

DMCE Airoli, Test-1 (2015) Subject: Engineering Mechanics

Maximum marks: 20

Time allowed: 1 hour

Minimum marks: 08

Instructions: 1. Question No. 1 is compulsory and attempt any two from remaining questions.

2. Assume suitable data wherever necessary.

-239.67
-270.95

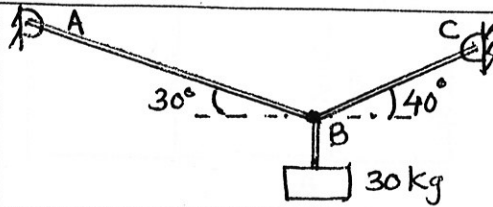
207-50

Q.1 Attempt any five

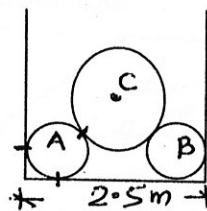
- (a) State principle of Transmissibility of forces.
- (b) State Varignon's theorem and state its application.
- (c) What is free body diagram? Explain in brief.
- (d) What are the conditions of equilibrium for coplanar concurrent force system?
- (e) What are the assumptions made in the analysis of trusses?
- (f) State Lami's theorem.
- (g) Define (i) Centroid of a lamina (ii) Moment of a force or (ii) Couple.

(2x5)

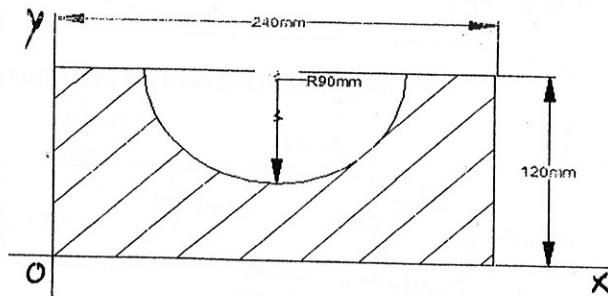
Q.2 Determine tensions in the Chords AB and BC for equilibrium of 30 Kg block.



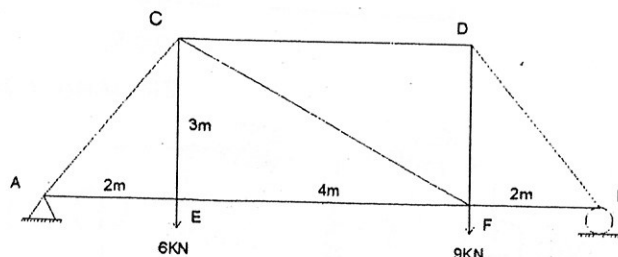
Q.3 A cylinder C of weight 1000N and diameter 2m rests on two cylinders A and B of weight 500N and diameter 1m each as shown in fig. Determine the reactions at all contact points of cylinder A.



Q.4 Determine the centroid of the shaded area as shown in the fig. with reference to OX and OY axes



Q.5 Determine the forces in any four members of the truss shown in fig. Indicate whether the members are in tension or compression.



Q.6 Determine the resultant of the coplanar force system shown in the fig.

