

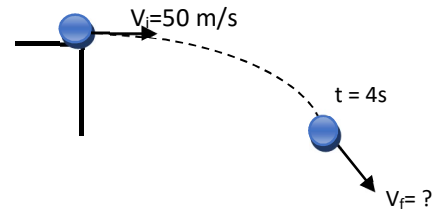
# PHYS 215-Mechanics I-Question Bank 10 - Homework

2019-2020

Full Name:.....

## Question 1

The object is thrown in horizontal direction with  $V_0 = 50 \text{ m/s}$ . Find the velocity of the object 4 s later.  
( Take  $g = -10 \text{ m/s}^2$  )

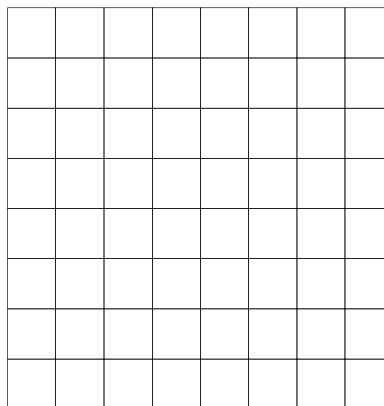
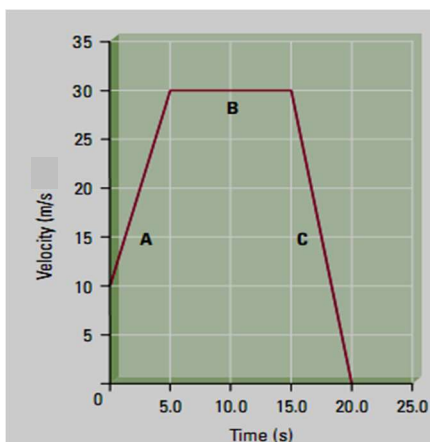


## Question 2

The graph below shows the change in the velocity of a car by time. For the time intervals

- i ) 0 - 5 s    ii ) 5 - 15 s    iii ) 15 - 20 s,

- A) Calculate the distance taken by the car for 20 seconds.
- B) Calculate the acceleration of the car for each time interval.
- C) Draw the acceleration-time graph of the motion.



### Question 3

Let  $A = -4i - 5j - 3k$  and  $B = -6i - 2j - k$ . Find  $A \times B$ .

### Question 4

A car initially at rest starts to move with a constant acceleration of  $6 \text{ m/s}^2$ . If it accelerates for 10 seconds,

- A) Sketch the motion of the car.
- B) How far will it move during this time?
- C) What will be its final velocity?
- D) What is the average velocity of the car during this motion?

### Question 5

A particle has a constant acceleration,

$$a = 8.0 \text{ m/s}^2 \text{ at } 60^\circ \text{ from the } +x \text{ axis.}$$

At  $t = 0$ , the particle's velocity is  $\vec{v}_0 = (-2.0 \text{ m/s})\hat{i} + (3.0 \text{ m/s})\hat{j}$

Calculate the particle's velocity at  $t = 5.0 \text{ s}$ ?

### Question 6

A ball rotates at a constant speed of  $4 \text{ m/s}$  on the end of  $1.5 \text{ m}$  long string. The string describes a horizontal circle.

- A) Calculate the period of the motion.
- B) Calculate the centripetal acceleration of the ball

