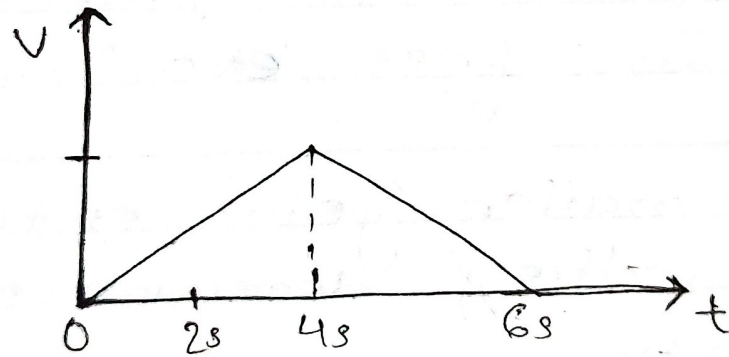


- 1) The velocity-time graph of a particle moving along a straight line is as shown in the figure. Which of the following is/are incorrect for this motion?

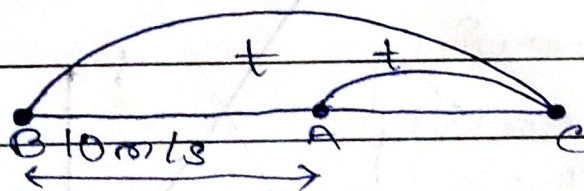


- (i) The motion is uniform.  
(ii) The acceleration is uniform.  
(iii) The particle changes its direction of motion. Incorrect.  
(iv) The displacement during the period 0-4s is equal to the area under the velocity-time graph for this period.

2) Initially car A is 10.5m ahead of car B. Both start at time  $t = 0$  in the same direction along a straight line. The velocity time graph of these cars is shown in figure. Find the time (in secs) when the car B will catch the car A.

From graph, velocity of A = 10 m/s  
 accel<sup>n</sup> of B =  $\tan 45 = 1$ .

A/Q



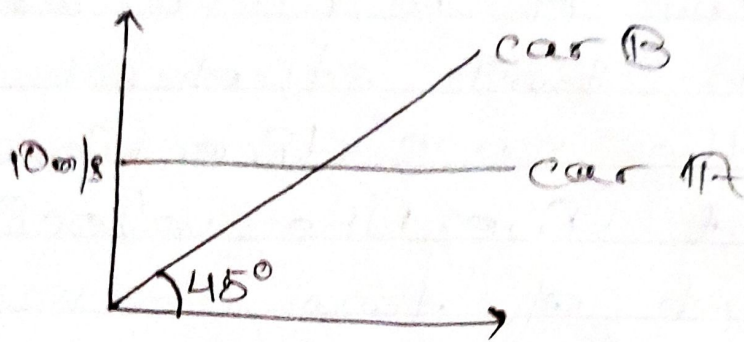
Let  $AC = x$  (C is the meeting point)  
 Time taken to reach C by A = Time taken by B to reach C.

For A (uniform motion)

$$v = \frac{x}{t}$$

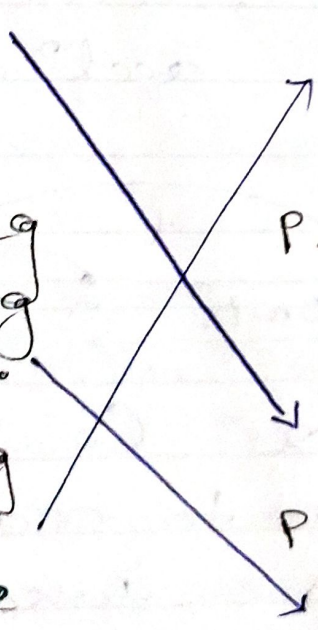
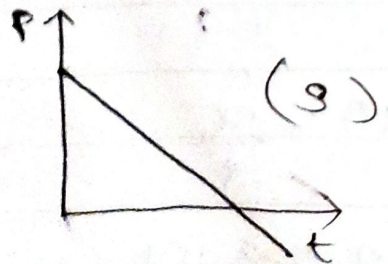
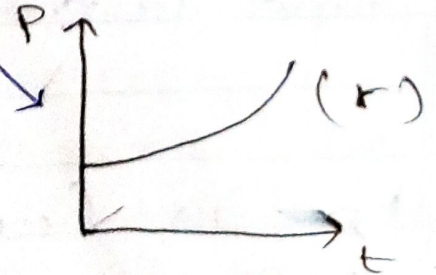
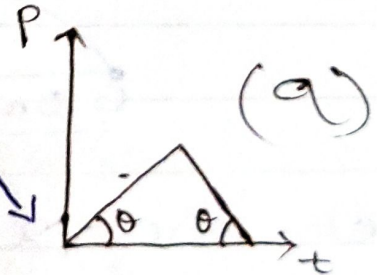
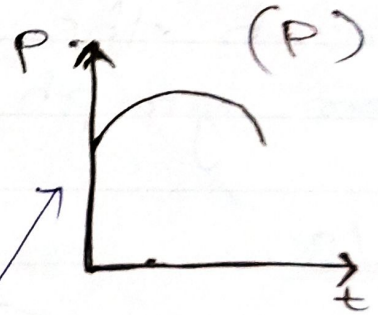
$$10 = \frac{x}{t}$$

