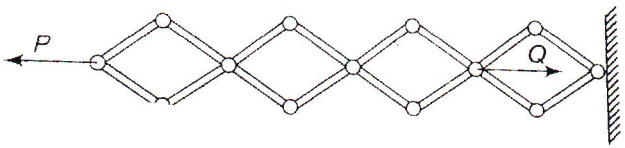
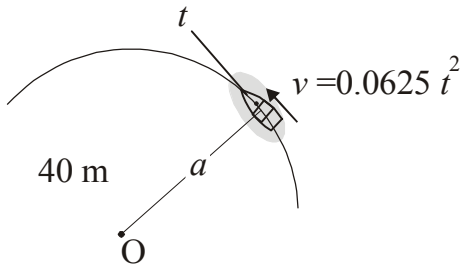
5. Explain the term virtual displacement. Calculate the relation between active force P and Q for equilibrium of the system of bars shown in Fig. The bars are so arranged that they form three identical rhombuses. **20**



6. The boat is travelling along the circular path with a speed of $v = (0.0625t^2)$ m/s where t is in seconds. Determine the magnitude of its acceleration when t = 10s. **20**



7. The crankshaft AB is rotating at constant angular velocity of ω = 150 rad/s. Calculate the velocity of the piston P at the instant θ = 30. **20**

No. of Printed Pages : 05 **Roll No. .....**

W-132

B. Tech. (Weekend)

EXAMINATION, May 2018

(First Semester)

(Re-appear Only)

(ME)

MEW101

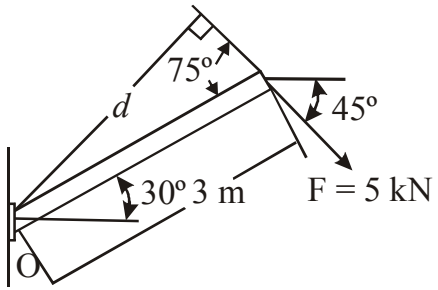
ENGINEERING MECHANICS

Time : 3 *Hours*] [*Maximum Marks :* 100

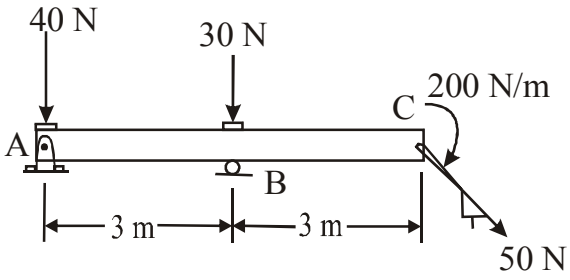
Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt any *Five* questions. All questions carry equal marks.

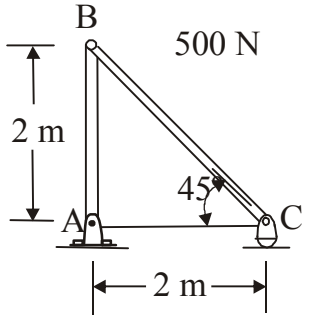
1. What do you understand by moment of force ? Determine the moment of force about point O. **20**



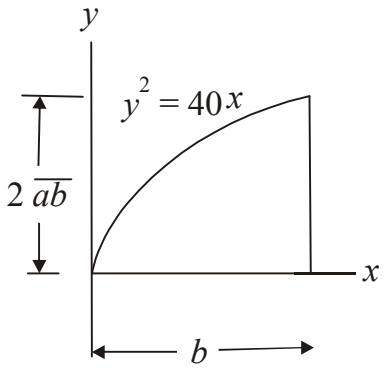
2. Differentiate between equal vectors and equivalent vectors. Replace the loading system by an equivalent resultant force and couple moment acting at point A. **20**

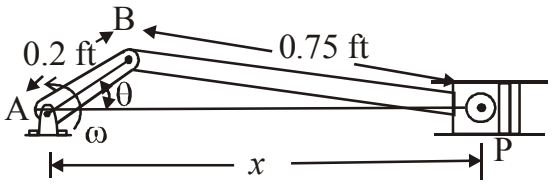


3. Determine the force in each member of the truss as shown in Fig. and also indicate whether the members are in tension or compression. **20**



4. Determine the centroid of the area. **20**





8. Explain any *four* of the following : **20**

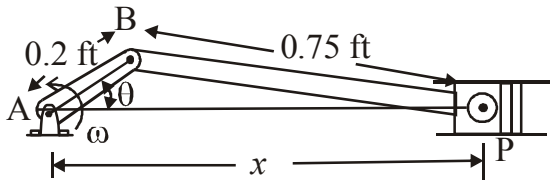
(a) Rectilinear and curvilinear translation motion

(b) Coriolis acceleration

(c) Chasles theorem

(d) Hamilton principle

9. Linear and angular momentum of a particle. **20**



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