Code No: 09A1BS05 **R09**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech I Year Examinations, November/December - 2013
ENGINEERING MECHANICS
(Common to CE, ME, CHEM, MCT, MMT, AE, AME, MIE, MIM, PTE, CEE, MSNT, ACE)

Time: 3 hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks

- - -

1.a) Two smooth spheres *P* and *Q* each of radius 25cms and weighing 1000N, rest in a horizontal channel having vertical walls as shown in figure 1. If the distance between the walls is 90cms, make calculations for the pressure exerted on the wall and floor at points of contact *A*, *B* and *C*.

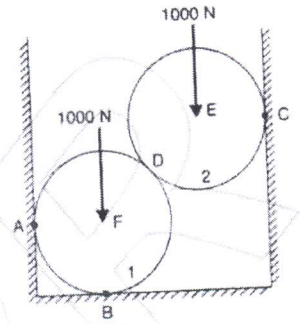

Figure: 1

b) A uniform rod *AB* of length 300mm and weight W rests inside a hemispherical bowl of radius 100mm as shown in figure 2. Neglecting friction, determine the angle θ corresponding to equilibrium. [15]

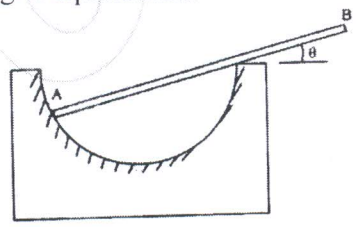

Figure: 2

2. Three similar right circular cylinders *A*, *B* and *C* of weights *W* each are arranged on smooth inclined planes as shown in figure 3. Determine the minimum value of θ that will prevent the arrangement from collapsing. [15]

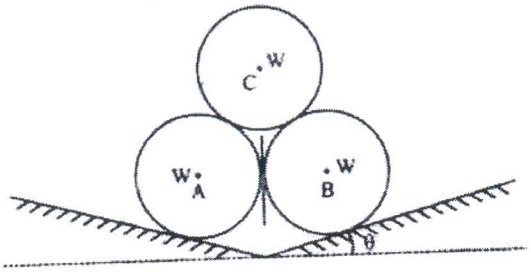

Figure: 3