

# ANURAG GROUP OF INSTITUTIONS

(AUTONOMOUS)

I B. Tech II Semester 2018 – 19

Assignment Paper – II

DEPARTMENT OF MECHANICAL ENGINEERING

SUBJECT: EM

BRANCHES: MECHANICAL

1. Determine the centre of gravity of a solid hemisphere of radius  $r$  from its diametral axis.
2. Determine the centre of mass of a composite body formed by placing a brass cone with a base diameter of 8 cm and 12cm height over a steel cylinder of same diameter and a height of 10 cm. Density of steel is  $7850 \text{ kg/m}^3$  and that of brass is  $8650 \text{ kg/m}^3$ .
3. Find the moment of inertia of shaded area shown in Fig. 1 about centroidal axes.
4. Find the moment of inertia about the horizontal centroidal axis of shaded portion as shown in Fig. 2.
5. Determine the mass moment of inertia of a circular ring of mass  $M$  and radius  $R$  about centroidal axes.
6. Determine the mass moment of inertia of the composite solid shown about the axis of rotation. The solid is made up of two identical spheres each of 2kg mass and 3cm radius attached at the end of a slender rod of 400grams mass and 15 cm length.

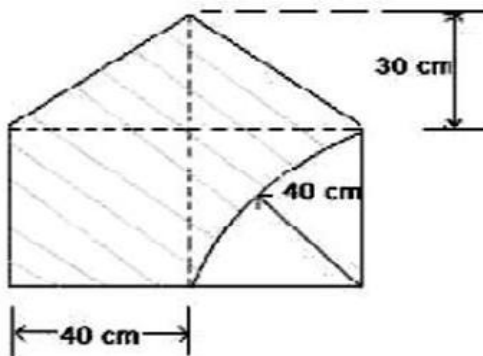


Fig. 1

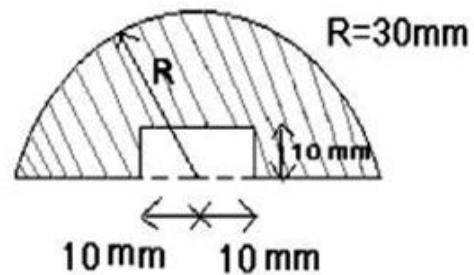


Fig. 2

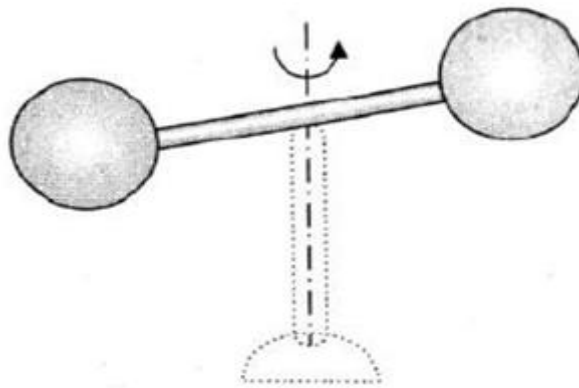


Fig. 3