Motion – 2022 November IGCSE 0625

1. Nov/2022/Paper_11/No.2

A car starts from rest.

The table shows the readings from its speedometer every 10 s.

time / s	0	10	20	30	40	50	60
speed / m/s	0	4	8	12	12	12	12

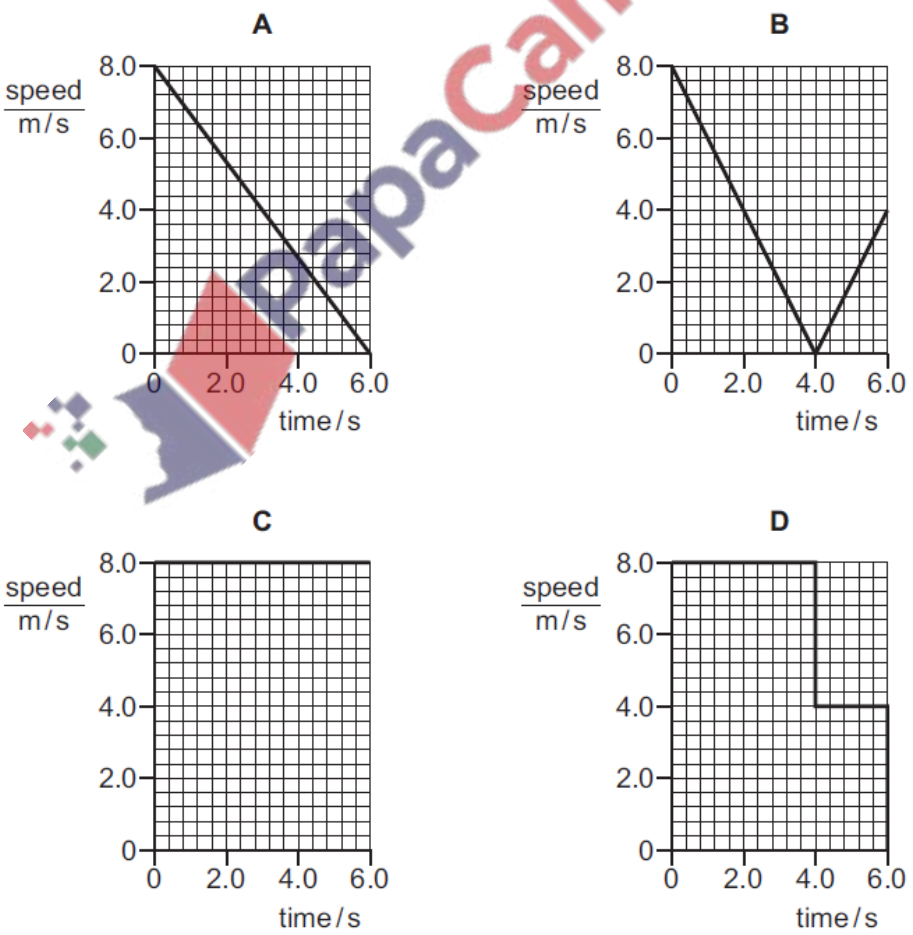
Which row describes the car's motion in the first 30 seconds and in the last 30 seconds?

	motion during first 30 s	motion during last 30 s
A	non-zero acceleration	at rest
B	zero acceleration	constant speed
C	zero acceleration	at rest
D	non-zero acceleration	constant speed

2. Nov/2022/Paper_12,22/No.2

The diagrams show speed–time graphs for four different bodies moving for 6.0 s.

Which body travelled the least distance?



