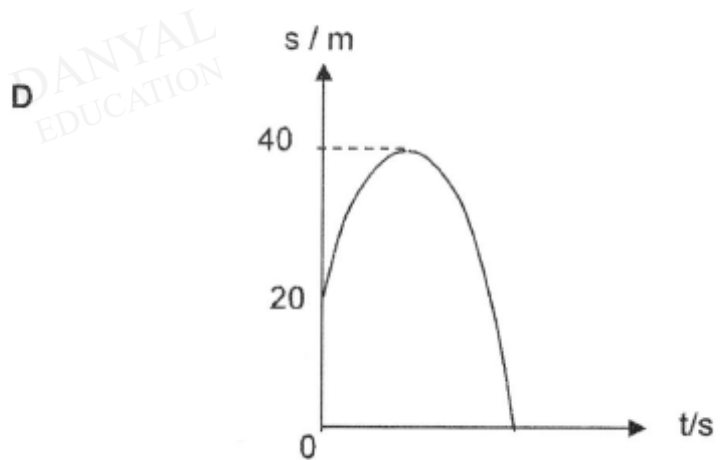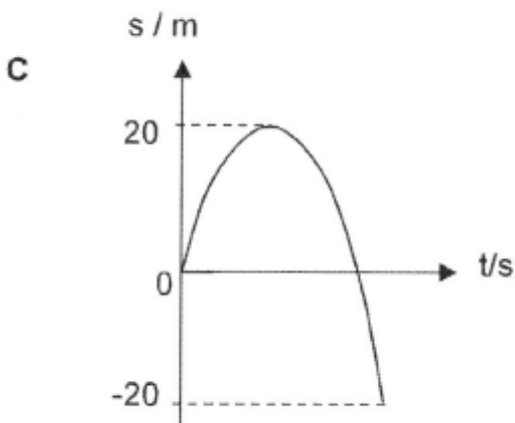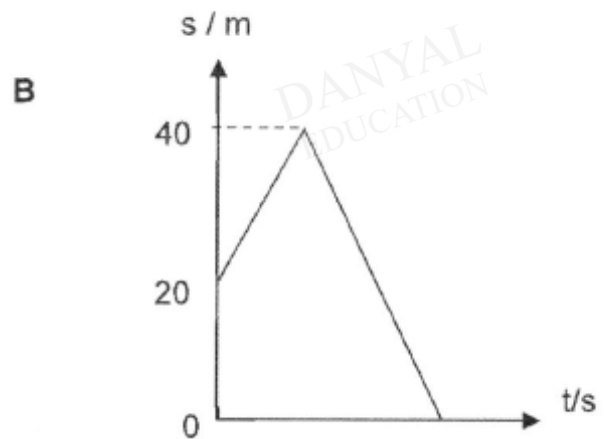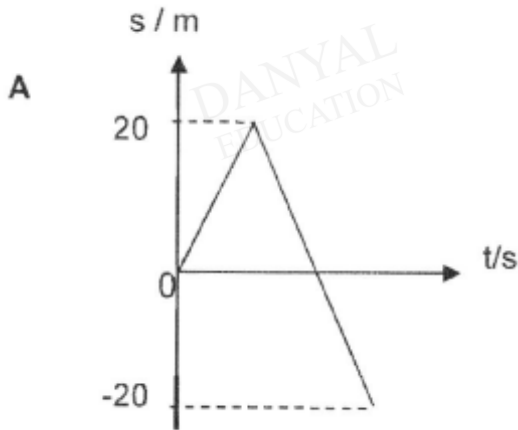## O Level Pure Physics MCQs

Kinematics Test 1.0

Q1

A ball is thrown vertically up from the top of a building 20 m high with an initial velocity of 20 m s^{-1}. The displacement of the balls is measured from the point of projection of the ball. Which of the following graphs best represents the displacement of the ball with time t?

Q2

A ticker tape timer is used to investigate the speed of a remote control car. The ticker tape timer is set to frequency of 10 Hz and a portion of the tape obtained is as shown in Fig. 3.1.
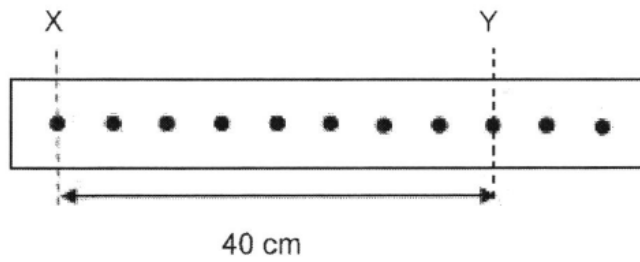

Fig. 3.1

Which of the following statements are correct?

