RAMRAO ADIK INSTITUTE OF TECHNOLOGY

FE SEM – I TERM TEST – I

B

Sub: Engineering Mechanics

Maximum Time: 1Hr. Maximum Marks: 30

Q1.(A) State Varignon's Theorem of Moments [2 M]

(B) Determine the resultant in magnitude, direction and its position with respect to origin for the force system shown in fig (1) Take side of each square as 1cm [8 M]

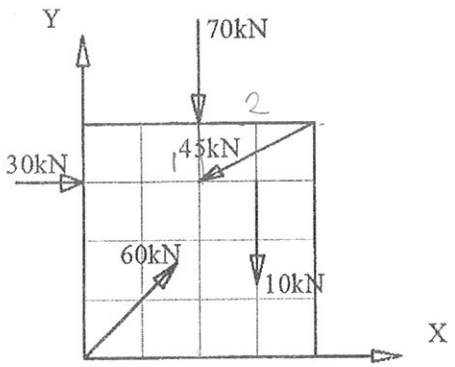


Fig. (1)

Q2 . (A) Define couple and its unit [2 M]

(B) Find reactions at supports A & F for the beam as shown in fig. (2) [8 M]

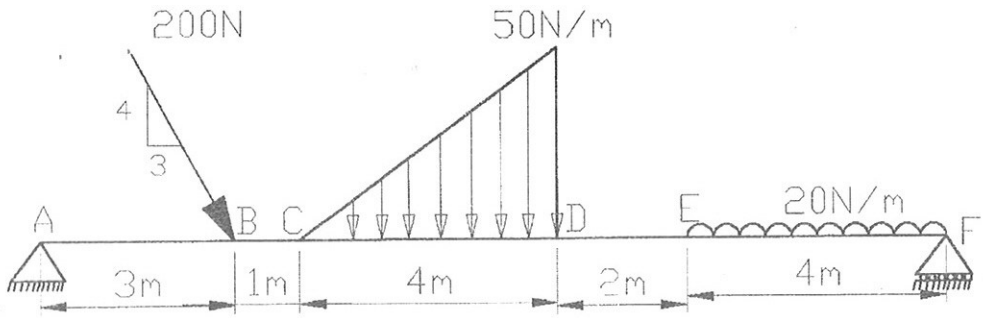
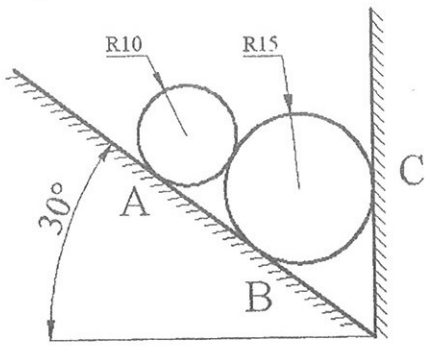


Fig (2)

OR

(B) Two spheres of radius 10cm and 15cm are supported by inclined plane as shown if fig (3). Find reactions at supports A, B and C if weight of smaller sphere is 100N and bigger sphere of 200N. Assume smooth surfaces for all contacts. [8 M]



Fig(3)

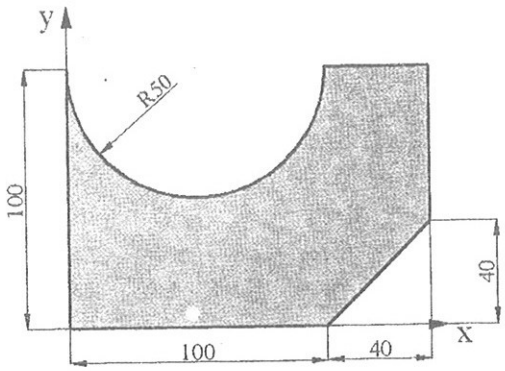


Fig (4)

Q3. (A) State formula to find centroid for circular sector with diagram. [2 M]

(B) Find centroid of shaded area shown if fig(4) [8 M]

OR

(B) Find forces in members AB, AC and BC by method of joint and in member DE by method of section for the truss shown in fig (5) [8 M]

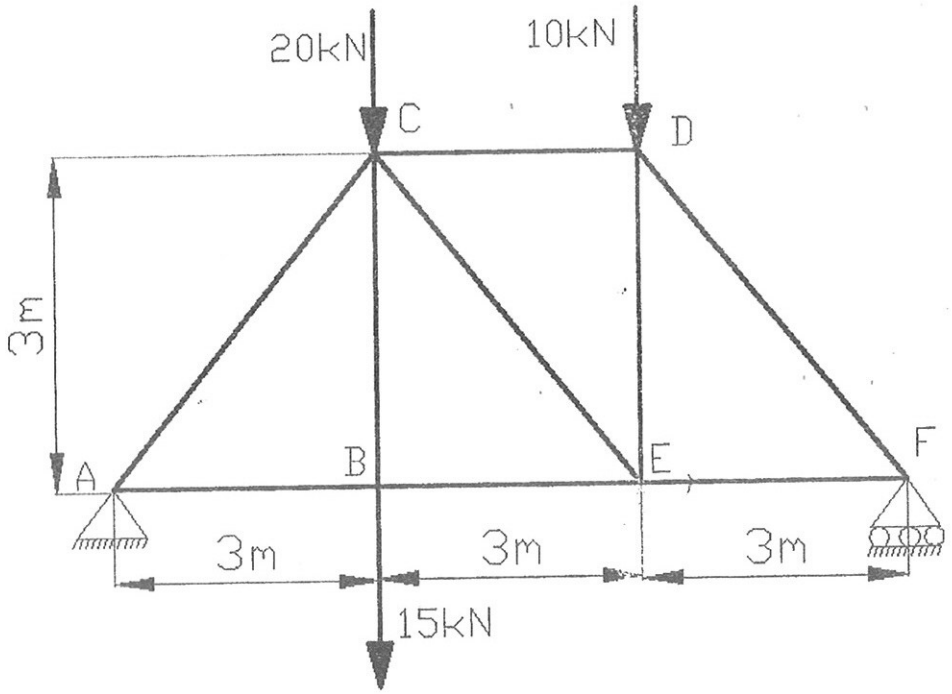


Fig. (5)