Name of the Student:_____
Max. Marks : 16 Marks **Time : 16 Minutes**

Q1.

The thinking distance and braking distance for a car vary with the speed of the car.

(a) Explain the effect of **two** other factors on the **braking** distance of a car.

Do **not** refer to speed in your answer.

_____

_____

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_____

(4)

(b) Which equation links acceleration (*a*), mass (*m*) and resultant force (*F*).

Tick (✓) **one** box.

resultant force = mass × acceleration ☐

resultant force = mass × acceleration^2 ☐

resultant force = $\frac{\text{mass}}{\text{acceleration}^2}$ ☐

resultant force = $\frac{\text{mass}}{\text{acceleration}}$ ☐

(1)

(c) The mean braking force on a car is 7200 N.

The car has a mass of 1600 kg.

Calculate the deceleration of the car.

_____

_____

_____

_____

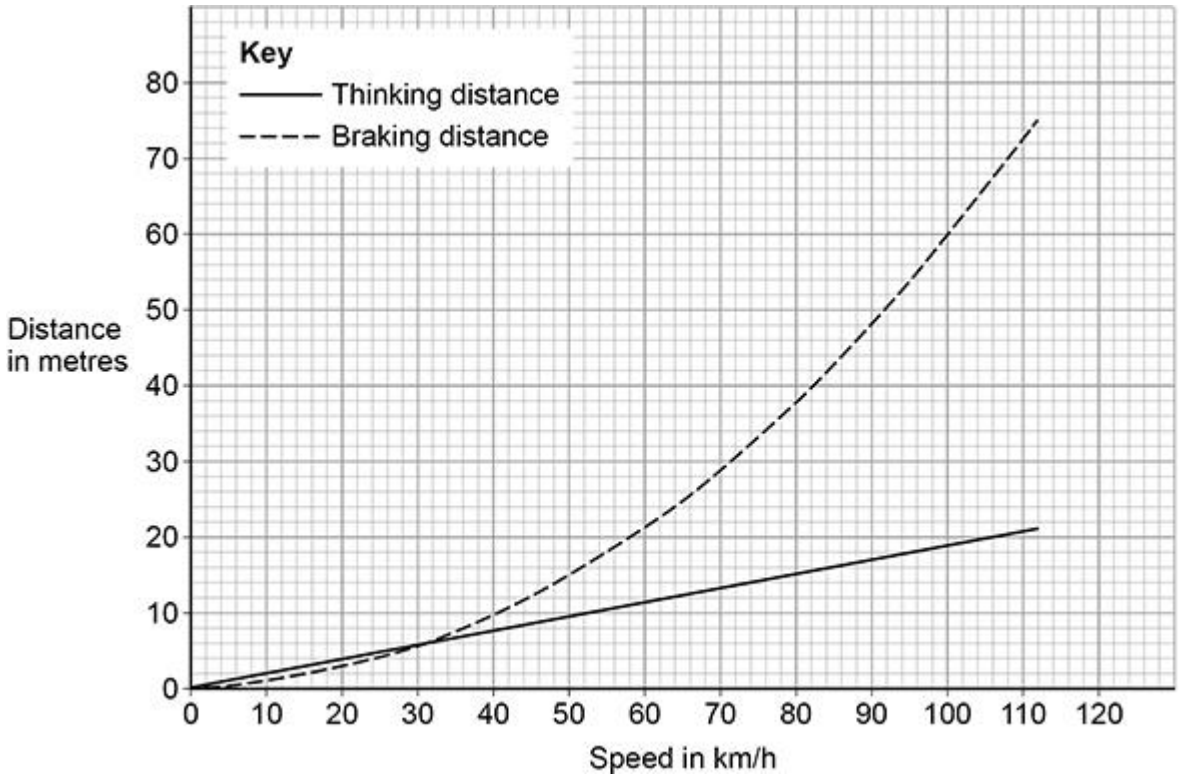
_____

Deceleration = _____ m/s^2

(3)

(d) **Figure 1** below shows how the thinking distance and braking distance for a car vary with the speed of the car.

Figure 1



Determine the stopping distance when the car is travelling at 80 km/h.

_____

_____

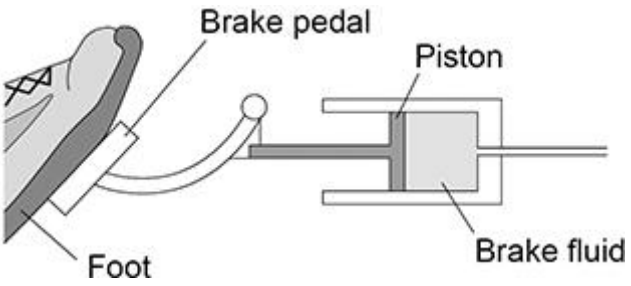
_____

Stopping distance = _____ m

(2)

Figure 2 below shows part of the braking system for a car.

Figure 2



(e) Which equation links area of a surface (A), the force normal to that surface (F) and pressure (p)?

Tick (✓) **one** box.

$p = F \times A$ ☐

$p = F \times A^2$ ☐

$p = \frac{F}{A}$ ☐

$p = \frac{A}{F}$ ☐

(1)

(f) When the brake pedal is pressed, a force of 60 N is applied to the piston.

The pressure in the brake fluid is 120 000 Pa.

Calculate the surface area of the piston.

Give your answer in standard form.

Give the unit.

Surface area (in standard form) = _____ Unit _____

(5)
(Total 16 marks)