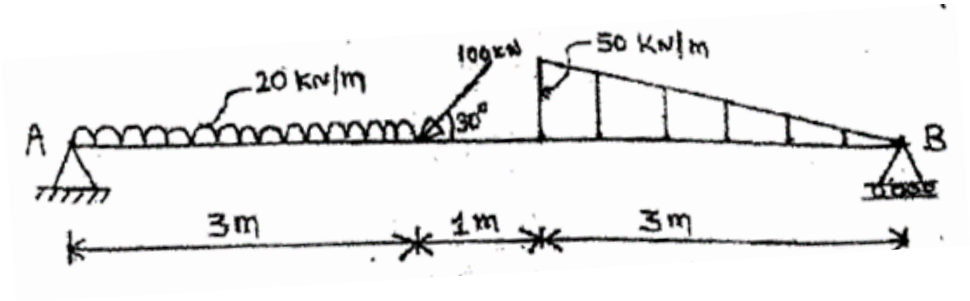

Fig – 6 (C.O. No. 2) [Comprehension)

12. Calculate the moment of inertia about its vertical and horizontal centroidal axis of a plane lamina as shown in fig – 7.

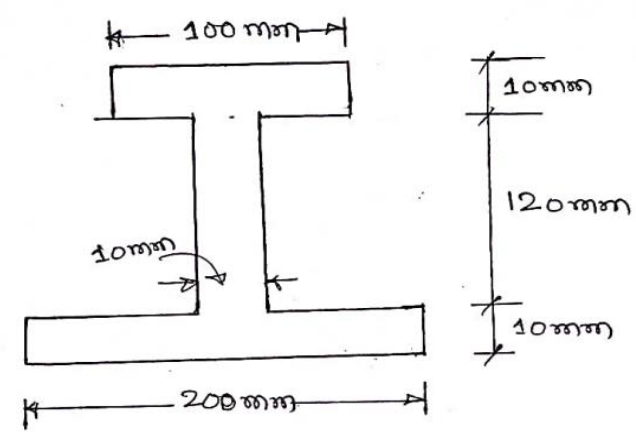

Fig – 7 (C.O. No. 3) [Comprehension)