Question no 04 *Acceleration-time graph of a particle moving in a straight line is as shown in Fig. 6.28. Velocity of particle at time $t = 0$ is 2 m/s. Find the velocity at the end of fourth second.*

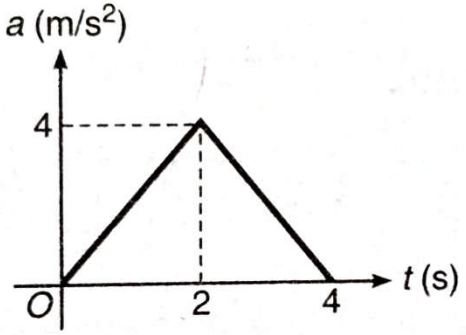

Fig. 6.28

Solution

$$\int dv = \int a\, dt$$

or change in velocity = area under a-t graph

Hence,
$$v_f - v_i = \frac{1}{2}(4)(4)$$
$$= 8\,\text{m/s}$$

$\therefore$
$$v_f = v_i + 8 = (2 + 8)\,\text{m/s}$$
$$= 10\,\text{m/s}$$