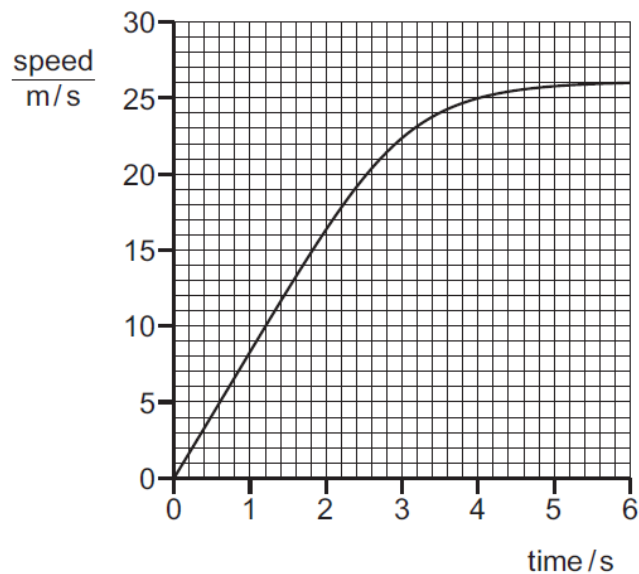


**Motion/Kinematics – 2021 O Level 5054****1. Nov/2021/Paper\_12/No.3**

A skier slides down a slope.

The diagram shows how his speed varies with time.



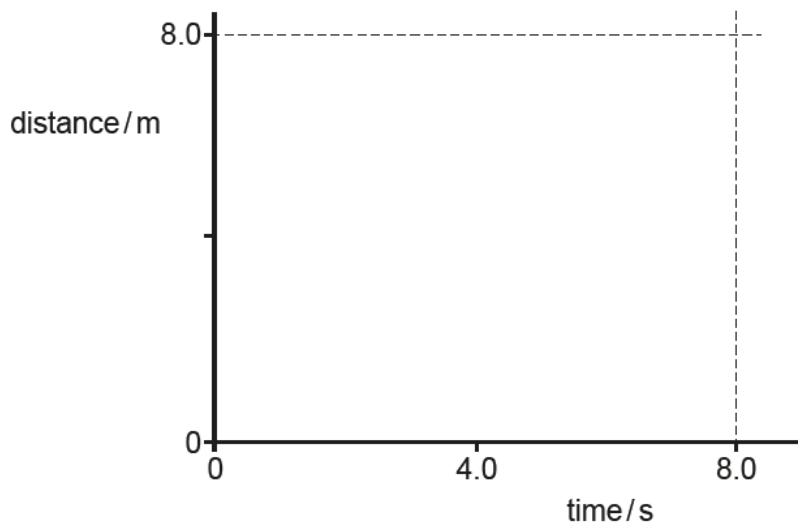
What is his average acceleration during the 6.0 s?

- A**  $2.2 \text{ m/s}^2$       **B**  $4.3 \text{ m/s}^2$       **C**  $8.0 \text{ m/s}^2$       **D**  $13.0 \text{ m/s}^2$

**2. Nov/2021/Paper\_21/No.2c**

- (c) The lift accelerates upwards uniformly from rest for 4.0 s and then decelerates uniformly to rest in 4.0 s. The total distance travelled is 8.0 m.

On Fig. 2.2, sketch the distance-time graph for this journey.

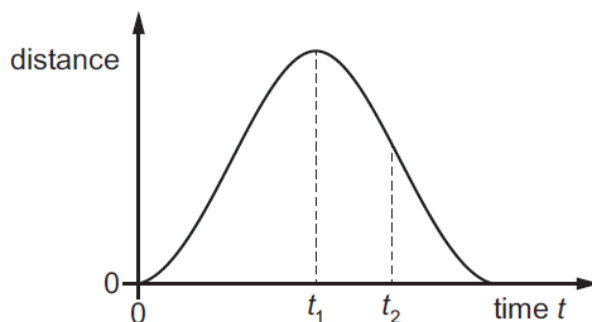


**Fig. 2.2**

[3]

## 3. June/2021/Paper\_11/No.3

A train sets off from a station at time  $t = 0$ . The graph shows how the distance between the train and the station varies with time.



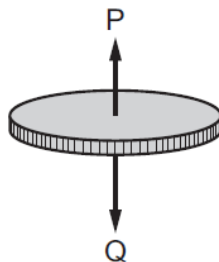
Which statement about the movement of the train between time  $t_1$  and  $t_2$  is correct?

- A Its speed is decreasing and it is moving away from the station.
- B Its speed is decreasing and it is moving towards the station.
- C Its speed is increasing and it is moving away from the station.
- D Its speed is increasing and it is moving towards the station.

## 4. June/2021/Paper\_11/No.4

A coin falls from rest through the air and eventually reaches a constant speed.

There is a resultant force acting on the coin due to the two forces P and Q shown in the diagram.



What happens to force P and what happens to the resultant force before the coin reaches constant speed?

	force P	resultant force
<b>A</b>	decreases	increases
<b>B</b>	decreases	decreases
<b>C</b>	increases	decreases
<b>D</b>	increases	increases

5. June/2021/Paper\_22/No.2

A car approaches a set of traffic lights. The lights change to red at time  $t = 0$ .

Fig. 2.1 shows how the speed of the car changes with time.

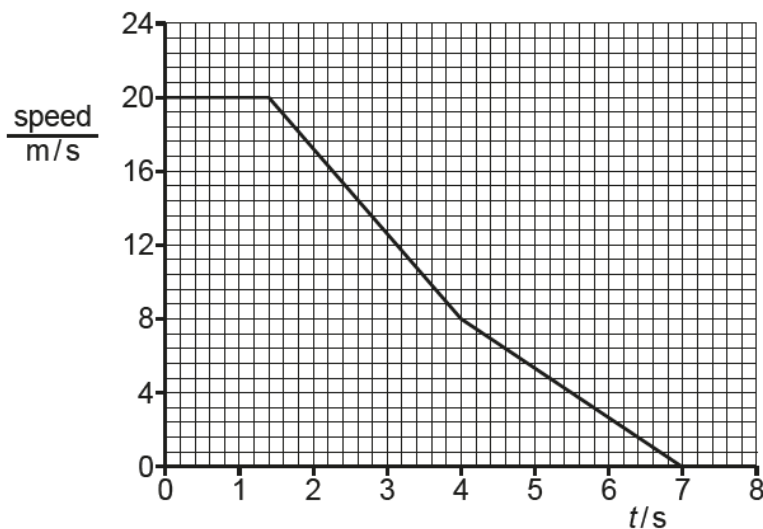


Fig. 2.1

(a) The car starts to slow down a short time after the lights change to red.

Determine the time between the lights changing to red and the car starting to slow down.

..... [1]

(b) (i) State what is meant by *uniform acceleration*.

.....  
 ..... [1]

(ii) State how Fig. 2.1 shows that the deceleration of the car between  $t = 2\text{ s}$  and  $t = 7\text{ s}$  is *non-uniform*.

.....  
 ..... [1]

(c) Determine the distance the car travels from the moment the car starts to slow down until it stops.

distance = ..... [3]