Total No. of printed pages = 2

CT-303/SoM/3rd Sem/2017/M

STRENGTH OF MATERIALS

Full Marks – 70

Pass Marks – 28

Time – Three hours

The figures in the margin indicate full marks for the questions.

1. Calculate and draw the bending moment and shear force diagram of Figure 1. 14

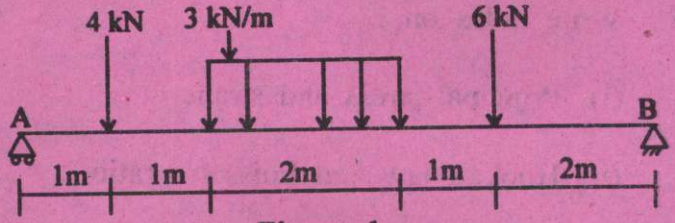

Figure 1

2. Calculate the moment of inertia of Fig. 2. 14

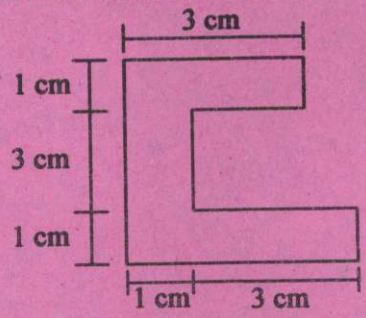

Figure 2

[Turn over

3. A plane element in a body is subjected to a tensile stress of 100 MPa accompanied by a shear stress of 25 MPa. Find

   (i) normal and shear stress on a plane inclined at 20°

   (ii) the maximum shear stress on the plane. 14

4. A solid shaft is 50 mm in diameter and 0.7m long is subjected to a torque of 1200 Nm. Calculate the shear stress and angle of twist. Also calculate the same for hollow shaft with internal diameter of 30 mm. 14

5. Write notes on :

   (i) Principal stress and strain 5

   (ii) Hooke's law and Poisson's ratio 5

   (iii) Stress-strain diagram for mild steel. 4