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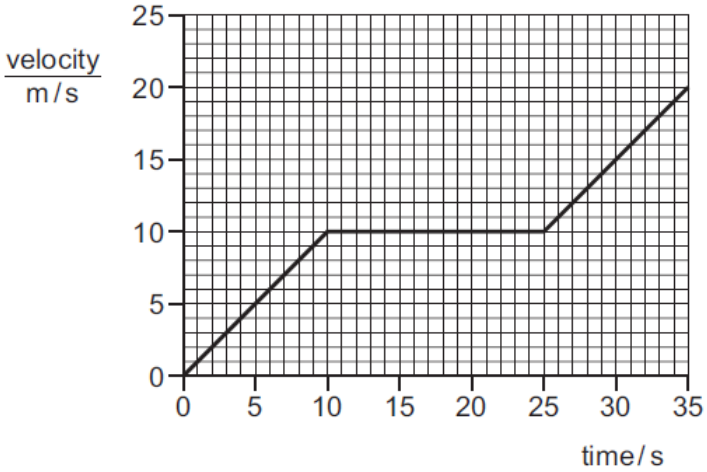
3. Nov/2022/Paper_13,23/No.2

The velocity–time graph for a car is shown.



What is the distance travelled by the car in 35 s?

A 250 m **B** 350 m **C** 450 m **D** 700 m

4. Nov/2022/Paper_21/No.2

A car starts from rest.

The table shows the readings from its speedometer every 10 s.

time / s	0	10	20	30	40	50	60
speed / m/s	0	4	8	12	12	12	12

Which row describes the car's motion in the first 30 seconds and in the last 30 seconds?

	motion during first 30 s	motion during last 30 s
A	non-zero acceleration	at rest
B	zero acceleration	constant speed
C	zero acceleration	at rest
D	non-zero acceleration	constant speed

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5. Nov/2022/Paper_31/No.2

Fig. 2.1 shows the horizontal forces acting on a car.

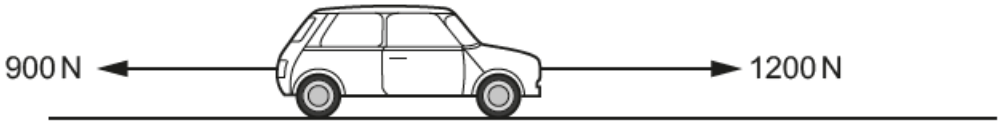

Fig. 2.1 (not to scale)

(a) Calculate the resultant horizontal force on the car.

size of force = ... N

direction .....

[3]

(b) A student uses a digital stop-watch to measure the time for the car to travel 100 m.

Fig. 2.2 shows the time reading on the stop-watch.

Fig. 2.2

(i) Using the information in Fig. 2.2, state the time taken to travel 100 m.

time to travel 100 m = ... s [1]

(ii) The car takes 12.8 s to travel the next 200 m.

Calculate the average speed of the car for this 200 m.

average speed = ... m/s [3]

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(c) Fig. 2.3 shows the speed–time graph for another car.

