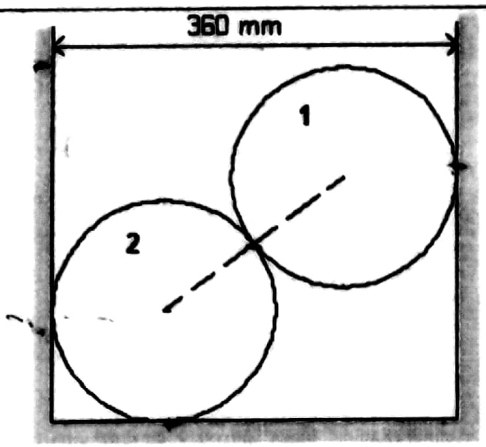
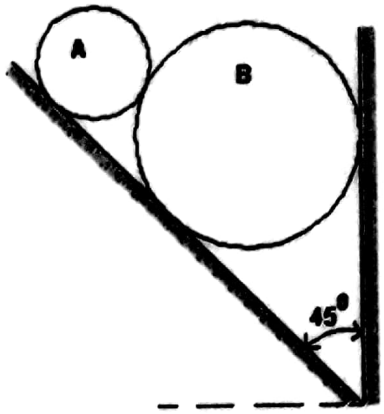
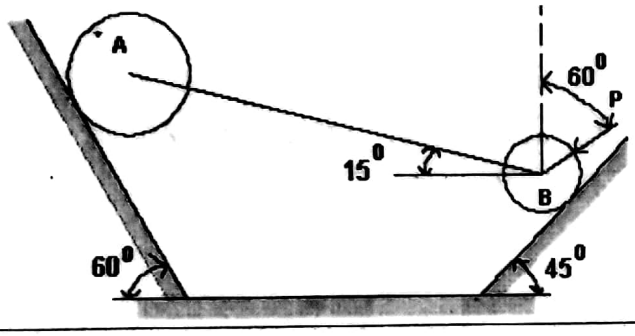


Q 1) Two smooth spheres of radius **100mm** and weight **100N** rest on a horizontal channel having vertical walls at **360mm** apart. Find the reactions at all point of contacts

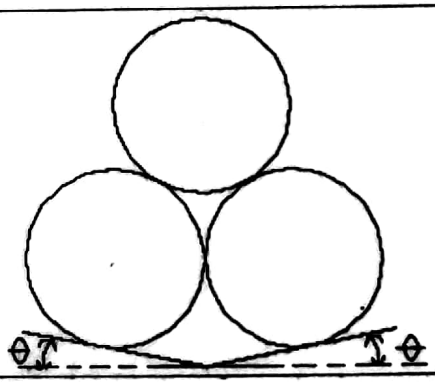


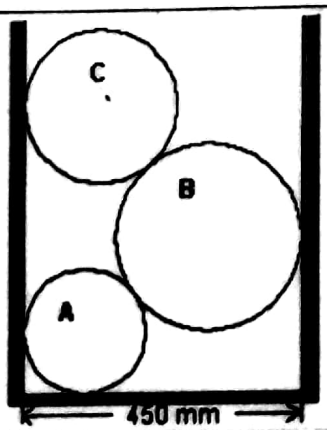
Q 2) Two cylinders **'A'** and **'B'** with weight **5kN** and **10kN** and radius **1m** and **2m** respectively. Determine all the reactions.



Q 3) Two cylinders **"A"** of weight **4000N** and **"B"** of weight **2000N** rest on smooth inclines as shown in Figure. They are connected by a bar of negligible weight hinged to each cylinder at its geometric centre by smooth pins. Find the force **'P'** to be applied as shown in the Figure such that it will hold the system in the given position

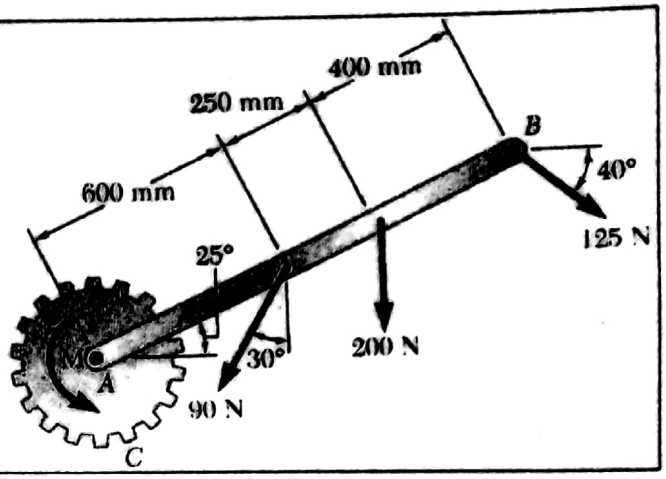
Q 4) 3 Identical smooth cylinders **'A'**, **'B'** and **'C'** each of weight **'W'** are arranged as shown in Figure. Determine the least value of 'θ' that will prevent the arrangement from collapsing

