

Name of the Student: _____

Max. Marks : 20 Marks

Time : 20 Minutes

Q1.

Figure 8 is a velocity/time graph showing a 34 s part of a train's journey.

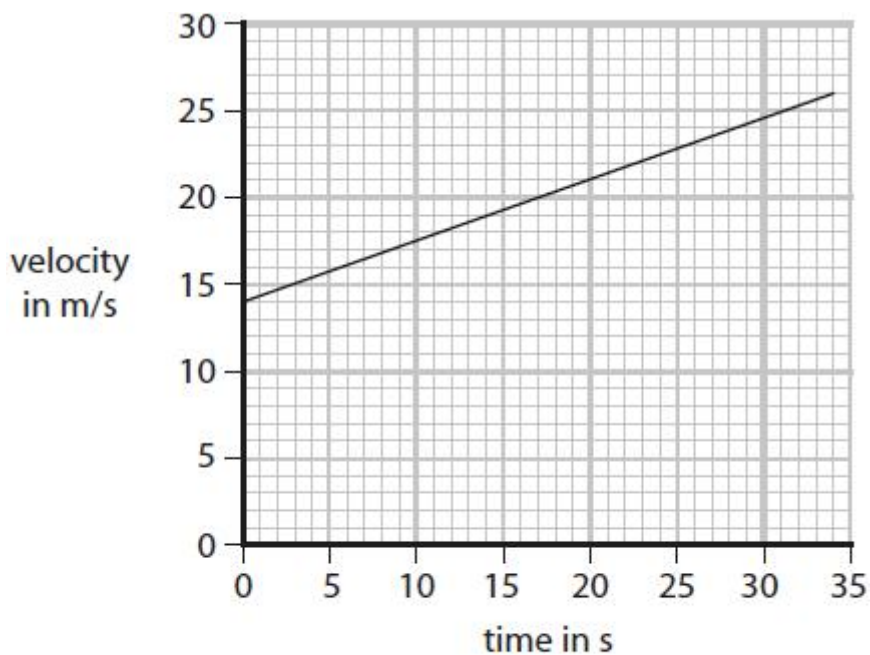


Figure 8

(i) Calculate the acceleration of the train in the 34 s.

Give your answer to an appropriate number of significant figures.

(3)

acceleration = m/s²

(ii) Calculate the distance the train travels in the 34 s.

(3)

distance m

(Total for question = 6 marks)

Q2.

Figure 8 is a velocity/time graph for a lift moving upwards in a tall building.

