3 **(a)** Define *power*.

.....

.....[1]

(b) Fig. 3.1 shows a car travelling at a speed of 22 m s^{-1} on a horizontal road.

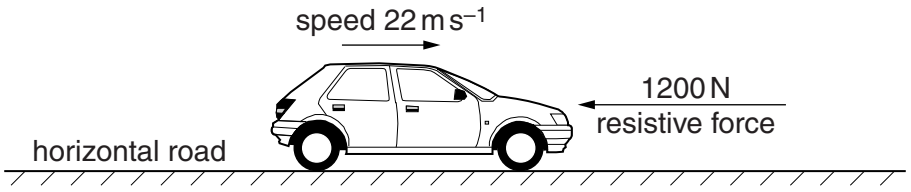

Fig. 3.1

The car has a mass of 1500 kg. A resistive force of 1200 N acts on the car.

Calculate

(i) the force F required from the car to produce an acceleration of 0.82 m s^{-2},

F = ... N [3]

(ii) the power required to produce this acceleration.

power = ... W [2]

(c) The resistive force on the car is proportional to v^2, where v is the speed of the car.
Suggest why the car has a maximum speed.

.....

.....[1]