## First: Multiple choice

1) The product of the mass of a body and the rate of change of its displacement it called ……

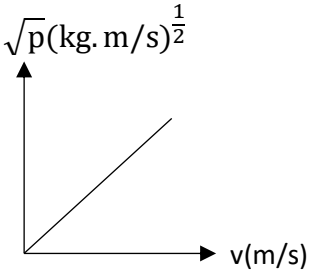
a) force **b) momentum** c) acceleration d) weight

2) If the momentum of an object is doubled and its mass decreased to half, its velocity ……

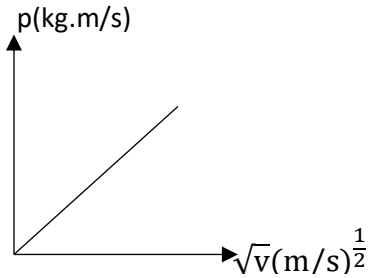
a) doesn't change b) decreases to half

c) increase to the double **d) increases four times**

3) The diagram ……. represents the relation between the momentum and the velocity of an object




(a)

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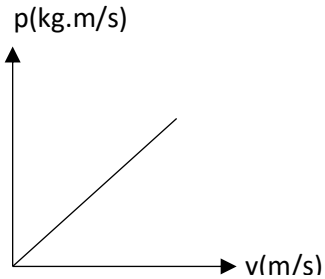
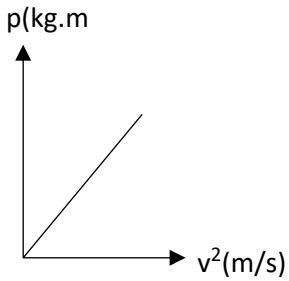



(c)




(d)

4) When a body falls freely towards the ground its …….

**a) momentum increases** b) mass increases

c) acceleration decreases d) velocity decreases

5) An object of mass 0.5 kg at rest, started to fall from a height of 180 cm from the surface of Earth. Its momentum when it reaches the Earth's surface is ……

**a) 3 kg.m/s** b) 5 kg.m/s c) 6 kg.m/s d) 9 kg.m/s

6) A firefighting airplane dropped its load into a firing forest when it was flying horizontally at a constant velocity and continued its motion by the same velocity, so the momentum of the airplane after dropping the load would.....

a) increase **b) decrease**

c) remains unchanged d) becomes zero

7)Two bodies have the same momentum, one of them has a mass of 5 kg and its velocity is 20 m/s, hence if the second one has a mass of 15 kg,its velocity equals.....

a) 0.15 m/s b) 5.55 m/s **c) 6.67 m/s** d) 20 m/s

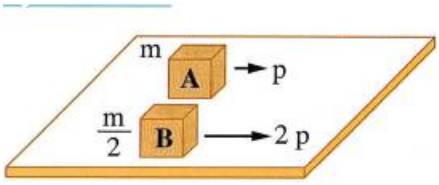
8) A bowling ball of mass 4.6 kg is moving at velocity v along a bowling alley, so at what velocity a gulf ball of mass 46 g has to move so that it has the same magnitude of momentum as that of the bowling ball?

a) 0.01 v b) 5 v c) 10 v **d) 100 v**

9) An eagle of mass 10 kg flies at a velocity of 20 m/s, if it catches a prey of mass 1 kg and then flies with it at the same velocity ,hence the ratio between the momentum of the eagle alone and its momentum with the prey respectively equals…….

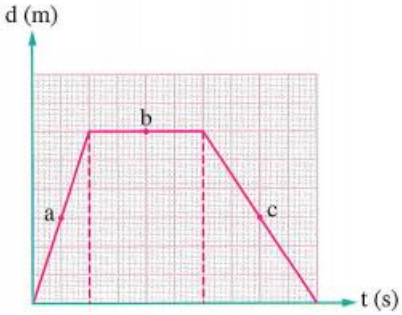
a) $\frac{1}{1}$ b) $\frac{1}{10}$ **c) $\frac{10}{11}$** d) $\frac{10}{1}$

10) In the opposite figure, if body A has mass m, velocity v and momentum p while body B has mass $\frac{m}{2}$ and momentum 2 p, the velocity of body B is…….




a) $\frac{V}{2}$ b) v c) 2 v **d) 4 v**

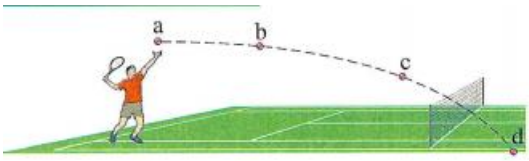
11) The opposite graph represents the variation of the displacement (d) of a body that is moving in a straight line versus time (t), so at which of the shown points in the graph the body has its maximum momentum?




**a) a** b) b

c) c d) all points

12)At which of the shown points in the opposite figure the tennis ball has the largest momentum?




a) a b) b c) c **d) d**

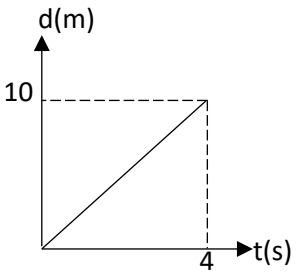
13) An object of mass 0.5 kg begins a free fall motion from the top of a building so that strikes the ground 4 s later , hence the momentum of the object at the moment of striking the ground equals…….. (take $g=10m/s^2$)

a) 10 kg.m/s **b) 20 kg.m/s** c) 30 kg.m/s d) 40 kg.m/s

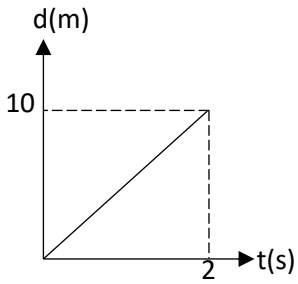
**14) A ball of mass 0.5 kg that undergoes a free fall motion towards the ground from height 180 cm, hence the momentum of the ball at the moment of reaching the ground equals..... (take g=10m/s$^2$)**

**a) 3 kg.m/s** **b) 5 kg.m/s** **c) 6 kg.m/s c** **d) 9 kg.m/s**

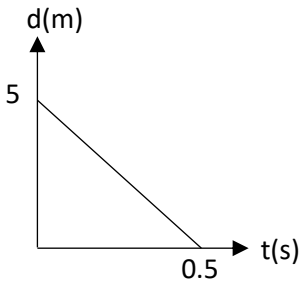
**15) The next graph represents four cases for the motion of a body, so which graph represent the body that has the largest value of momentum?.....**



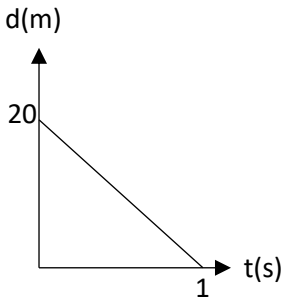

**a)**




**b)**




**c)**




**d)**