Code: R5 100105

R5

B.Tech I Year (R05) Supplementary Examinations, May 2012

APPLIED MECHANICS

(Civil Engineering)

Time: 3 hours Max Marks: 80

Answer any FIVE questions

All questions carry equal marks

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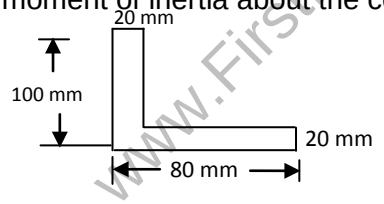
1 (a) Explain Equilibrium of system of forces and free body diagrams.
(b) Two pulling forces 100 N and 80 N act at a point. Find the resultant force and its inclination with the 100 N force.

2 A body resting on a horizontal plane required a pull of 80 N inclined at 30^0 to the horizontal just to move it. It was also found that a push of 100 N inclined at 30^0 to the horizontal just moved the body. Find the weight of the body and the coefficient of friction.

3 (a) Distinguish between initial tension and centrifugal fugal tension in a belt.
(b) An open belt of width 80 mm connects a pulley of diameter 400 mm on the secondary shaft to a pulley of diameter 200 mm on the machine shaft. The shafts are 3 m apart. The secondary shaft has a speed of 100 r.p.m. Find the maximum permissible stress in the belt if the safe working tension is 15 N/mm width and μ = 0.3.

4 (a) State and explain the transfer theorems.
(b) Find the moment of inertia about the centroidal axis yy of the section shown in figure.



5 Derive the moment of inertia of solid cone and hollow sphere.

6 Explain the rectilinear and curve linear motion in kinematics.

7 Explain the equation of plane motion and equation of translation in kinetics.

8 Write short notes on:
(a) Simple harmonic motion.
(b) Torsional vibrations.

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