(i) The average speed is 50 cm/s.
(ii) The car moves at a constant speed.
(iii) The car has a uniform acceleration.

A   (i) and (ii) only   C   (i) and (iii) only
B   (ii) and (iii) only   D   (i), (ii) and (iii)
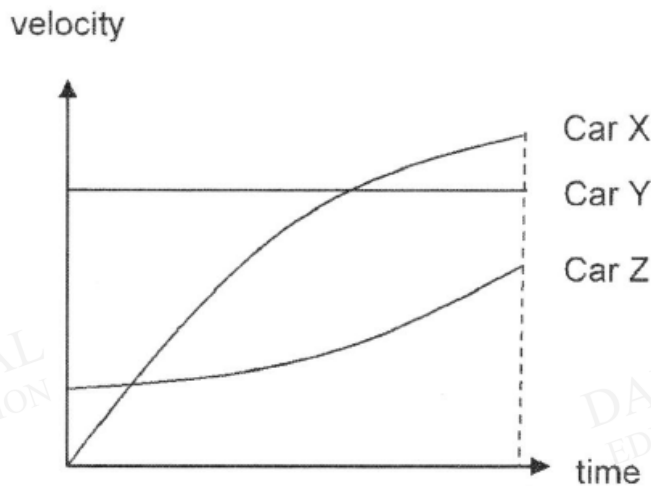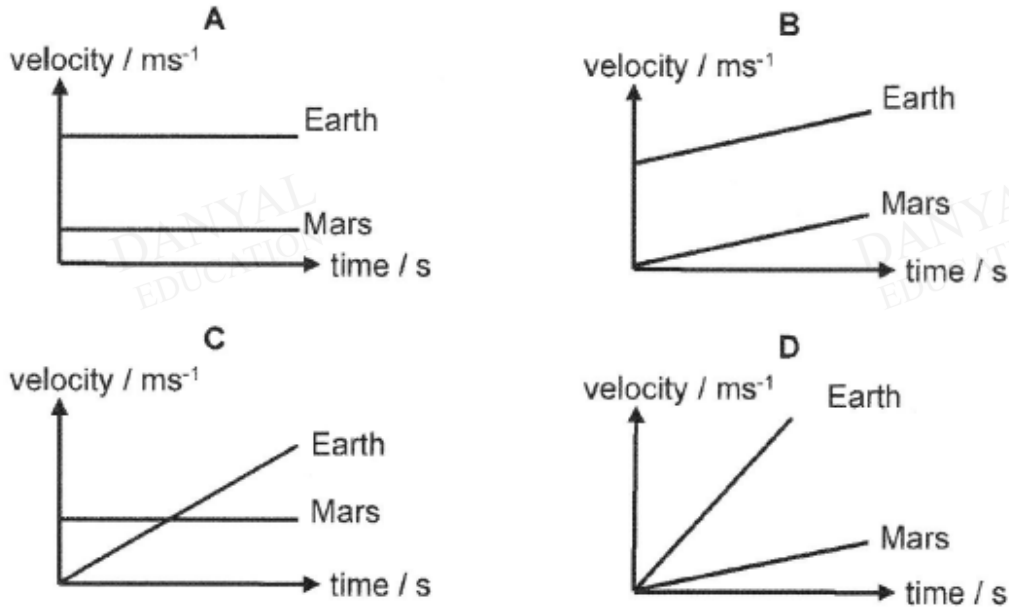
Q3

Fig. 4.1 describes the motion of three cars.

Fig. 4.1

Which of the following sets is correct?

|	greatest average velocity	increasing acceleration
A	X	Z
B	X	Y
C	Y	Z
D	Z	X

Q4

When a stone is dropped on Earth, it accelerates constantly at about 10 m/s². When the same stone drops on Mars, it accelerates constantly at about 2.0 m/s². Which graph best describes the rock motion?

A

velocity / ms⁻¹

Earth

Mars

time / s

B

velocity / ms⁻¹

Earth

Mars

time / s

C

velocity / ms⁻¹

Earth

Mars

time / s

D

velocity / ms⁻¹

Earth

Mars

time / s

Q5

A train moves from town A to town B in 22 minutes and stops for 5 minutes for passengers to board. It then takes 27 minutes to travel from town B to town C. The diagram below shows the path of the train. What is the magnitude of its average velocity for the entire journey?

