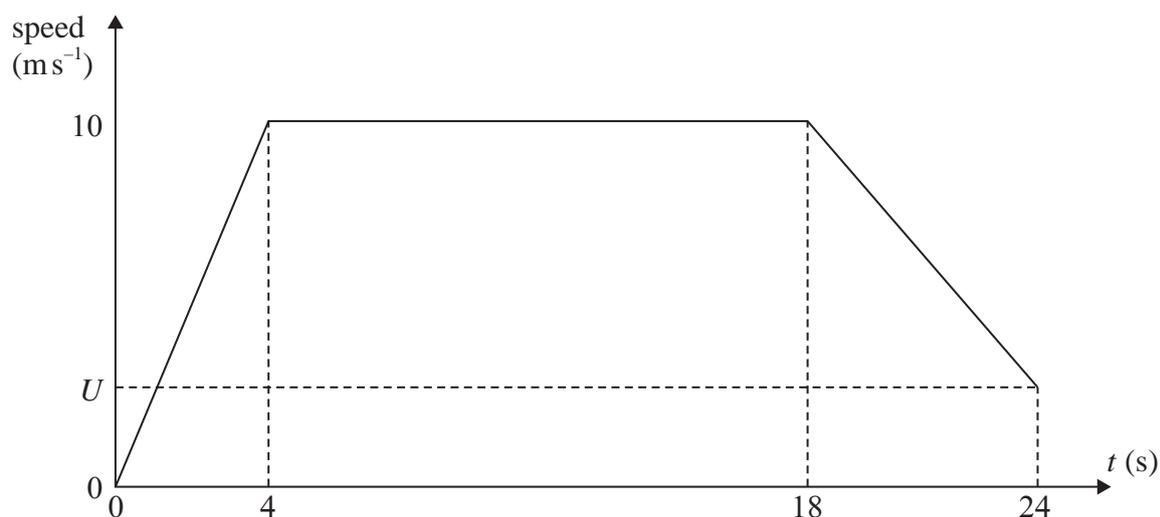**1.**

Figure 2

Figure 2 shows a speed-time graph for a model of the motion of an athlete running a **200 m** race in 24 s.

The athlete

- starts from rest at time $t = 0$ and accelerates at a constant rate, reaching a speed of $10\,\mathrm{m\,s^{-1}}$ at $t = 4$

- then moves at a constant speed of $10\,\mathrm{m\,s^{-1}}$ from $t = 4$ to $t = 18$

- then decelerates at a constant rate from $t = 18$ to $t = 24$, crossing the finishing line with speed $U\,\mathrm{m\,s^{-1}}$

Using the model,

(a) find the acceleration of the athlete during the first 4 s of the race, stating the units of your answer,

(2)

(b) find the distance covered by the athlete during the first 18 s of the race,

(3)

(c) find the value of U.

(3)