B.Tech. SEM -II (2007 Course) (All Branches) : WINTER - 2018

SUBJECT: ENGINEERING MECHANICS

Day: Thursday
Date: 15/11/2018

W-2018-2692

Time 10.00 AM TO 01.00 PM
Max. Marks: 80

N.B.:

1) Q.No. 1 and Q.No. 5 are COMPULSORY. Out of the remaining attempt any **TWO** questions from each section.
2) Figures to the right indicate **FULL** marks.
3) Answer to both section should be written in **SEPARATE** answer books.
4) Use of non programmable **CALCULATOR** is allowed.

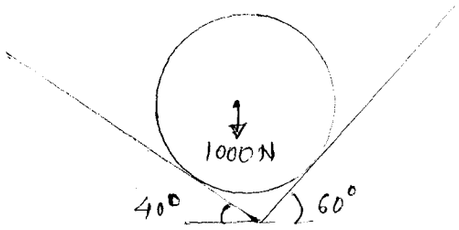
SECTION-I

Q.1 **a)** What are different types of supports? **[04]**

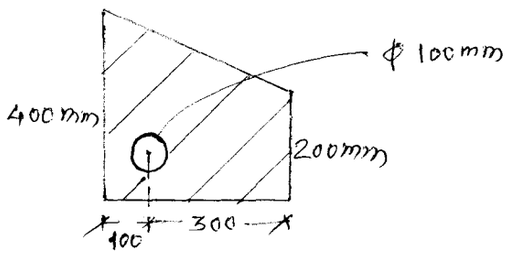
b) Explain procedure to calculate resultant of forces in space. **[04]**

c) What is truss? **[04]**

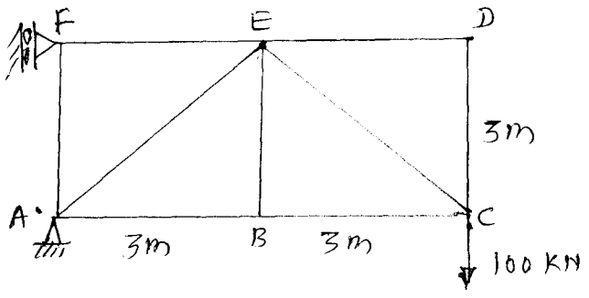
Q.2 A cylinder of weight 1000 N is resting against smooth surface as shown in figure. Calculate support reactors. **[14]**



Q.3 Calculate centroid of area shown in figure. **[14]**



Q.4 Analyse the truss shown in figure using method of joints. **[14]**



P.T.O.

SECTION-II

Q.5 **a)** Explain normal and tangential components of velocity and acceleration. **[04]**

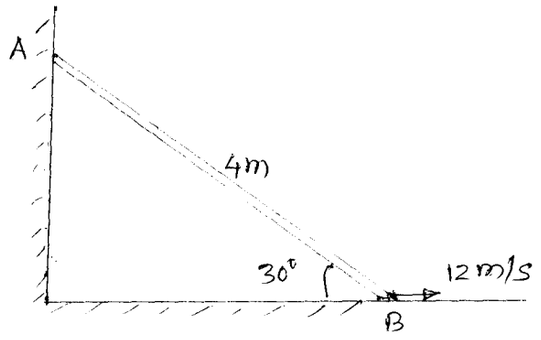
b) State and explain impulse-momentum principle. **[04]**

c) Explain application of I.C.R. in rigid body motion. **[04]**

Q.6 The acceleration of particle starting from rest is defined by $a= 10t-t^2$. Find displacement before it reverse the direction of motion. **[14]**

Q.7 Two balls, each of mass 5kg moving with opposite direction with velocities 15m/s and 10m/s collides with each other. Find out their velocities after impact if e = 0.8. **[14]**

Q.8 Bottom end of a rod shown in figure slides with velocity 12m/s. Find out velocity of top end at this instant. **[14]**



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