Answer on Question #60035-Physics – Mechanics | Relativity

Velocity(m/s)- 20, 20, 10, 20, 0

Time(s) - 0, 5, 7, 10, 15

The above table shows the velocity of the motorbike by at various intervals of time.

Plot a velocity-time graph.

Calculate,

a)Deceleration between 5sec and 7sec.

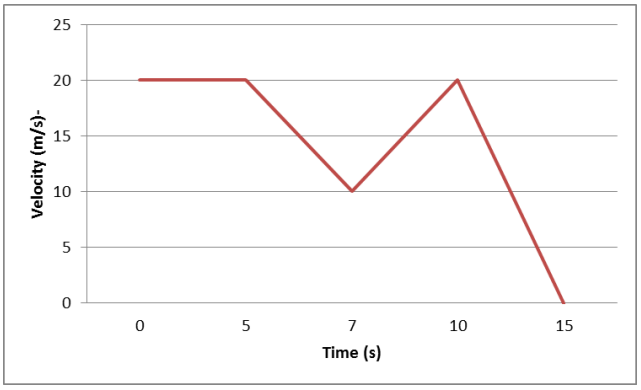
b)Acceleration between 7sec and 10sec

c)Deceleration between 10sec and 15sec.

d)Total distance travelled by motorbike in 15sec.

e)Average velocity of the motorbike.

Solution



a)

$$\frac{20-10}{7-5}=5\frac{m}{s^2}$$

b)

$$\frac{20-10}{10-7}=\frac{10}{3}\frac{m}{s^2}\approx 3.3\frac{m}{s^2}$$

c)

$$\frac{20-0}{15-10}=4\frac{m}{s^2}$$

d)

$$D=(20)(5)+\frac{1}{2}(10+20)(2)+\frac{1}{2}(10+20)(3)+\frac{1}{2}(0+20)(5)=225\,m.$$

e)

$$v = \frac{D}{T} = \frac{225}{15} = 15\frac{m}{s}.$$