

Name of the Student: _____

Max. Marks : 17 Marks

Time : 17 Minutes

Q1.

Many factors can affect the stopping distance of a car.

Some of these factors involve the driver and some of these factors involve the car or the road.

Explain how the stopping distance of a car is affected by

- factors involving the driver
- factors involving the car or the road.

You should include examples in your explanations.

(6)

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(Total for question = 6 marks)

Q2.

Figure 12 is a speed limit sign from a European motorway.

The speeds shown are in km/h (kilometres per hour).

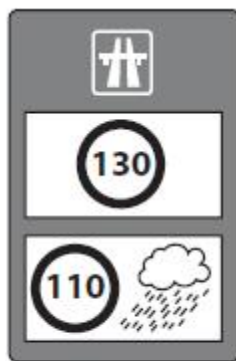


Figure 12

- (i) The sign tells drivers to drive at a slower speed in wet weather.

Explain why it is safer for drivers to drive at a slower speed in wet weather.

(2)

.....

.....

.....

.....

- (ii) Show that a speed of 31 m/s is less than a speed of 130 km/h.

(2)

(iii)

The driver's reaction time is the time between the driver seeing an emergency and starting to brake.

A car is travelling at a speed of 31 m/s.

The car travels 46 m between the driver seeing an emergency and starting to brake.

Calculate the driver's reaction time.

Give your answer to 2 significant figures.

(3)

driver's reaction time = s

(Total for question = 7 marks)

Q3.

The stopping distance of a car is the thinking distance plus the braking distance.

A car has a device that can detect an obstacle in the road ahead.

The device is linked to a computer that can apply the brakes.

It is claimed that, in an emergency, the computer-controlled car will have a shorter stopping distance than if the car is controlled by a human driver.

Explain why this claim could be true.

(2)

.....

.....

.....

.....

(Total for question = 2 marks)

Q4.

This table shows data about two other cars.

car	mass	time taken to reach 30 m/s from rest
family car	1400 kg	10 s
sports car	600 kg	5 s

The owner of the family car claims that although the sports car has greater acceleration, it produces a smaller accelerating force than his family car.

Explain how these figures support his claim.

(2)

.....

.....

.....

.....

.....