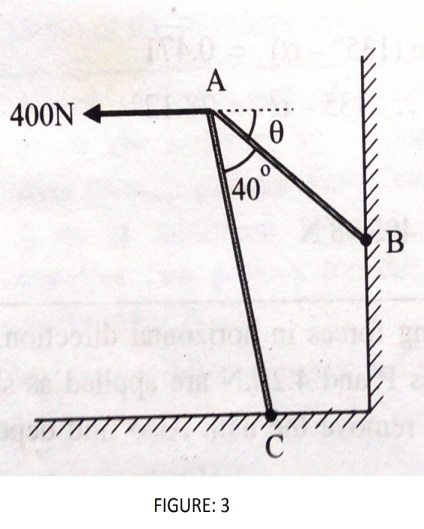
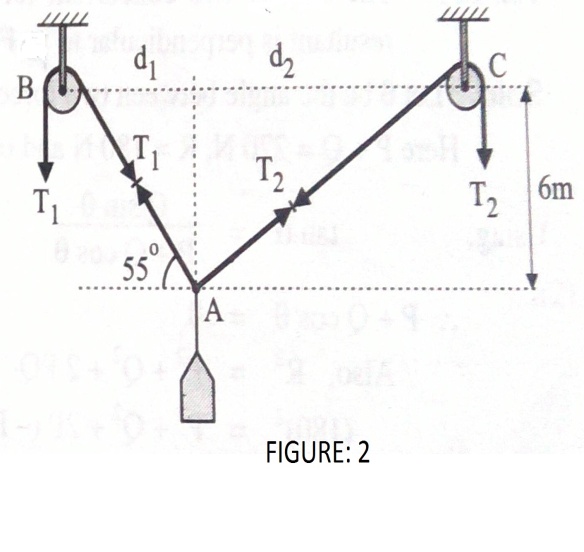
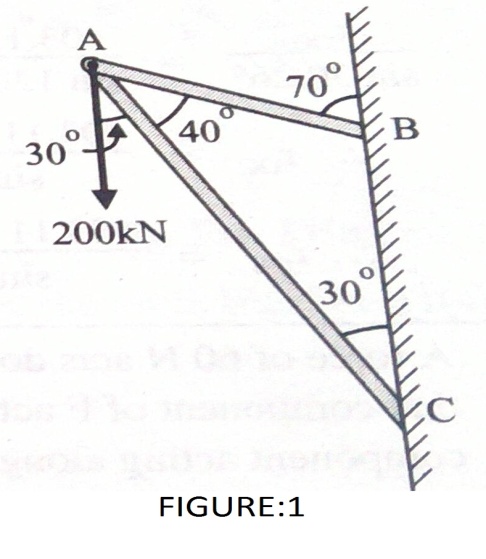
**Engineering Mechanics**

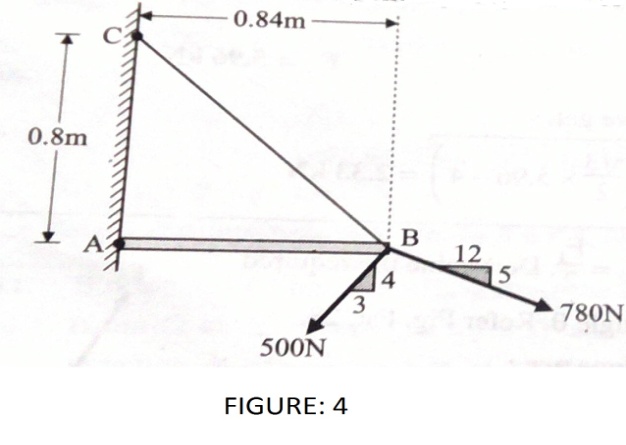
**(For Section CS-1)**

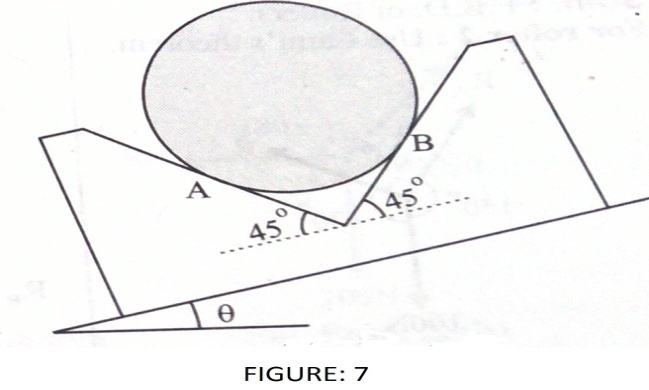
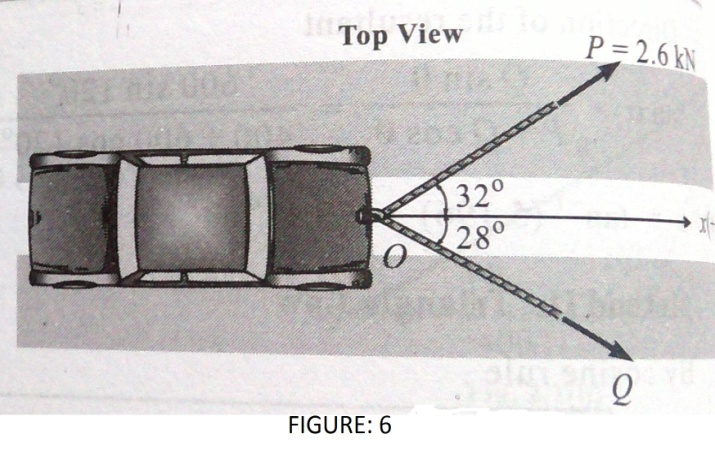
**First Assignment (2015-16)**

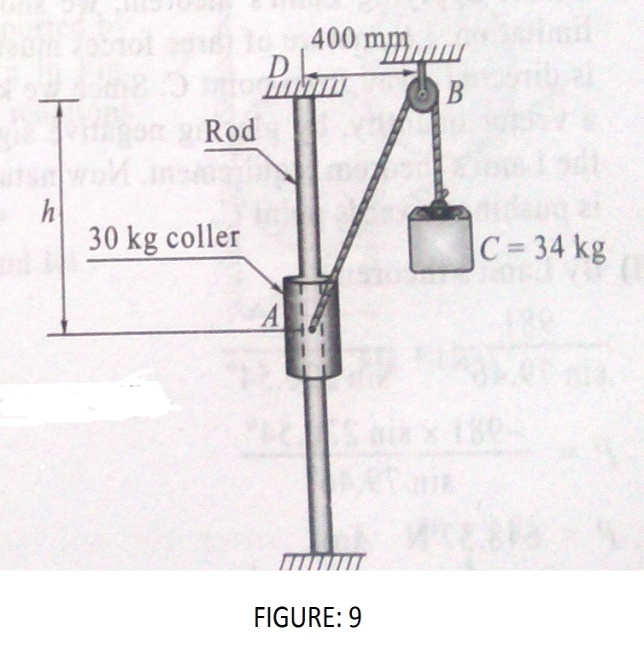
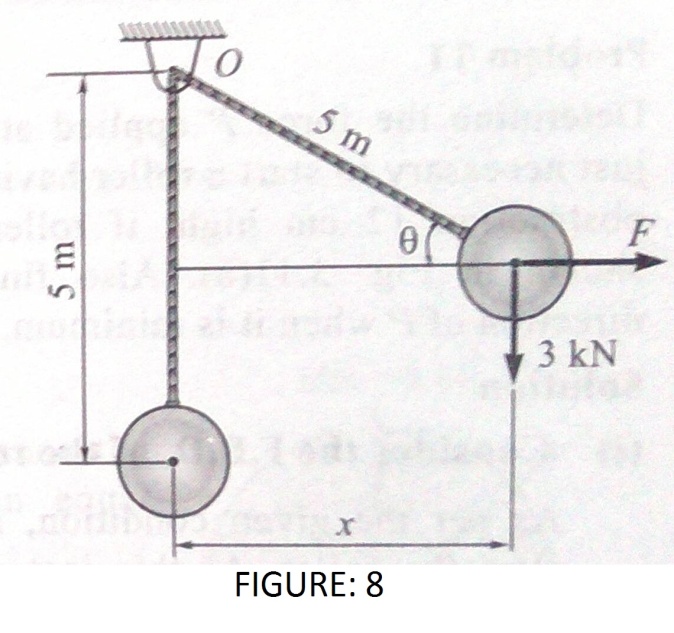
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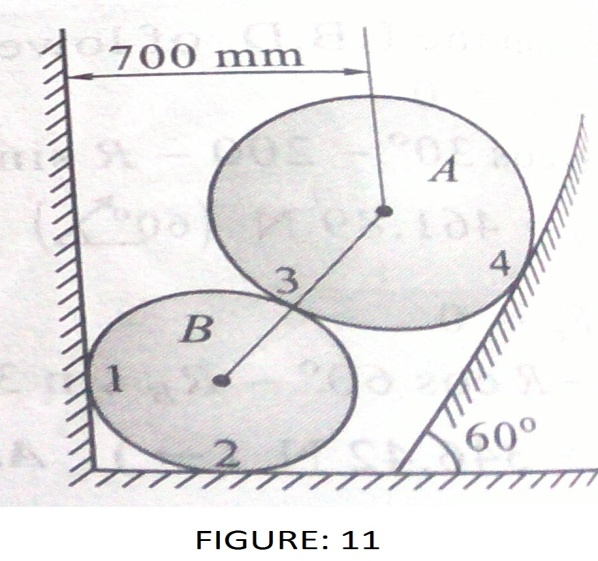
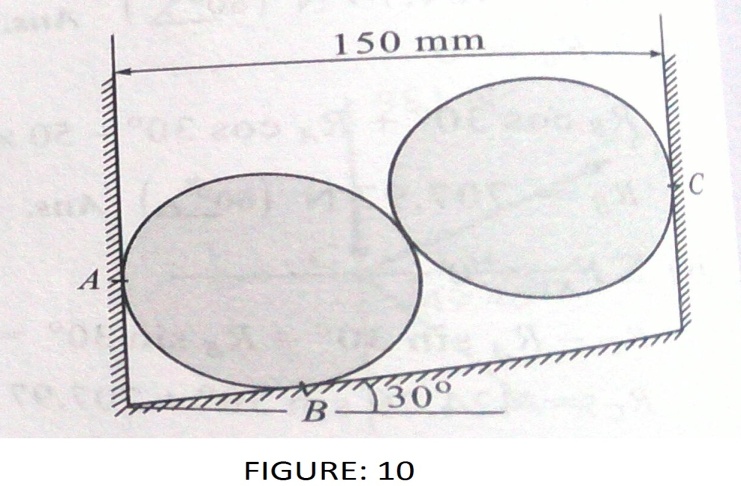
1. **A force of 200 KN is acting at A. Resolve the force along two members AB and AC. Refer figure:1**
2. **A load is lifted in vertical direction with a force of 40 KN, applying by two cables passing over smooth pulleys. Find the tension T1 if T2 is to be minimum. What is the distance between two pulleys for this condition? Refer figure:2**
