1 **(a)** In the following list, underline **all** quantities that are SI base quantities.

charge electric current force time [1]

(b) Under certain conditions, the distance s moved in a straight line by an object in time t is given by

$$s = \frac{1}{2}at^2$$

where a is the acceleration of the object.

State **two** conditions under which the above expression applies to the motion of the object.

1 .....

2 .....
[2]

(c) The variation with time t of the velocity v of a car that is moving in a straight line is shown in Fig. 1.1.

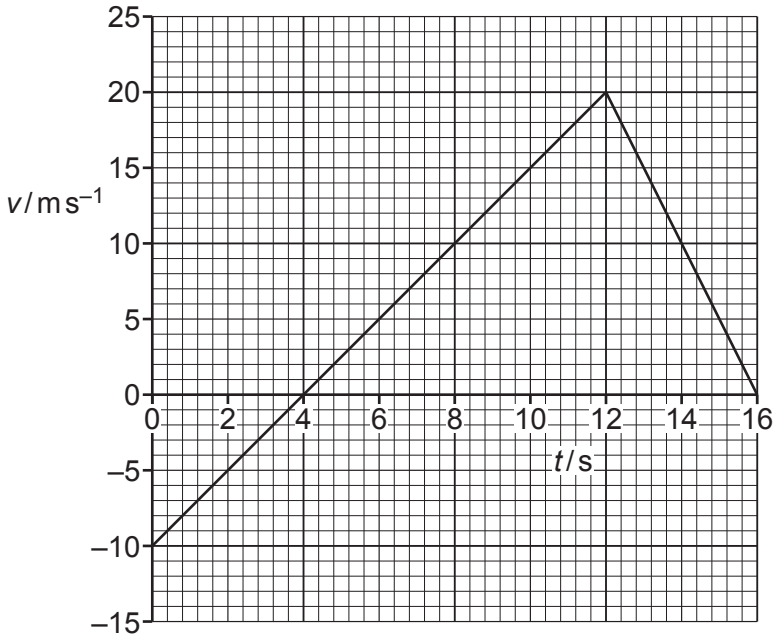

Fig. 1.1

(i) Compare, qualitatively, the acceleration of the car at time $t = 8.0\,s$ and at time $t = 14.0\,s$ in terms of:

- magnitude

.....

.....

- direction.

.....

.....

[2]

(ii) Determine the magnitude of the acceleration of the car at time $t = 4.0\,s$.

acceleration = ... $m\,s^{-2}$ [2]

(iii) The car is at point X at time $t = 0$.

Determine the magnitude of the displacement of the car from X at time $t = 12.0\,s$.

displacement = ... m [2]

[Total: 9]