

Roll No.

E 04

UITians

B. E. (Second Semester) (CGPA)
EXAMINATION, 2011-12

(Civil Engg. Branch)

ENGINEERING MECHANICS

(CE-204)

Time : Three Hours

Maximum Marks : 60

Note : All questions are compulsory.

1. Fill in the blanks : M₁

- (a) Product of inertia about principal axis is 1 $\frac{1}{2}$
- (b) Expression for ratio of tensions on the two sides of a belt is given by 1 $\frac{1}{2}$
- (c) System of forces in which all the forces in a plane meet at a point is called 1 $\frac{1}{2}$
- (d) Expression for Horizontal Range of projectile is given by 1 $\frac{1}{2}$

Choose the correct answer :

- (e) A body of weight W is placed on an inclined plane. The inclination of the plane with the horizontal is less than the angle of friction. The body : 1
(i) will be in equilibrium

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- (b) moves downwards (c) moves upwards (d) None of these

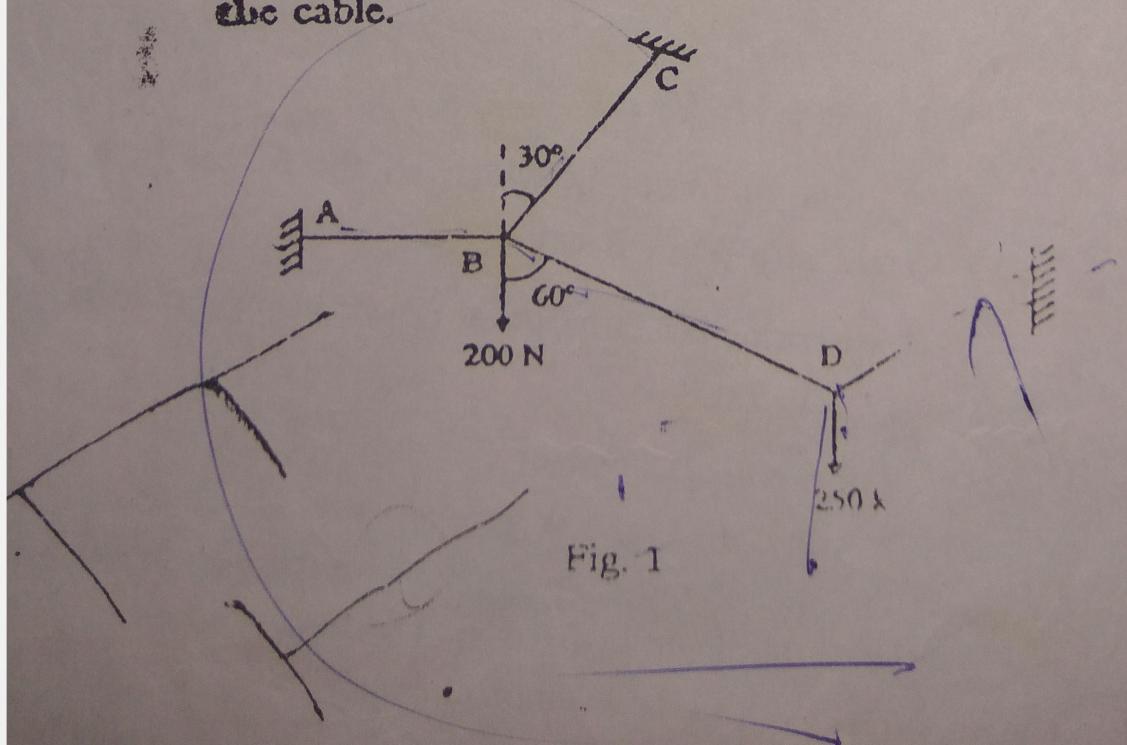
(D) Moment of inertia of a circular lamina about an axis passing through C. G. and perpendicular to plane of lamina is :
 (i) $\frac{\pi D^4}{32}$ (ii) $\frac{\pi D^4}{16}$
 (iii) $\frac{\pi D^3}{32}$ (iv) None

(g) The relation between number of joints (J) and number of members (n) in a perfect frame is :
 (i) $J = 2n - 3$ (ii) $n = 2J$
 (iii) $J = 3n - 2$ (iv) $n = J$

(h) A beam which is provided more than two supports is :
 (i) Overhanging beam (ii) Continuous beam
 (iii) Fixed beam (iv) None of the above

2. (a) Write condition of equilibrium.

(b) A system of connected flexible cable shown in figure. Determine the forces in various segments of the cable.