3. **Determine the angle Ɵ for strut AB, so that 400 N horizontal force has a component of 500 N acting from A to C. Also find component along member AB. Refer figure:3**
4. **Determine: (a) The required tension in cable BC if the resultant of three forces at B is to be vertical. (b) The corresponding magnitude of resultant. Refer figure:4**
5. **The striker of carom board laying on the board is being pulled by four players as shown in figure: 5. The players are sitting exactly at the centre of the four sides. Determine the resultant of forces in magnitude and direction.**
6. **A car is pulled by means of two ropes as shown in figure:6 The tension in one rope is P=2.6 KN. If the resultant of two forces applied at O is directed along the X- axis of the car. Find the tension in the other rope and the magnitude of the resultant.**
7. **Find the angle of tilt Ɵ with horizontal so that the contact force at B will be one-half at A.**
8. **Determine the horizontal distance x of which a 5 m long inextensible string holding a roller of weight 3 KN can be pulled before the string breaks. The string can withstand a maximum force of 6 KN as show in figure:8. Determine also the required force F.**
9. **The 30 Kg collar may slide on frictionless vertical rod and is connected to a 34 Kg counter-weight. Find the value of ‘h’ for which the system is in equilibrium. Refer figure:9**
10. **Two cylinders each of diameter 100 mm and each weighing 200 N are placed as shown in figure:10, assuming that all the contact surfaces are smooth, find the reactions at A,B and C.**
11. **Two spheres A and B of weight 1000 N and 750 N, respectively are kept as shown in the figure:11. Determine the reactions at all contact points. Radius of A = 400 mm and radius of B =300 mm.**
12. **Determine the reactions at points of contact 1,2 and 3 as shown in the figure:12.**
13. **Two smooth circular cylinder of weight W = 500 N each and radius r =150mm are connected at their centre by a string of length L =400 mm and rest upon a horizontal plane supporting above them a third cylinder of weight 1000 N and radius 150 mm as shown in figure:13. Find the tension in the string and pressure at the point of contact D and E.**
