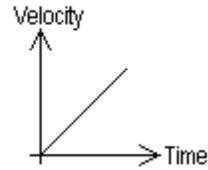


**LESSON 2
ANALYSING MOTION GRAPHS**

Introduction

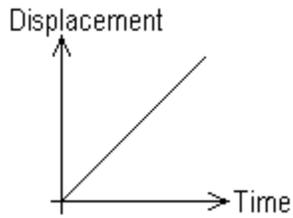
The motion graphs is a useful method of summarizing the motion of an object. In the graph the nature of the motion can be seen quite clearly.

Velocity – Time graphs



**Gradient = acceleration
Area under the graph = displacement**

Displacement – time graphs



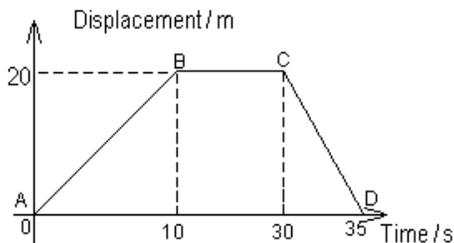
Gradient = Velocity

The conclusion of the motion graphs

Graph	s against t	v against t	a against t
zero velocity			
negative velocity			
uniform velocity			
uniform acceleration			
uniform deceleration			
increasing acceleration			
decreasing acceleration			

Example 1

The following figure shows displacement – time graph of an object.



Based on the graph

(a) calculate the velocity of the object between

- (i) AB (ii) BC
- (iii) CD

(b) describe the motion of the object between

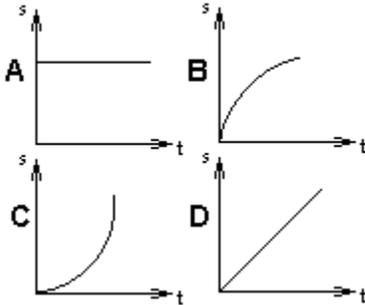
- (i) AB (ii) BC
- (iii) CD

Solution

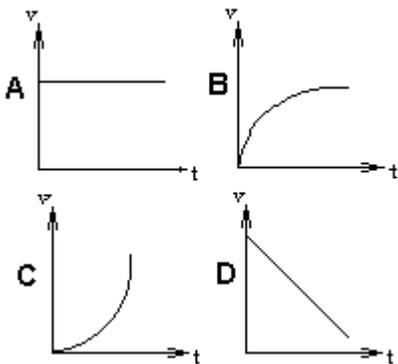


TUTORIAL 2

- 1 An object moves with an uniform acceleration. With of the following shows the motion of the object. ?



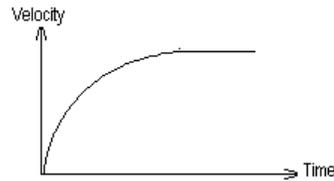
- 2 Which graph correctly describes the object moving with an increasing acceleration.



- 3 Which of the following cases represents a uniformly accelerated motion?

- A A straight line with constant slope in a velocity-time graph
- B A straight line with constant slope in an acceleration-time graph
- C A straight line with constant slope in a displacement -time graph

- 4 The graph shows how the velocity of a car changes with time



Which of the following can be deduced from the graph?

- A The car accelerates uniformly
- B The car decelerates until it stops
- C The car first accelerates and then moves with a steady velocity
- D The car first decelerates and then moves with a steady velocity

- 5 While traveling along the road at 20 ms^{-1} , a car driver suddenly sees the road ahead blocked at the distance 62 m from the car. He applies the brakes as fast as he can.

Once the brakes are applied, the car still moves fastly. He applies the brakes again more strongly until it stops before the road block. The following graph shows the motion of the car.



- (a) How long the driver takes the time during he starts see the road block until the brakes are effective.

- (b) Calculate the distance between the car and the road block when the car stop.