5 A car of weight 8500 N is travelling at constant speed along a road that is an arc of a circle. In order that the car may travel more easily round the arc, the road is banked at 14° to the horizontal, as shown in Figure 2.1 below.

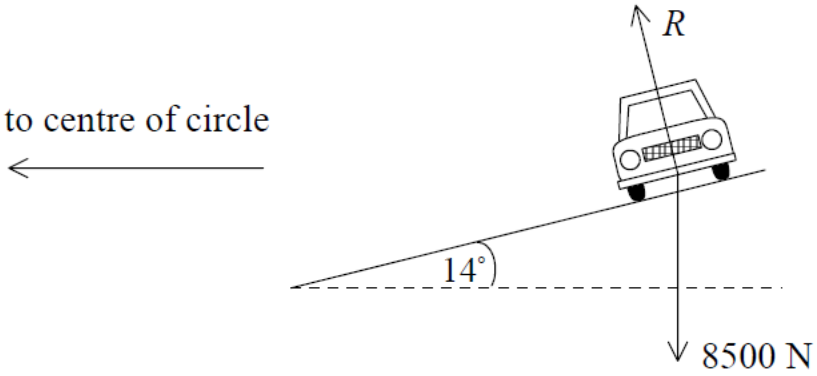

Fig. 5.1

At one particular speed *v* of the car, there is no frictional force at 90° to the direction of travel of the car between the tyres and the road surface. The reaction force of the road on the car is *R*.

(a) Show that the horizontal component of the force *R* is approximately 2100 N.

[2]

(b) Determine the speed *v* of the car at which it travels round the arc of radius 150 m without tending to slide.

speed *v* = ... m s^{-1} [2]

(c) State and explain in which direction the car will tend to slide if it travels round the curve at a speed greater than *v*.

.....

.....

.....

[2]

.....

DO NOT WRITE IN THIS MARGIN