PHYSICS
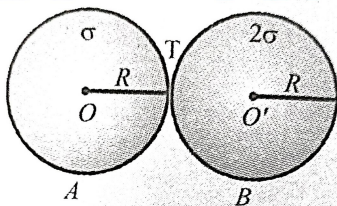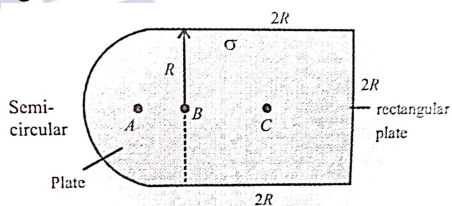
1. A disc of diameter a is cut from disc of radius a as shown in figure below .find position of Centre of mass of remaining portion.
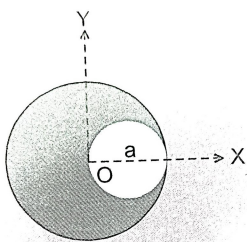
2. Two circular discs having radius R and mass density σ and 2σ respectively are placed as shown in figure .Then find out the position of COM of the system.


3. Find out the position of centre of mass of the figure shown below.


4. A wooden plank of mass 20 kg is resting on a smooth horizontal floor. A man of mass 60 kg starts moving from one end of the plank to the other end. The length of the plank is 10 m. Find the displacement of the plank over the floor when the man reaches the other end of the plank.
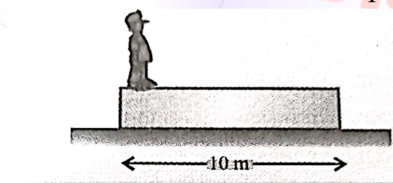

5. If the system is released then the acceleration of the centre of mass of the system is:
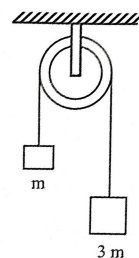
6. Consider a system of two identical particles. One of the particles is at rest and the other has an acceleration a. The centre of mass has an acceleration

7. A square plate of side 20 cm has uniform thickness and density. A circular part of diameter 8 cm is cut out 7 symmetrically as shown in figure. The position of centre of mass of the remaining portion is
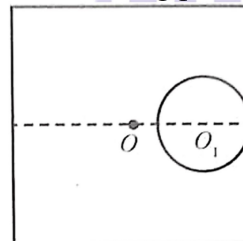
8. Blocks A and B are resting on a smooth horizontal surface given equal speeds of 2 m/s in opposite sense as shown in the figure.
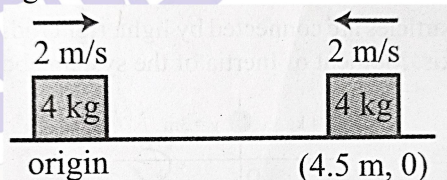
At t =0 the position of block are shown , then the co0rdinates of centre of mass at t=3s Will be

9. Three particles of masses 1 kg, 2 kg and 3 kg are subjected to forces ($3\hat{\imath}-2\hat{\jmath}+2\hat{k}$) N, (- $\hat{\imath}+2\hat{\jmath}-2\hat{k}$) N and ($\hat{\imath}+\hat{\jmath}+\hat{k}$)N respectively. The magnitude of the acceleration of the CM of the system is:

10. Three particles of the same mass lie in the x-y plane. The (x, y) coordinates of their positions are (1, 1), (2, 2) and (3, 3) respectively. The (x, y) coordinates of the centre of mass are

10. What is the pigment give the role in photosynthesis

CHEMISTRY

1. A system absorbs 100 J of heat and 100 J work is done on the system. Calculate the change in internal energy.
2. A system gives out energy equal to 20 J work done on the surrounding is 40 joule. Calculate the change in internal energy.
3. Work done on the system is 200 J and heat given out by the system is 500 J. Calculate the change in internal energy of the system.
4. Increase in internal energy of a system is 350 J. It does work of 700 J on the surroundings. How much heat the system needs ?
5. A gas absorbs 200 J of heat and expands against the constant external pressure of 1.5 atm. The initial and final volume of the gas is 0.5 L and one litre. Calculate the change in internal energy
6. Define system & surrounding
7. Defind the following
   (i) Isolated system   (ii) Closed system
8. Defind reversible and Irreversible process
9. What are the state &path functions
10. Define first law of thermodynamics

BIOLOGY

1. What is kranz anatomy give the importance in plant
2. What is a light harvesting complex give the role of reaction centre
3. What is photo respiration name the organelles involved in this process
4. What is the RubisCO give the full name
5. What is photolysis of water give the site of this process
6. What is the black mannen linting factor in photosynthesis
7. Give the difference between cyclic and noncyclic photo phosphoryelation
8. Give the different steps in C3 cycle in short
9. Give the absorption spectrum in photosynthesis