CE/ME 114 (R-22)

Total No. of Questions : 10] [Total No.of Pages : 04

I/IV B. Tech. DEGREE EXAMINATIONS, MARCH - 2023

First Semester

CE / ME

ENGINEERING MECHANICS

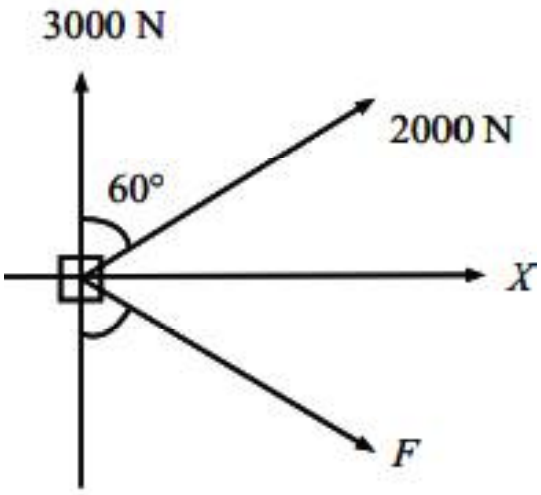
Time : **Three Hours** Maximum : **70** Marks

Answer All Questions

Answer ONE question from each Unit. 5x14=70 M

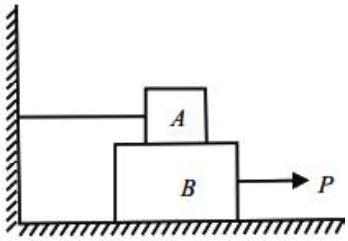
UNIT - I

1. A body is subjected to 3 forces as shown in the fig. If possible, determine the directions of the force F so that at the resultant is in x-direction. When (a) F = 6000N, (b) F = 3000N.



(OR)

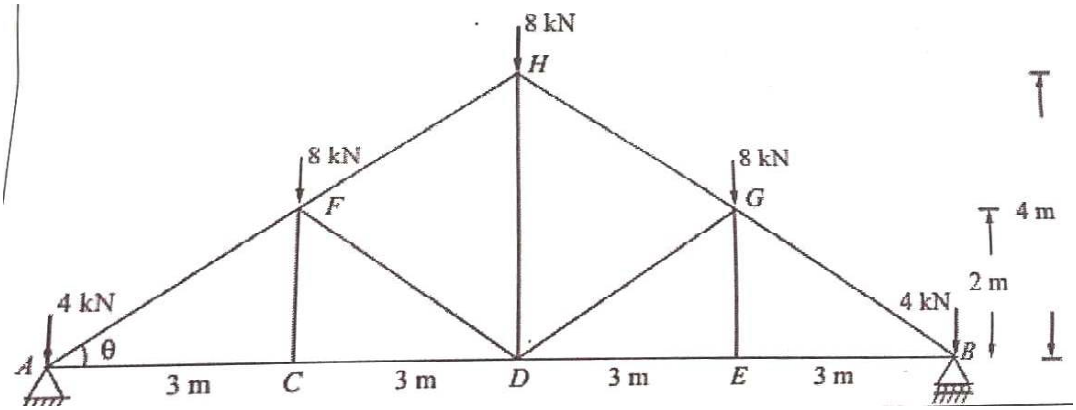
2. Block A weighing 1000N tests over block B which weighs 2000N as shown in fig Block A is tied to wall with horizontal string. If the coefficient of friction between blocks A and B is 0.25 and between B and floor is 1/3, what should be the value of P to move the block (B). If (a) P is horizontal (b) P acts at 30^o upwards to horizontal ?



P.T.O.

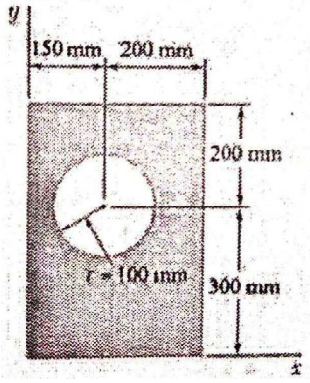
UNIT - II

3. Determine the forces in members and tabulate neatly. Use method of joints.



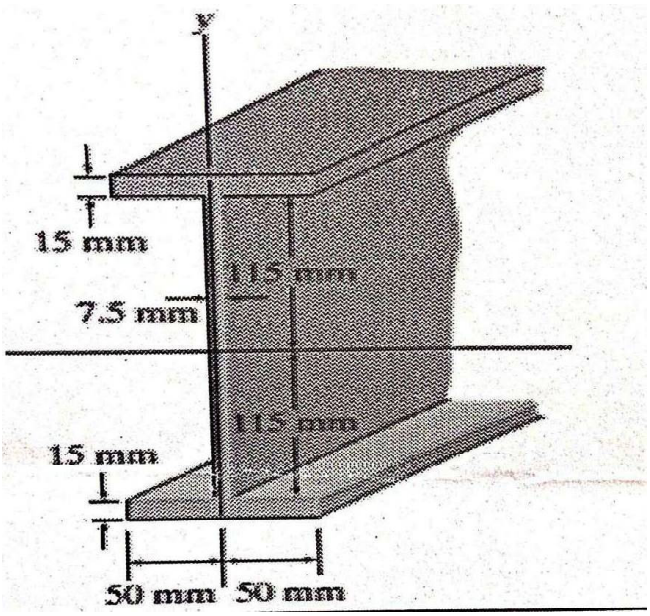
(OR)