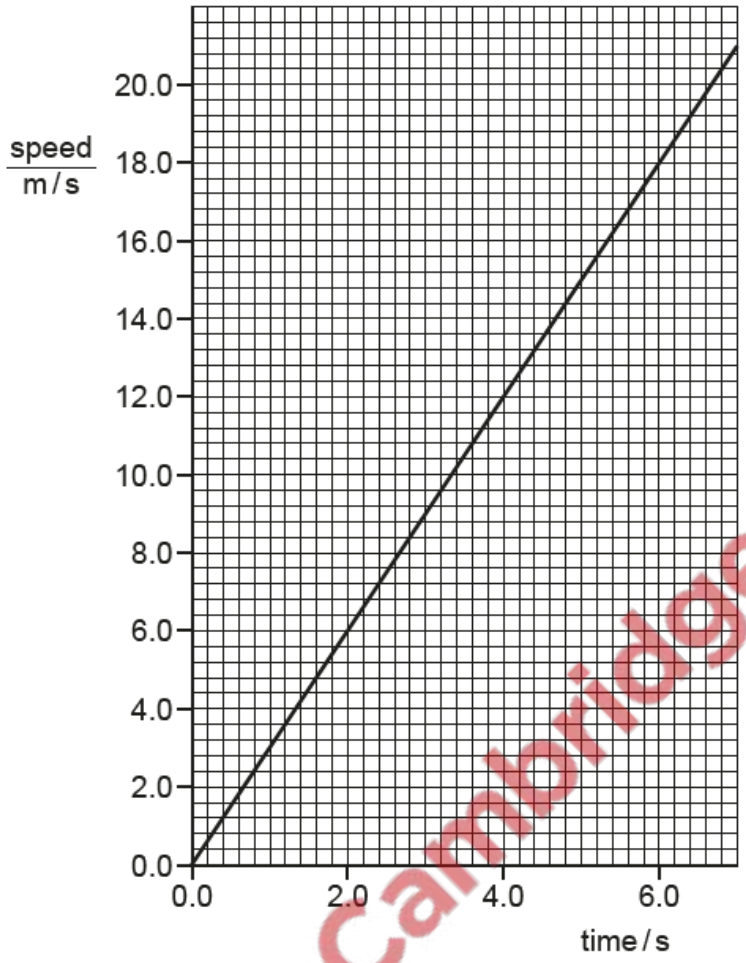

Fig. 2.3

Calculate the distance travelled by this car between time = 2.0 s and time = 6.0 s.

distance travelled = ... m [3]

[Total: 10]

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6. Nov/2022/Paper_32/No.1(a)

(a) Using the information from Fig. 1.3:

(i) Describe the vertical motion of the skydiver between time = 0 and time = 20 s.

..... [1]

(ii) Determine the maximum vertical speed of the skydiver.

maximum speed = ... m/s [1]

(iii) Determine the point, A, B, C, D or E, at which the skydiver opens her parachute.

..... [1]

(iv) Determine the distance the skydiver falls between time = 50 s and time = 80 s.

distance = ... m [3]

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7. Nov/2022/Paper_33/No.1

Fig. 1.1 shows a tram. Trams carry passengers from one place to another.

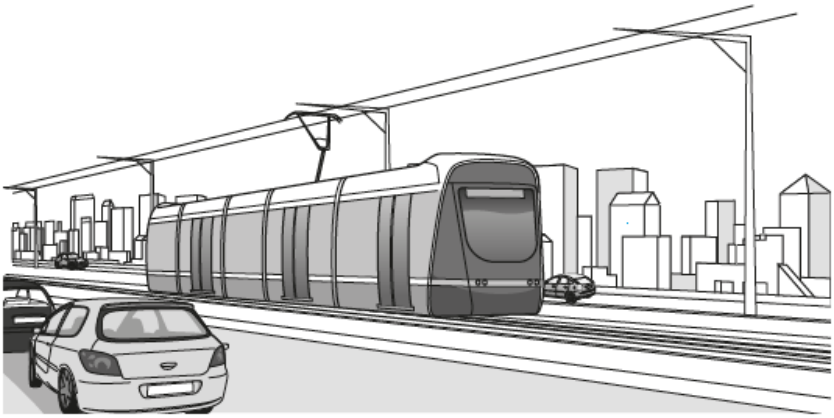

Fig. 1.1

A tram travels from A to E, stopping at B, C and D on the way.
Fig. 1.2 shows the speed–time graph for this tram journey.