$$x = 10t \longrightarrow (1)$$

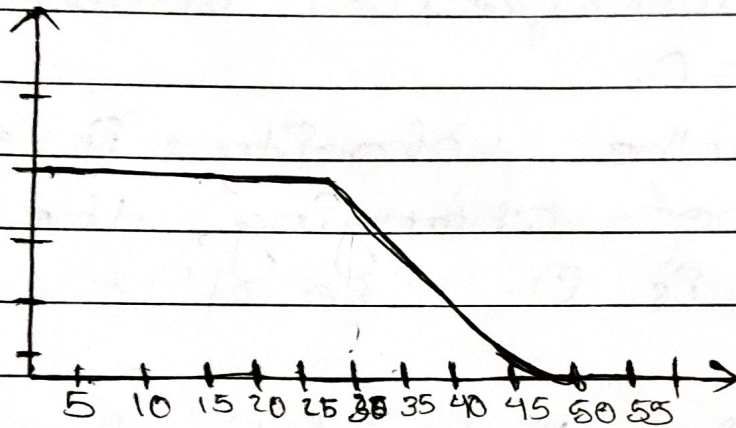


3) Column 1

- a) Particle moving with constant speed.
- b) Particle moving with increasing acceleration.
- c) Particle moving with constant negative acceleration.
- d) Particle moving with zero acceleration.



④ The  $v-t$  graph of an object is shown in the figure.



(a) State the kind of motion that object has from A to B; from B to C.

- From A to B :- Uniform motion
- From B to C :- Negatively accelerated (retarded) motion.

(b) Identify the part of graph where the object has zero acceleration. Give reason for your answer.

- The part of graph where the object has zero

acceleration is from A to B.

The reason is that :-

i) The part A to B, is parallel to time axis which tells that  $a = 0$ .

ii) As the velocity is constant and is not changing, the acceleration is 0.

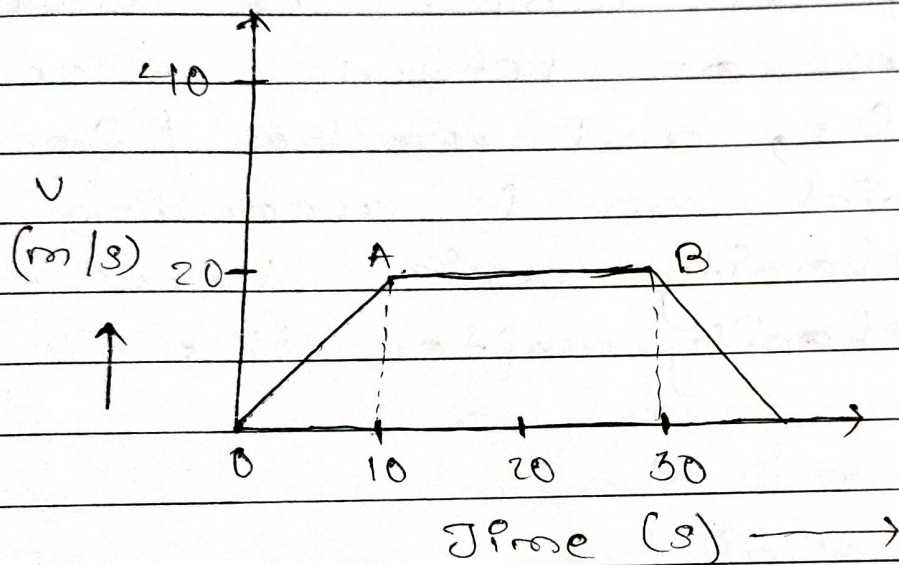
c) Identify the part of graph where the object has negative acceleration. Give reasons.

The part from B to C has negative acceleration.

The reason is that :-

Because, according to the graph, the slope is going downwards or retarding which means it is negative acceleration.

5) The  $v-t$  graph of a body is given:-



(i) State the kind of motion reported by OA, AB.

→ Kind of motion by OA =

→ Kind of motion by AB = Uniform motion.

(ii) What is the velocity of the body after 10s and after 40s?

→ Velocity after 10s = After 10s, we can see there is a continuation of the same velocity.

up to 30s (A to B). Hence the velocity is 20 m/s.

Velocity at 40 m/s = The velocity decreases or retards after 30s up to 40s, and reaches / forms a point on 0 according to the velocity axis, henceforth, the velocity after 40s is 0 m/s.