14. **Three cylinders are piled up in a rectangular channel as shown in figure:14. Determine the reactions at point 6 between the cylinders A and the vertical wall of the channel. Mass of cylinders A,B and C are 15 Kg, 40Kg and 20 kg respectively. Radius of cylinders A, B and C is 4 cm, 6 cm and 5 cm respectively.**
15. **Two bodies weighing 150 N and 200 N respectively rest on a cylinder and are connected by a rope as shown in figure: 15. Find the reaction of cylinder on the bodies, the tension in rope and angle Ɵ assume all surface to be smooth.**

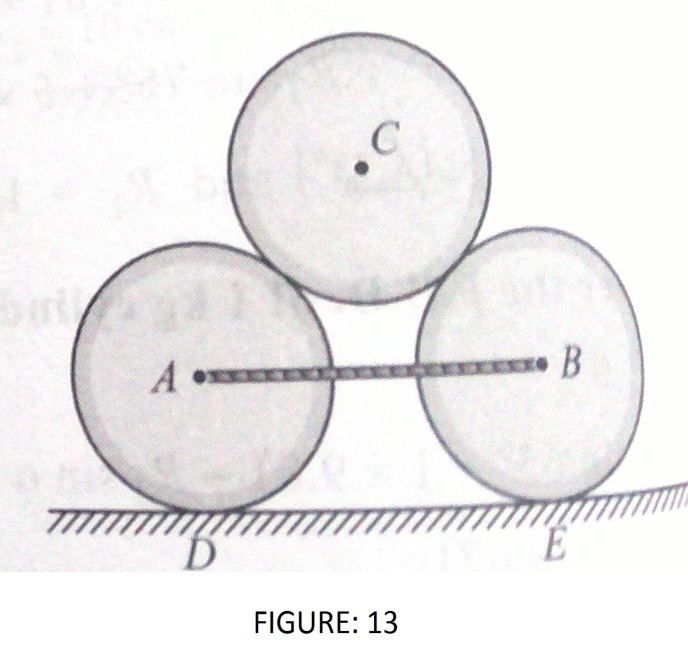
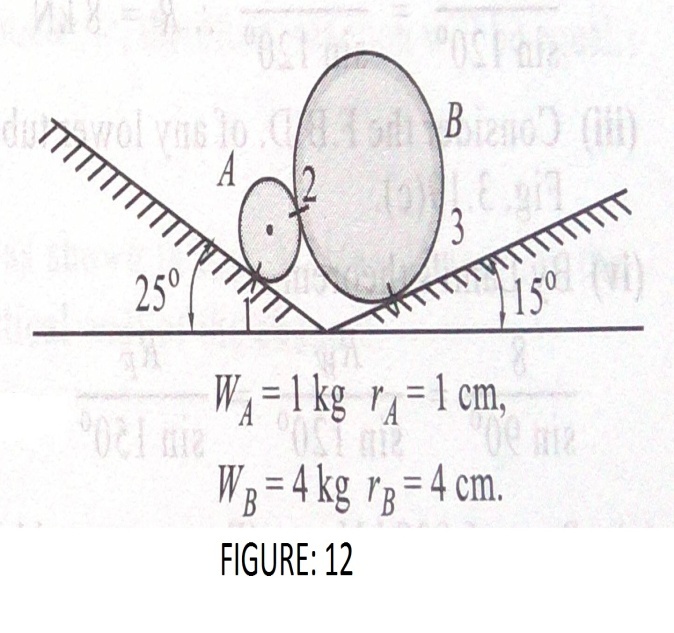
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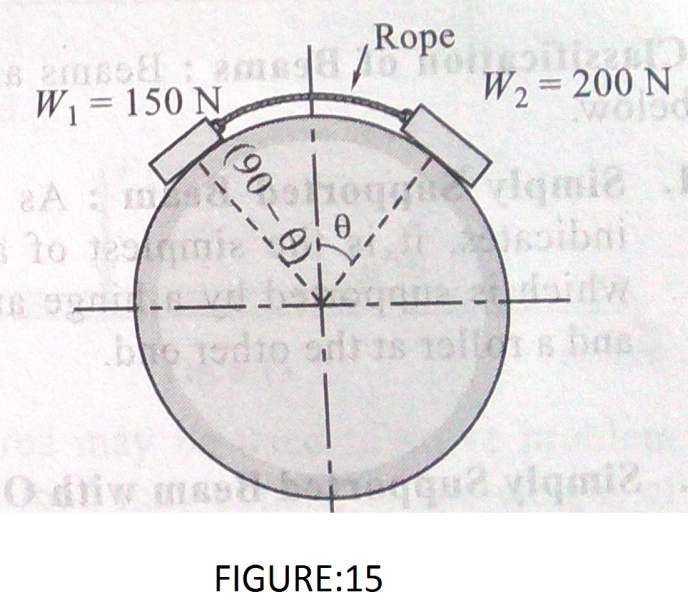
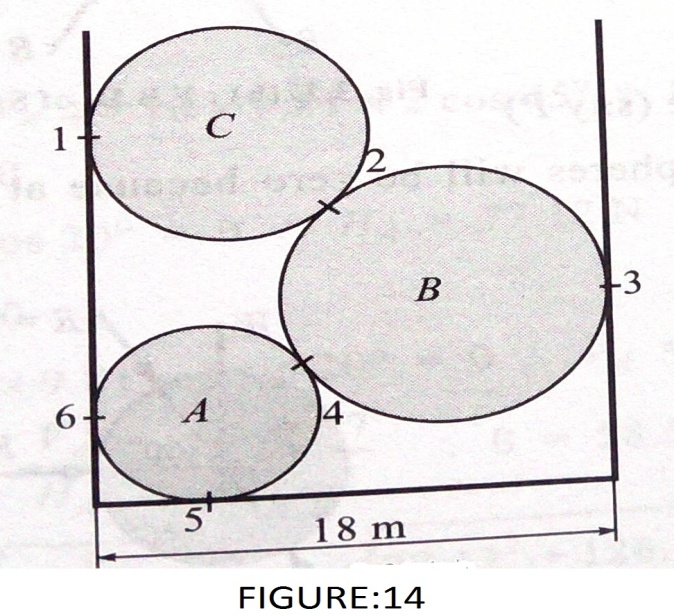
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