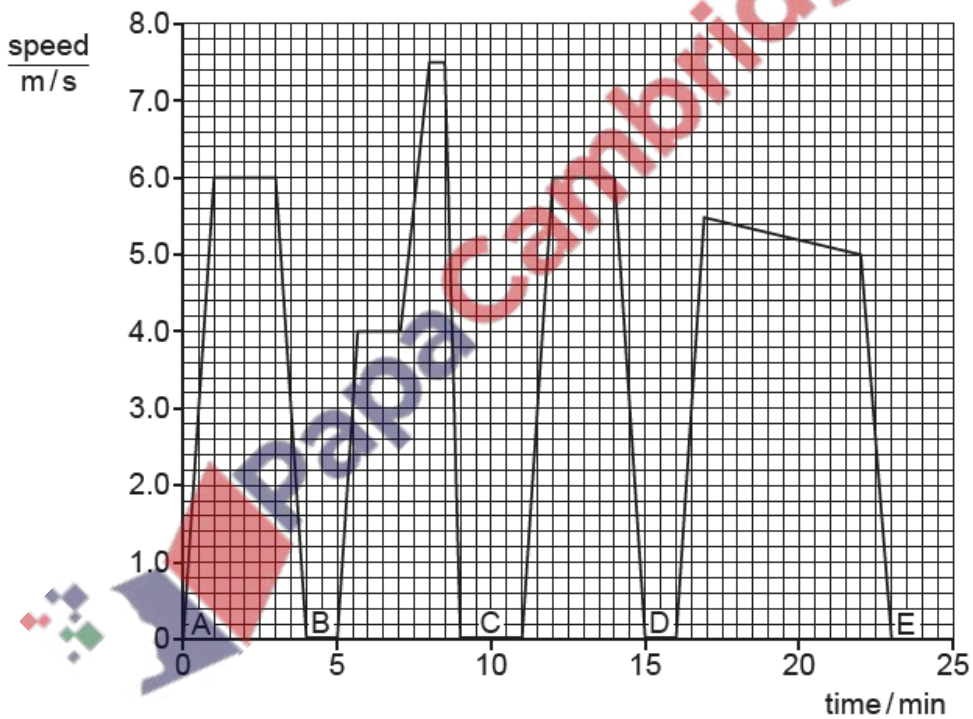

Fig. 1.2

(a) (i) Determine the time between the tram leaving A and arriving at C.

time = ... min [1]

(ii) Determine the maximum speed of the tram during the journey from A to E.

maximum speed = ... m/s [1]

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(iii) The tram decelerates as it approaches each stop. Use information from Fig. 1.2 to identify the greatest deceleration. Give a reason for your answer.

Complete the sentence.

The greatest deceleration occurs as the tram approaches ..... .

reason .....

.....

[2]

(b) The total distance between A and E is 5200 m.
The tram takes 1380 s to travel from A to E.

Calculate the average speed of the tram between A and E.

average speed = ... m/s [3]

[Total: 7]

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8. Nov/2022/Paper_33/No.1(a)

An aeroplane accelerates along a horizontal runway before take-off.
The aeroplane accelerates for 35 s. The speed of the aeroplane when it takes off is 72 m/s.

Fig. 1.1 shows how the speed of the aeroplane varies between time $t = 0$ and $t = 35$ s.

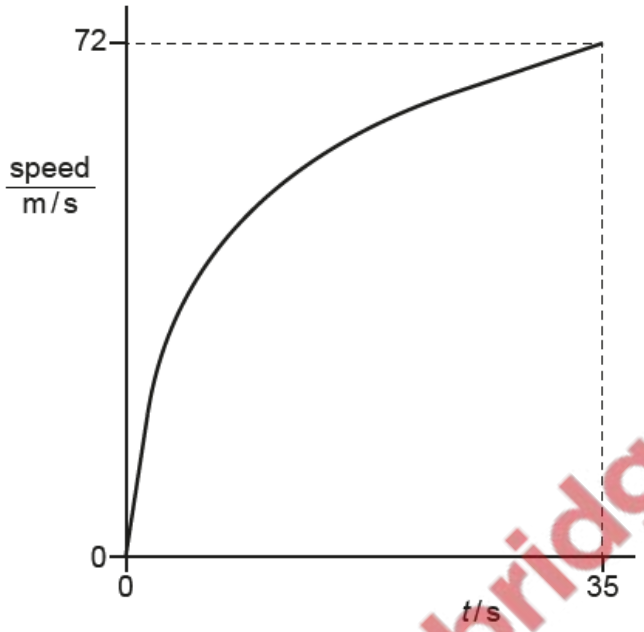

Fig. 1.1

(a) Define acceleration.

.....

..... [1]

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