B

11 km   14 km

A   C

22 km

A   6.8 m/s   B   7.7 m/s   C   8.5 m/s   D   14.5 m/s
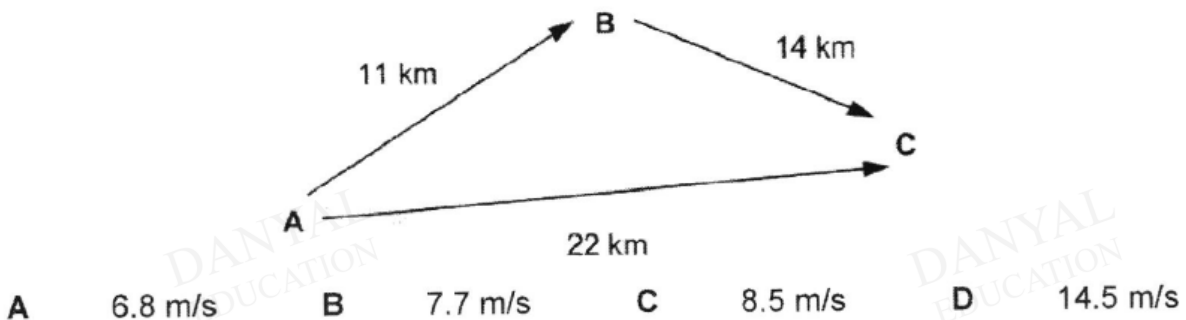
Q6

The graph shows how displacement varies with time for three cars X, Y and Z.
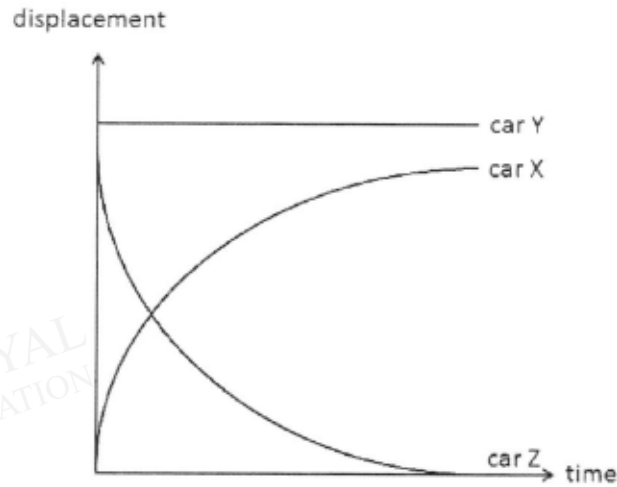
Which row describes cars X, Y and Z correctly?

	car X	car Y	car Z
A	decreasing speed	constant speed	moving in the same direction as car X
B	decreasing speed	not moving	moving in the opposite direction to car X
C	increasing speed	constant speed	moving in the opposite direction to car X
D	increasing speed	not moving	moving in the same direction as car X

