Code: R7100306

R07

B. Tech I Year (R07) Supplementary Examinations, December 2012

CLASSICAL MECHANICS

(Mechanical Engineering)

Time: 3 hours Max. Marks: 80

Answer any FIVE questions

All questions carry equal marks

*****

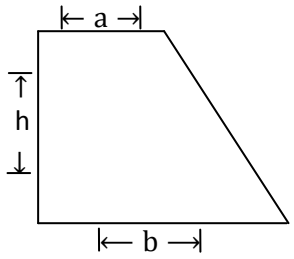
1 Explain:

(i) Coplanar concurrent forces (ii) Moment of force

(iii) Couples (iv) Resultant of force systems

2 A small ring in situated at the centre of a hexagon, and is supported by six strings drawn tight, all in the same plane and radiating from the centre of the ring and each connected to a different angular print of the hexagon. The tensions in four consecutive strings are 12 N, 34 N, 45 N and 30 N respectively. Find the tensions in the two remaining strings.

3 Figure shows the cross-section of masonary dan. Determine the distance of the centroid from the vertical face.



4 State and explain the parallel axes theorem and the perpendicular axes theorem.

5 State the assumptions for forces in members of a perfect frame and also explain the method of sections for finding the forces in a cantilever then with help of an example.

6 (a) Explain in detail rectilinear and curvelinear motions.

(b) Explain the analysis of rigid body in planar motion.

7 A simple pendulum consisting of a bob attached to the cord oscillates in a vertical plane with a period of 2 s. The maximum velocity of the bob is 0.6 m/sec. Assure SHM determine:

(i) amplitude of the motion

(ii) the max. tangential acceleration of the bob.

8 Write short notes on:

(i) simple harmonic motion

(ii) work - energy applications to particle motion.

*****