2 **(a)** Define *acceleration*.

……

……[1]

(b) An object is released from rest in a viscous fluid. Fig. 2.1 shows the variation with time *t* of the acceleration *a* of the object as it falls in the fluid.

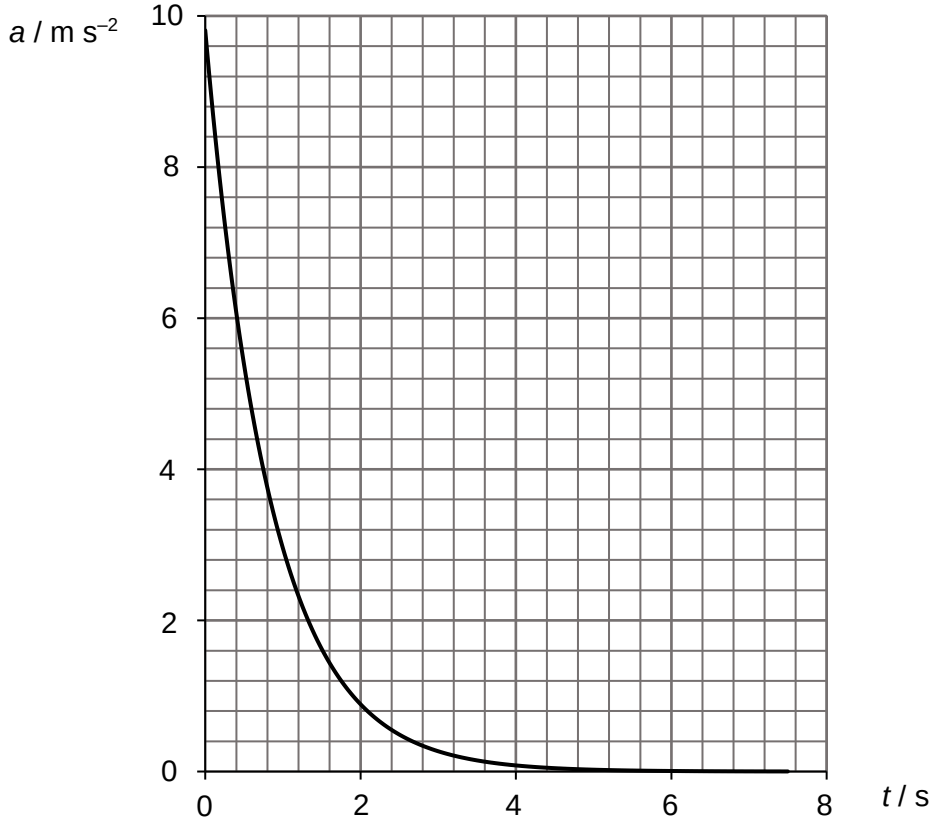

Fig. 2.1

(i) Explain why the acceleration of the object decreases with time.

……

……

…… [2]

(ii) Explain why the initial value of the acceleration is 9.81 m s^{-2}.

……

…… [1]

(iii) Use Fig. 2.1 to estimate the speed of the object when its acceleration is zero. Explain your working clearly.

speed = …… m s^{-1} [2]

(iv) In Fig. 2.2, sketch the variation of the displacement *s* of the object with time *t*, from *t* = 0 s to *t* = 8 s. There is no need to label the displacement axis.

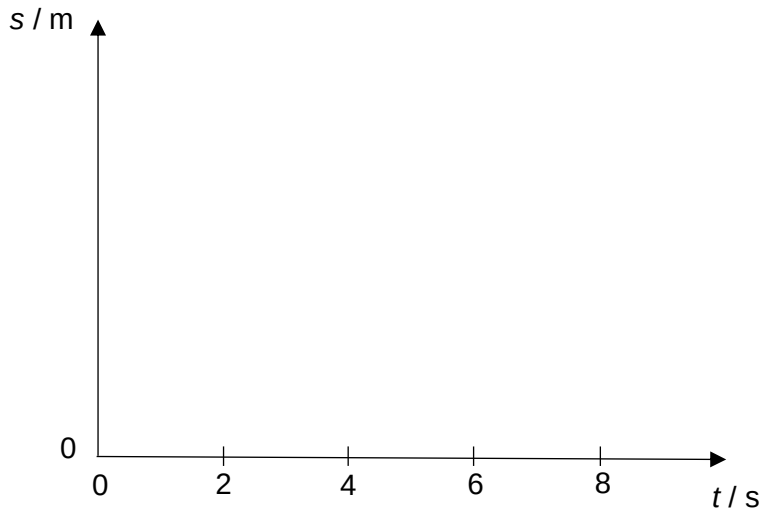

Fig. 2.2

[2]

[Total: 8]