Q7

An athlete participates in a 200 m race. In the first 10 seconds, he increases his speed from rest with a uniform acceleration of 1.0 m/s². Thereafter, he maintains his speed and completes the remaining distance.
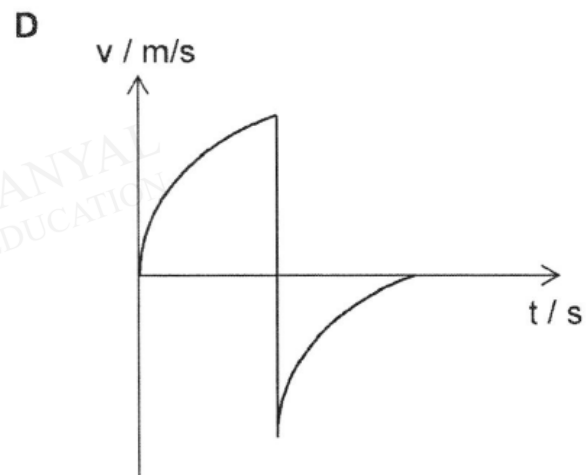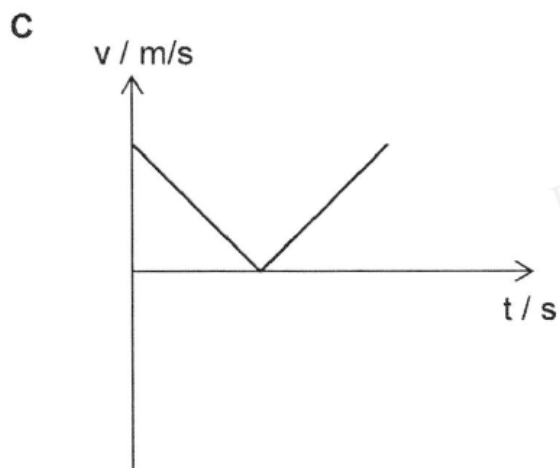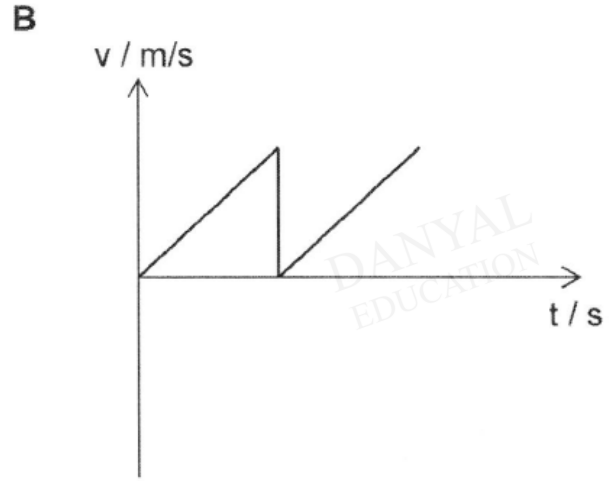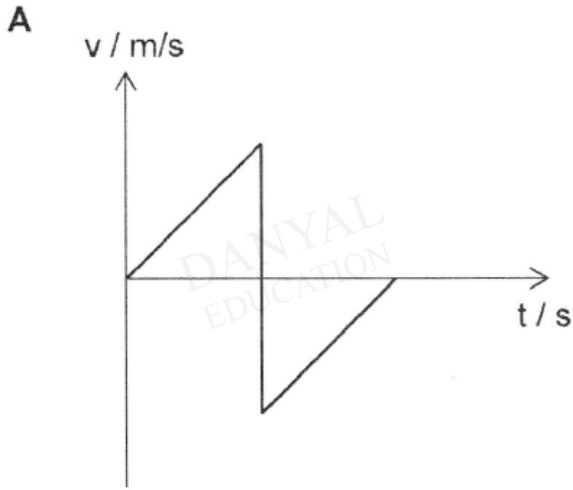
What is the time he took for the entire race?

A   15 s

B   25 s

C   30 s

D   35 s

Q8

A ball rebounds after being dropped from a height.

Assuming that no energy is lost during its impact with the ground and air resistance is negligible, which graph best describes the motion of the ball from the time it rebounds?
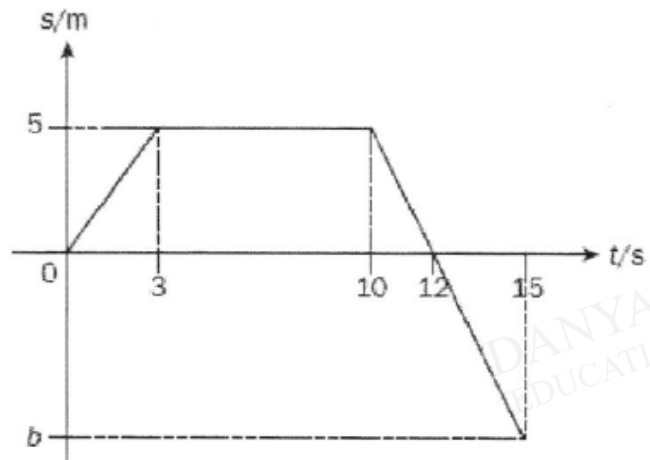
A

B

C

D

Q9

The figure below shows the displacement-time graph of an object.

What is the velocity of the object at 11 s and the value of b?

	velocity/m/s	b/m
A	-2.5	-5.0
B	-5.0	-5.0
C	-2.5	-7.5
D	-5.0	-7.5

Q10

A stone is dropped from rest and falls freely from the top of a tall building.
Taking g, the acceleration of free fall near the surface of Earth, to be 10 m/s^2, the ratio

"distance fallen in first 1.0 s : distance fallen in first 2.0 s"

should be _____.

A   1 : 4
B   1 : 2
C   2 : 1
D   4 : 1

Answers

Kinematics Test 1.0

Q1 C

Q2 A

Q3 C

Q4 D

Q5 A

Q6 B

Q7 B

Q8 C

Q9 C

Q10 A