

BACHELOR OF TECHNOLOGY (C.B.C.S.) (2021-COURSE)

B. Tech. Sem - II CIVIL :SUMMER- 2022

SUBJECT : STATICS & DYNAMICS

Day : Monday
Date : 1/8/2022

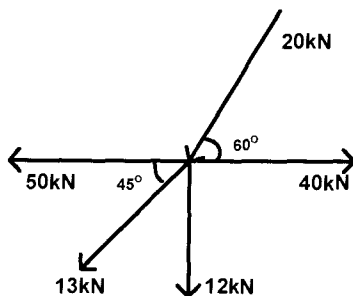
S-24040-2022

Time : 10:00 AM-01:00 PM
Max. Marks : 60

N.B.

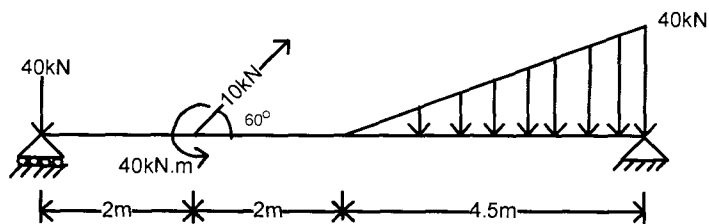
- 1) All questions are **COMPULSORY**.
- 2) Figures to the **RIGHT** indicate **FULL** marks.
- 3) Use of non-programmable calculator is **allowed**.
- 4) Assume suitable data **WHEREVER** necessary.
- 5) Draw neat diagram **WHEREVER** necessary.

Q.1 Calculate resultant of force system shown in fig. below. (10)

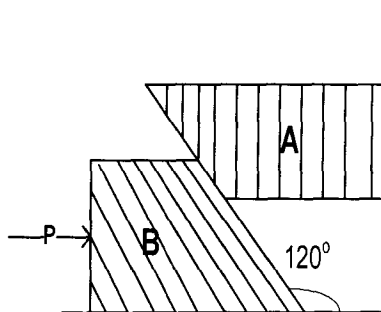


OR

Q.1 Calculate support reactions for the given beam. (10)

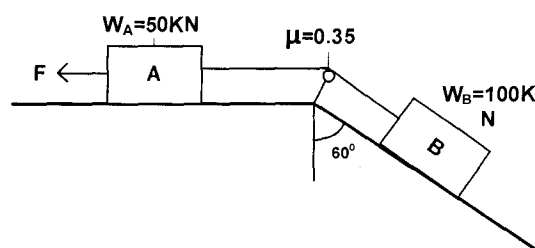


Q.2 Two blocks A and B resting against a wall & the floor as shown below. Find the horizontal force P applied to block B which will keep Block A in equilibrium. The weight of Block A is 600N and Block B is 1200N and coefficient of friction is 0.35 for all contact surfaces. (10)

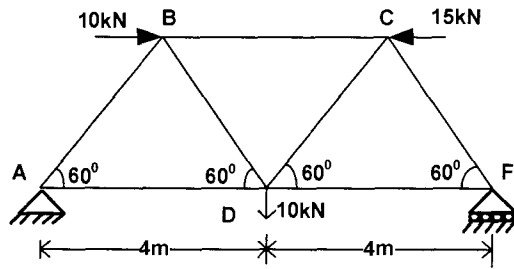


OR

Q.2 Calculate force F to maintain equilibrium. Take $\mu=0.35$ for all the surfaces. Assume Pulley Frictionless. (10)

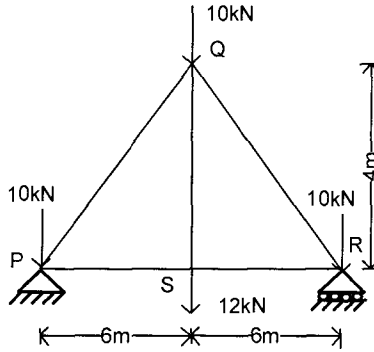


Q.3 For given truss find the forces in member BD & BC by using method of section. (10)

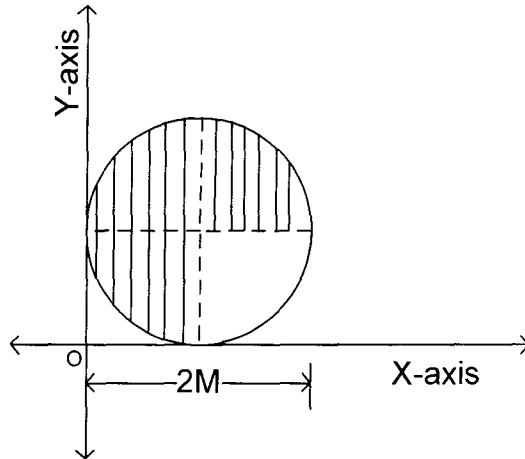


OR

Q.3 Calculate forces in the member using method of joints and tabulate the answer. (10)

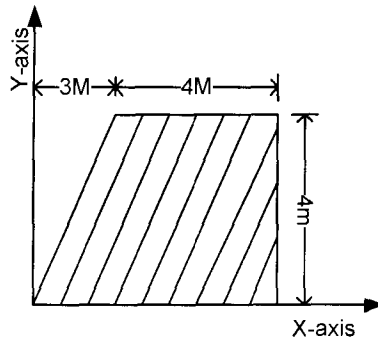


Q.4 Calculate the centroid of the shade area. (10)



OR

Q.4 Calculate the Moment of Inertia of the shaded area about its centroidal axis X-X. (10)

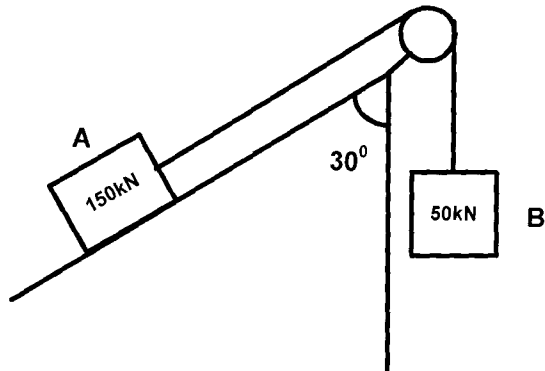


- Q.5** A cyclist is riding west at 30kmph he finds the rain meeting him at an angle of 50° with vertical. When rides at 20 kmph he meets the rain at an angle of 40° with vertical. Find absolute velocity of the rain. (10)

OR

- Q.5** A soldier positioned on hills fires a bullet with 500m/s at an angle of 30° upwards with horizontal. The target lies 60m below him. Determine: (10)
- Determine maximum height to which bullet will rise.
 - Velocity of bullet when it hits the target.
 - Time to hit the target.

- Q.6** Two blocks are resting on inclined plane as shown in figure. Calculate their velocities after block A travels downwards by distance 2m from start. Take $\mu=0.5$, assume 10pulley as frictionless. (10)



OR

- Q.6** A ball is dropped vertically downwards from a height of 10m. Find out the maximum height gained by ball after third impact. Take $e=0.75$. (10)
