



# END OF YEAR MOCK EXAMINATION SECONDARY THREE COMBINED PHYSICS (ANSWER KEY)

## Paper 1

1	<input checked="" type="checkbox"/> A	<input type="checkbox"/> B	<input type="checkbox"/> C	<input type="checkbox"/> D
2	<input type="checkbox"/> A	<input type="checkbox"/> B	<input checked="" type="checkbox"/> C	<input type="checkbox"/> D
3	<input type="checkbox"/> A	<input type="checkbox"/> B	<input checked="" type="checkbox"/> C	<input type="checkbox"/> D
4	<input type="checkbox"/> A	<input type="checkbox"/> B	<input checked="" type="checkbox"/> C	<input type="checkbox"/> D
5	<input type="checkbox"/> A	<input type="checkbox"/> B	<input type="checkbox"/> C	<input checked="" type="checkbox"/> D
6	<input type="checkbox"/> A	<input checked="" type="checkbox"/> B	<input type="checkbox"/> C	<input type="checkbox"/> D
7	<input checked="" type="checkbox"/> A	<input type="checkbox"/> B	<input type="checkbox"/> C	<input type="checkbox"/> D
8	<input type="checkbox"/> A	<input type="checkbox"/> B	<input checked="" type="checkbox"/> C	<input type="checkbox"/> D
9	<input checked="" type="checkbox"/> A	<input type="checkbox"/> B	<input type="checkbox"/> C	<input type="checkbox"/> D
10	<input checked="" type="checkbox"/> A	<input type="checkbox"/> B	<input type="checkbox"/> C	<input type="checkbox"/> D

## Paper 2

### Question 11

(a)  $a = (v - u) / t$

$$a = (0 - 40) / 20$$

$$= -2.0 \text{ m/s}^2$$

Deceleration of the car is **2.0 m/s<sup>2</sup>**.

(b) Distance travelled = area under the graph

$$= \frac{1}{2} (30 + 60)(40)$$

$$= \mathbf{1800 \text{ m}}$$

(c) average speed = total distance / total time

$$= 1800 / 60$$

$$= \mathbf{30 \text{ m/s}}$$

### Question 12

(a) The driving force is equal to the resistive forces and is in the opposite direction.

Hence, the resultant force is zero and the car moves at constant speed.

(b)(i)  $F_{\text{net}} = ma$

$$= 1300 \times 2.5$$

$$= \mathbf{3250 \text{ N}}$$

(b)(ii)  $F_{\text{net}} = F_{\text{driving force}} - F_{\text{resistive force}}$

$$3250 = F_{\text{driving force}} - 1250$$

$$F_{\text{driving force}} = \mathbf{4500 \text{ N}}$$

**Question 13**

(a)(i)  $E_{GP} = mgh$

$$= 500 \times 10 \times 30$$

$$= \mathbf{150\ 000\ J}$$

(a)(ii) Maximum speed is achieved when all of the energy in the  $E_{GP}$  store is transferred to the  $E_K$  store.

$$\frac{1}{2}mv^2 = 150\ 000$$

$$\frac{1}{2}(500)v^2 = 150\ 000$$

$$v^2 = 600$$

$$v = \mathbf{24.5\ m/s}$$

(b) Work is done against friction.

Some of the energy in the gravitational potential store of the cart dissipated into the internal store of the surroundings and cart due to friction.