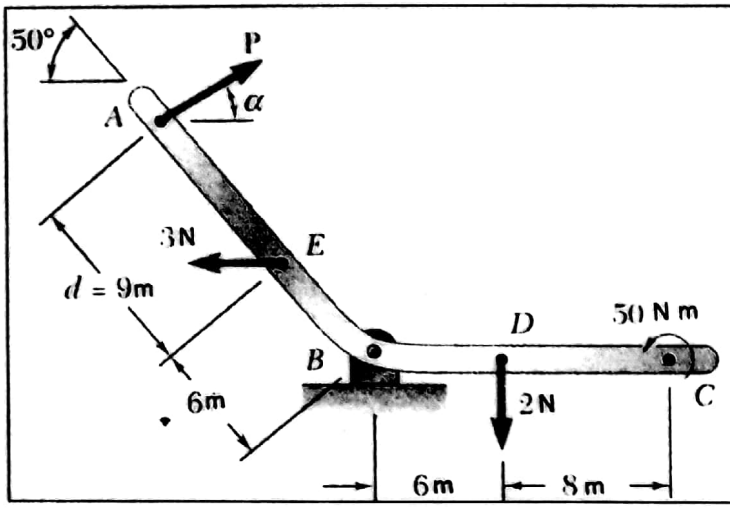




Q 5) 3 bodies **'A'**, **'B'** and **'C'** of radius 100mm, 150mm and 125mm of weight **100N, 225N** and **150N** respectively are placed in a box whose c/s in shown in Figure. If all surfaces are assumed to be smooth determine the reaction at all contact surfaces

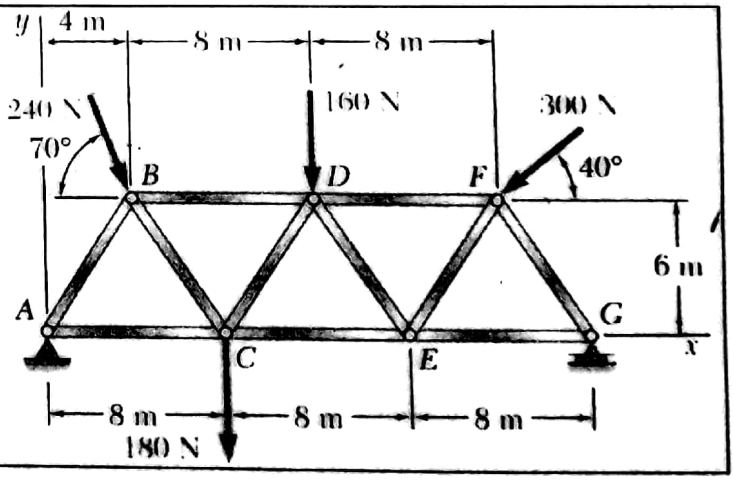
Q 6) Gear **'C'** is rigidly attached to arm **'A B'**. If the forces and couple shown can be reduced to a single equivalent force at **'A'**, determine the equivalent force and the magnitude of the couple **'M'**

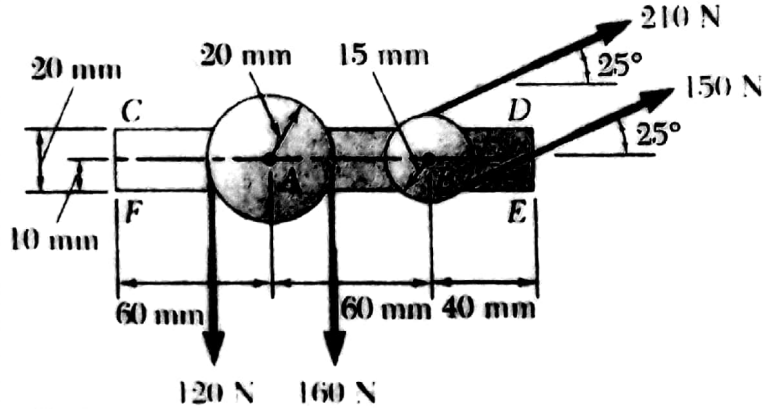




Q 7) Three forces and a couple act on crank **ABC.** For **P = 5N** and **α = 40°**. (a) determine the resultant of the given system of forces (b) locate the point where the line of action of the resultant intersects a line drawn through points **'B'** and **'C'**

Q 8) A truss supports the loading shown. Determine the equivalent force acting on the truss and the point of intersection of its line of action with a line through points **'A'** and **'G'**





Q 9) Pulleys **'A'** and **'B'** are mounted on bracket **CDEF.** The tension on each side of the two belts is shown. Replace the four forces with a single equivalent forces and determine where its line of action intersects the bottom edge of the bracket