1 A ball of mass 10 g is dropped from a height and falls through air. The variation with time t of the speed of the ball v is shown in Fig. 1.1

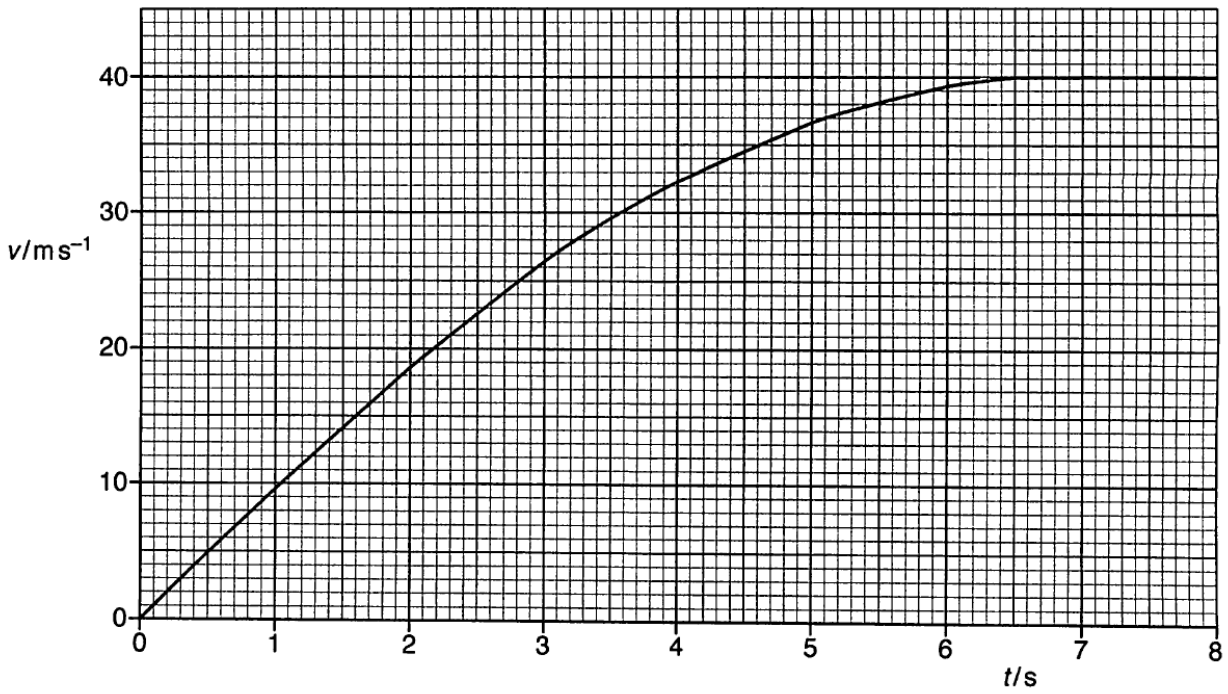

Fig 1.1

(a) **(i)** Use Fig 1.1. to determine the acceleration of the ball at time t = 0. Show your construction on Fig 1.1.

acceleration = ……. m s^{-2} [3]

(ii) By reference to your answer in **(a)(i)**, suggest the difference, if any, between your answer and the acceleration of free fall.

……...

……...

……...

……..…….. [2]

(b) Calculate the maximum resistive force acting on the ball.

force = …..…… N [1]

(c) On Fig 1.1, draw another curve to show the variation with time *t* of the speed of the ball *v* if the ball was dropped in a more viscous medium. [2]

[Total: 8]

[Turn over