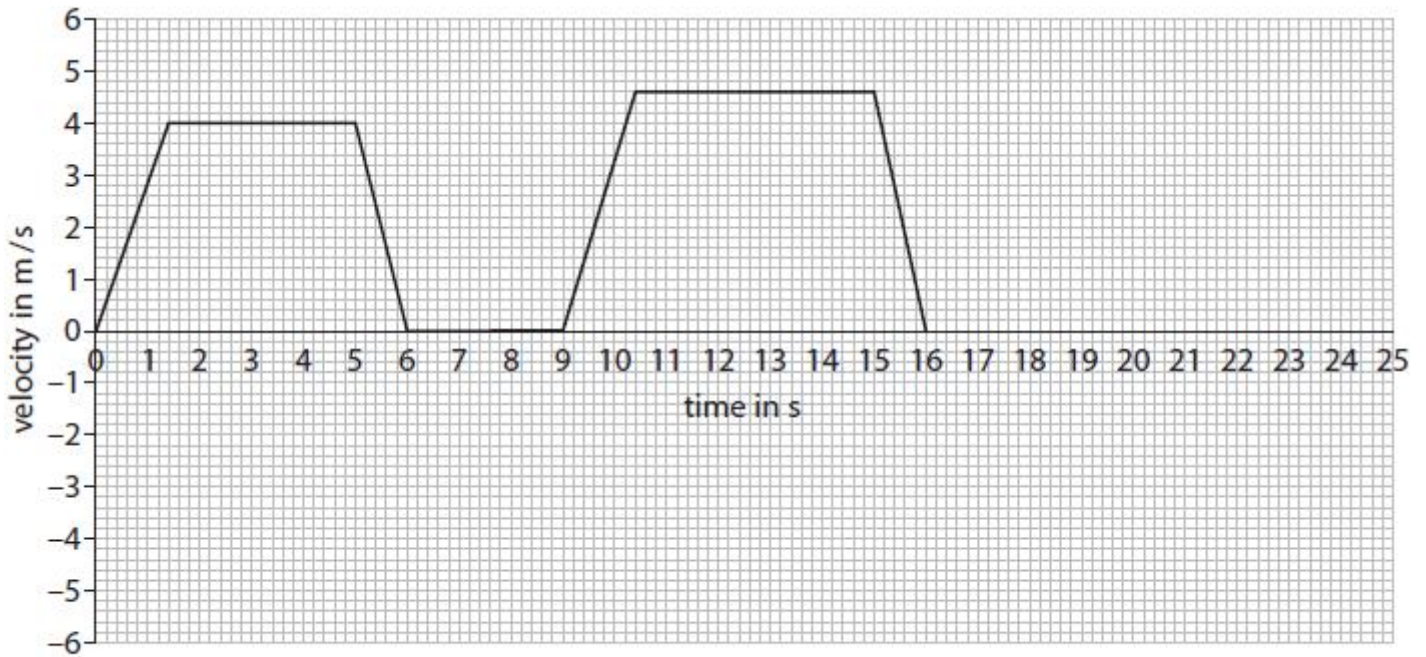


Figure 8

Use the graph in Figure 8 to determine the acceleration of the lift during the first 1.4 s.

(3)

acceleration = m/s²

(Total for question = 3 marks)

Q3.

Figure 9 shows a racket and a tennis ball.

The tennis ball is travelling towards the racket at a velocity of 8.2 m/s.

The ball is hit back in the opposite direction at a velocity of 15 m/s.

The ball has a mass of 0.075 kg.

The ball is in contact with the racket for 12 ms.

(i) Calculate the average force exerted by the ball on the racket.

Use the equation

$$F = \frac{mv - mu}{t}$$

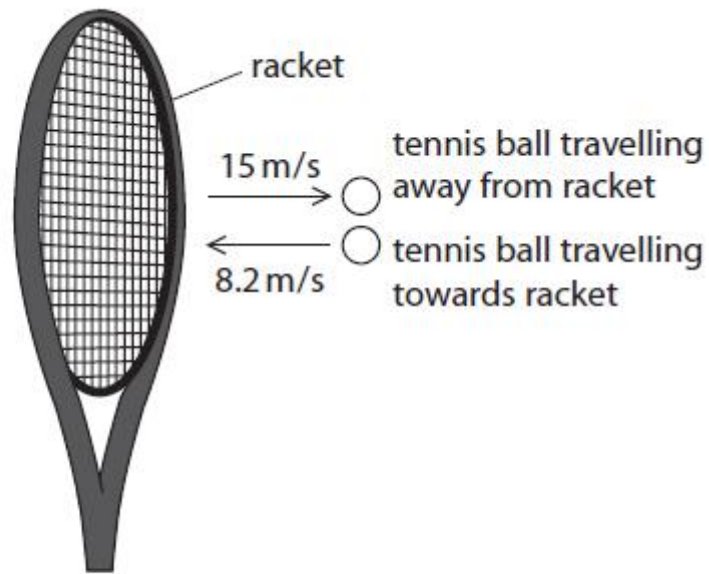


Figure 9

(3)

force = N

(ii) Describe how Newton's Third Law of Motion applies to the collision between the racket and the ball.

(2)

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.....

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.....

(Total for question = 5 marks)

Q4.

Figure 12 shows a skier on a slope.

The skier travels down the slope with a constant acceleration.

The speed of the skier is measured at points P and Q.

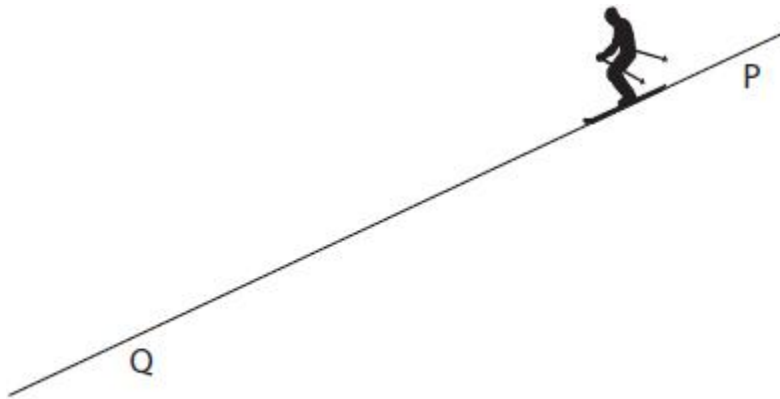


Figure 12

The table in Figure 13 gives some data about the skier making one downhill run.

acceleration	3.0 m/s ²
speed at P	7.6 m/s
speed at Q	24 m/s

Figure 13

(i) Calculate the distance from P to Q.

Use an equation selected from the list of equations at the end of this paper.

(3)

distance from P to Q = m

(ii) Calculate the time taken for the skier to travel from P to Q.

(3)

time from P to Q = s

(Total for question = 6 marks)