4. Locate the centroid of the plane area shown.



UNIT - III

5. Determine the moment of inertia of the beam cross sectional area about the x axis.

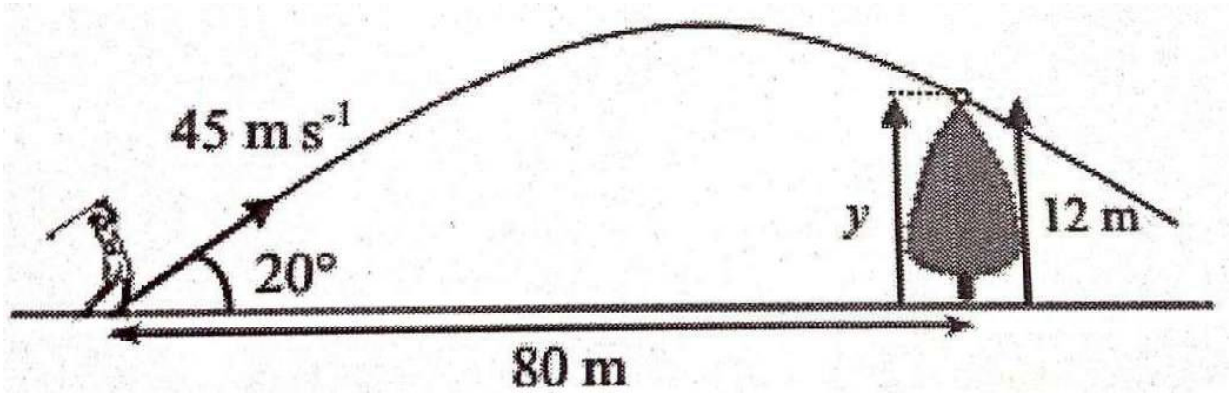


(OR)

6. Define the Parallel Axis Theorem with the sketch.

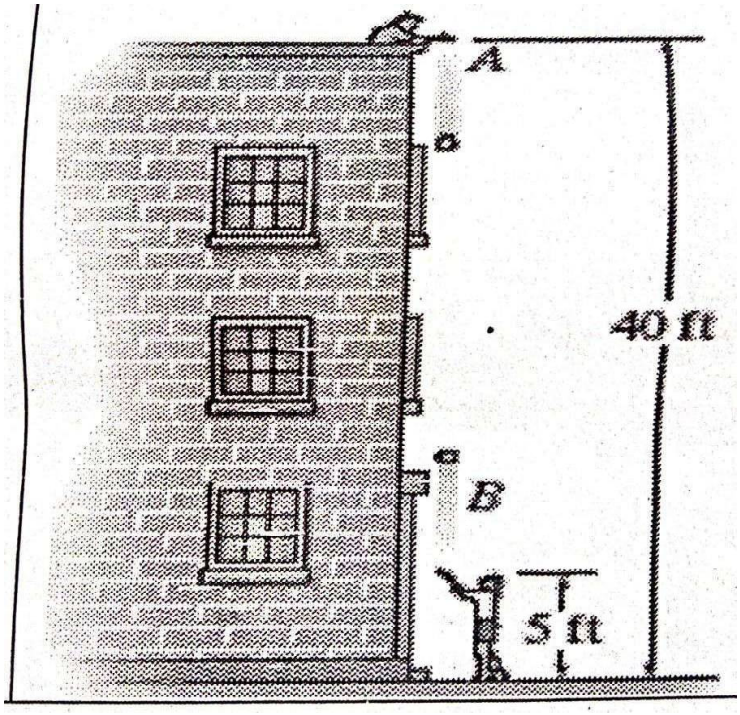
UNIT - IV

7. The golf ball is hit in the direction of a 12-meter tree which is 80 meters from the golfer, will the ball pass over the tree or hit it ?



(OR)

8. Ball (A) is released from rest at a height of (40 ft) at the same time a ball (B) is thrown upward, (5 ft) from the ground. The balls pass one another at a height of (20 ft). Find : The speed at which ball (B) was thrown upward.



UNIT - V

9. What are Newton's Laws of Motion and explain them with examples ?

(OR)

10. A toy car with a mass of 112g is pushed by a student along a track so that it is moving at 3.00m/s. It hits a spring (k=925 N/m) at the end of the track, causing it to compress. (a)Determine how far did the spring compress to bring the car to a stop. (b) If the spring only compressed 2.00 cm in bringing the car to a stop, expalin what happened.