Practice Question Set For GCSE
Subject : Physics
Paper-1 Topic: Energy (High Demand)

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Name of the Student:_____
Max. Marks : 25 Marks **Time : 25 Minutes**

Mark Schemes

Q1.

(a) the wall has two / three layers
allow the wall is thick
1

cavity wall insulation / brick / block has a low thermal conductivity
1

so less energy is transferred by conduction
allow rate of energy transfer is lower
ignore any reference to convection and / or radiation
1

(b)
$$T = 17.4 + \left(\frac{(20.8 - 17.4)}{2}\right)$$
or
$$T = 20.8 + \left(\frac{(20.8 - 17.4)}{2}\right)$$
1

T = 19.1 (°C)
1

an answer in the range 18.5−19.1 scores **2** marks

(c) chemical energy store of the fuel decreases
1

thermal energy store of the water increases
allow kinetic energy store of the water particles increases
1

thermal energy store of the air / atmosphere increases
allow kinetic energy store of the air particles increases
1

(d) E = 15 000 000 (J)
1

t = 600 (s)
1

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$p = \frac{15\,000\,000}{\quad}$

allow a correct substitution of incorrectly / not converted values of E and / or t

1

P = 25 000 (W)

allow a correct calculation using incorrectly / not converted values of E and / or t

1

[12]

Q2.

(a) either:
7.5 (m) **and** 12.3 (m) from the graph
or
15 (m/s) × 0.32 (s) using speed

allow 7.5 (m) and between 12.2 (m) and 12.4 (m)

1

extra distance = 4.8 (m)

1

*an answer between 4.7 (m) and 4.9 (m) scores **2** marks*

(b) there is a decrease in kinetic energy of the car

allow work is done by friction (on the brakes)

1

so this (causes) the internal / thermal energy store of the brakes to increase

1

(c) $19^2 - u^2 = 2 \times 2 \times 84$

1

$u^2 = 19^2 - (2 \times 2 \times 84)$

1

u = 5 (m/s)

$u = \sqrt{19^2 - (2 \times 2 \times 84)}$

1

an answer of 5 (m/s) scores 3 marks

(d) **Level 3:** Scientifically relevant facts, events or processes are identified and given in detail to form an accurate account.

5–6

Level 2: Scientifically relevant facts, events or processes are identified and their relevance is clear. The account is not fully accurate.

3–4

Level 1: Facts, events or processes are identified and simply stated but their relevance is not clear.

1–2

No relevant content

0

Indicative content

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- use of drugs, alcohol, tiredness and distractions would increase the thinking distance
- thinking distance increases with speed
- thinking distance is directly proportional to speed
- use of drugs, alcohol, tiredness and distractions would increase the gradient of thinking distance

- poor brakes, poor tyres, wet / icy roads and mass would increase the braking distance
- braking distance increases with speed
- braking distance increases at an increasing (accept greater) rate (with speed)
- poor brakes, poor tyres, wet / icy roads and mass would increase the gradient of braking distance
- braking distance is directly proportional to speed squared

- stopping distance = thinking distance + braking distance
- factors that increase thinking and / or braking distance would increase the gradient of stopping distance
- stopping distance increases at an increasing (accept greater) rate (with speed)

[13]

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