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- (a) Write short notes on the following : 3
(i) Infra-red truss (ii) Redundant truss

(b) Find the forces in different members of truss as shown in figure. 7

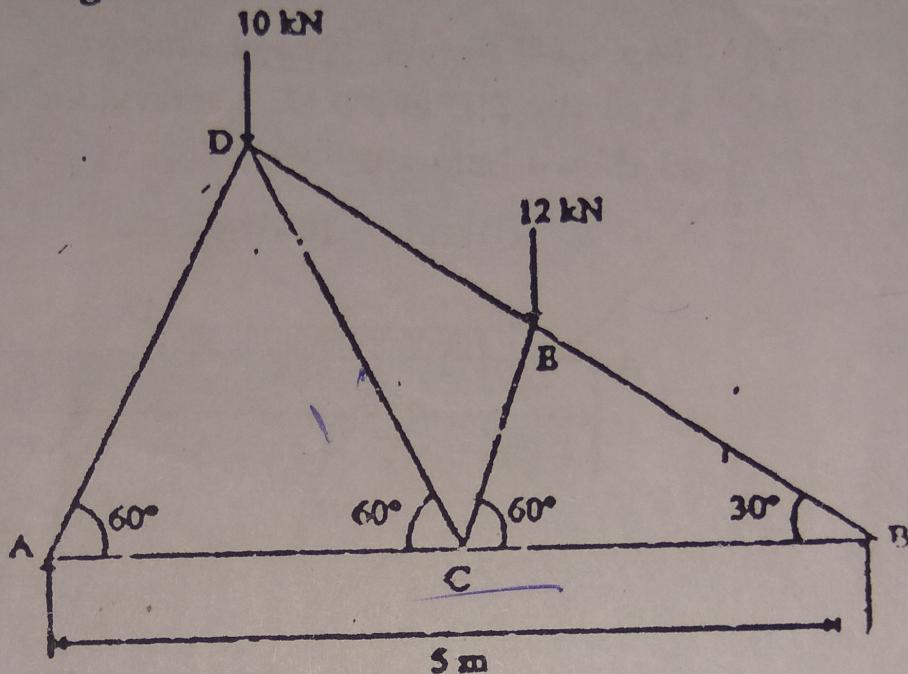
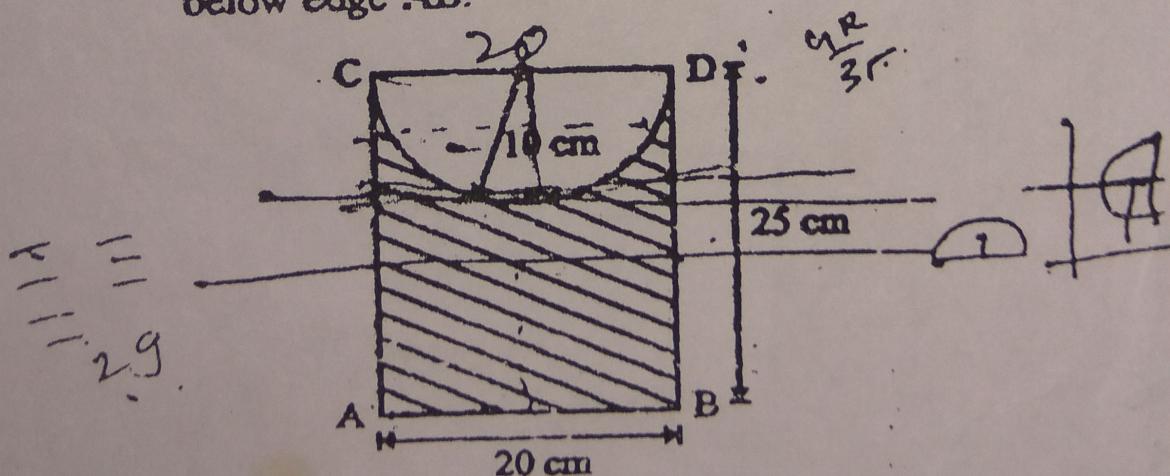


Fig. 2



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Or

(a) Explain different types of support. 2

(b) Draw the S.F. and B.M. diagrams for the beam loaded as shown below. 8

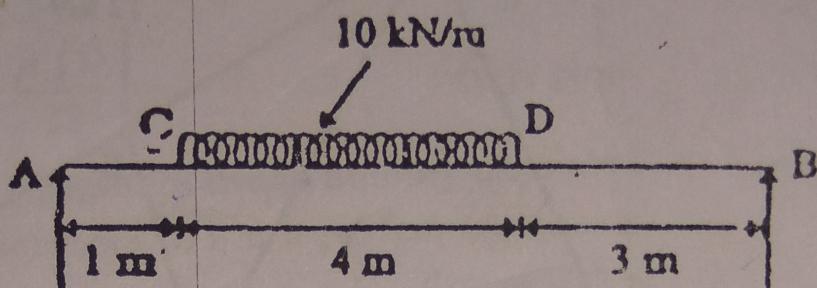


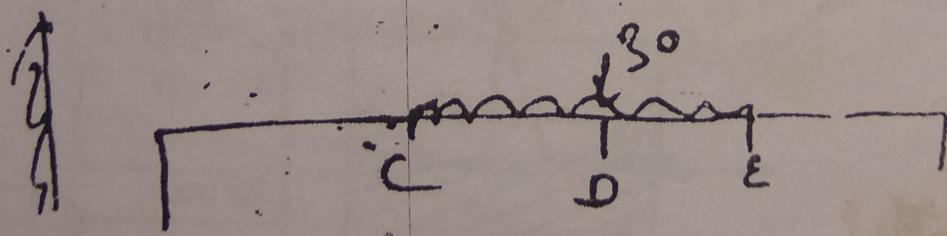
Fig. 7

$$R_B \times 3 + 10$$

$$40x$$

$$10 \times 4 \times x^2$$

$$C_{10} + 2$$



$$X - 2x_1 R_1 + x_1 F_1$$