**DESCRIBING THE MOTION OF AN OBJECT.**

An object is projected vertically upwards from ground level.

The distance, ***H*** from the ground at ***t*** seconds is given by :

***H = 40t – 5t2 = 5t(8 – t) H***

Draw the distance-time graph:

***8 t***

Find the velocity equation by ***v***

differentiation.

***v = dH***

***dt***

Draw the velocity-time graph: ***8 t***

Find the acceleration equation by ***a***

differentiation.

***a = dv = 8 t***

***dt***

Draw the velocity-time graph:

To DESCRIBE the motion of the body at any time t, means to find the values of ***H, v*** and ***a*** with a few words of explanation.

(i) Describe the motion at t = 1 sec

(ii) Describe the motion at t = 6 sec

**DESCRIBING THE MOTION OF AN OBJECT. ANSWERS**

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The distance, ***H*** from the ground at ***t*** seconds is given by :

***H = 40t – 5t2 = 5t(8 – t) H***

Draw the distance-time graph:

***8 t***

Find the velocity equation by ***v***

differentiation. **40**

***v = dH = 40 – 10t***

***dt***

Draw the velocity-time graph: 4 ***8 t***

**-40**

Find the acceleration equation by ***a***

differentiation.

***a = dv = – 10 8 t***

***dt***

Draw the velocity-time graph: **-10**

To DESCRIBE the motion of the body at any time t, means to find the values of ***H, v*** and ***a*** with a few words of explanation.

(i) Describe the motion at t = 1 sec.

***H = 40t – 5t2 = 35m The object is 35m above the ground***

***v = 40 – 10t = 30 m/s The object is travelling at 30 m/s upwards***

***a = – 10 m/s/s . The object is decelerating at 10 m/s every second***

(ii) Describe the motion at t = 6 sec.

***H = 40t – 5t2 = 60m The object is 60m above the ground***

***v = 40 – 10t = –20 m/s The object is travelling at 20 m/s downwards***

***a = – 10 m/s/s . The object is accelerating down at 10 m/s every second***

***(or you could say “decelerating upwards”)***