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Province of the
EASTERN CAPE
EDUCATION

OR TAMBO INLAND DISTRICT

GRADE 10

PHYSICAL SCIENCES (P1)

OCTOBER 2022

MARKING GUIDELINES

MARKS: 100

These marking guidelines consists of 11 pages.

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QUESTION 1

1.1 D✓✓ (2)

1.2 C✓✓ (2)

1.3 C✓✓ (2)

1.4 D✓✓ (2)

1.5 C✓✓ (2)

1.6 B✓✓ (2)

1.7 A✓✓ (2)

1.8 B✓✓ (2)

1.9 D✓✓ (2)

1.10 D✓✓ (2)

[20]

QUESTION 2

2.1 *Single vector having the same effect as two or more vectors together.* ✓✓ (2)

2.2 F_m = 19 N + 21 N
= 40 N✓
F_R = $F_m - F_w$
= 40 N – 16 N✓
= 24 N✓, Westwards. ✓ (4)

[6]

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QUESTION 3

3.1 *Total path length travelled*. ✓✓ (2)

3.2.1 Distance = 100 m + 100 m

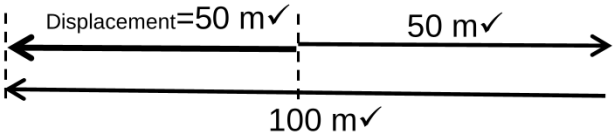
= 200 m✓✓ (2)

3.2.2 Speed = $\frac{Distance}{Time}$✓

= $\frac{200}{60}$✓

= 3.33 m.s^{-1}✓ (3)

3.3



✓*direction of arrows* (4)

3.4 $\Delta x = CD - DC + CE$

= 34 m – 34 m + 50 m

= 50 m✓

V = $\frac{\Delta x}{\Delta t}$✓

v = $\frac{50}{90}$✓

= 0.56 m.s^{-1}✓ (4)

[14]

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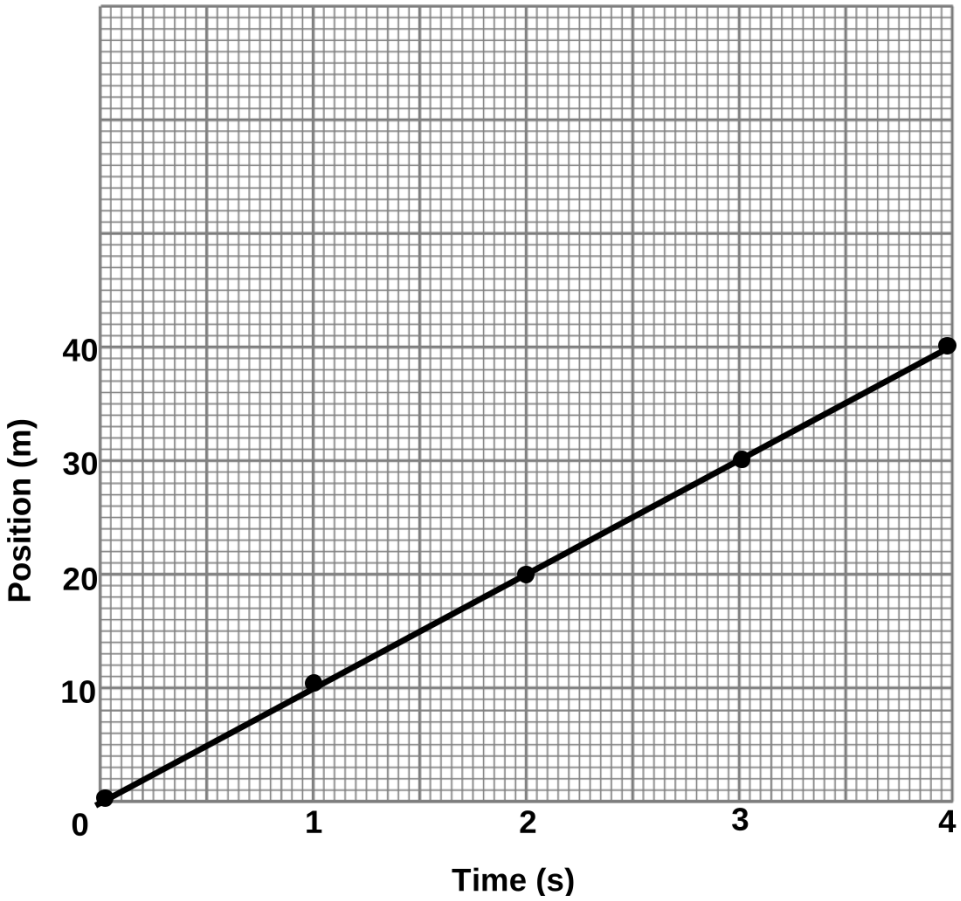
QUESTION 4

4.1.1 Time✓ (1)

4.1.2 Position✓ (1)

4.2 The graph below shows the change in position of the Truck during equal time intervals.



Heading	✓
Correct axis	✓
Shape	✓✓

(4)

4.3 Gradient = $\frac{\Delta x}{\Delta t}$✓

= $\frac{40-0}{4-0}$✓✓

= 10 m.s^{-1}✓ (4)

[10]

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QUESTION 5

5.1 Ep = mgh✓
= (68) (9.8) (50) ✓
= 33 320 J✓ (3)

5.2 *The total energy of an isolated system remains constant.* ✓✓ (2)

5.3 $(Ep + Ek)_{top} = (Ep + Ek)_{bottom}$✓

33 320✓ + 0✓ = (68) (9.8) (30) ✓ + $\frac{1}{2}$(68) v^2

33 320 = 19 992 + 34 v^2

V = 19.80 $m.s^{-1}$, downwards✓ (5)

[10]

QUESTION 6

6.1.1 1 s✓ (1)

6.1.2 1.5 m ÷ 2
= 0.75 m✓ (1)

6.2 $v = {}^{\Delta x}/_{\Delta t}$✓
$2 = {}^{d}/_{3}$✓
d = 6 m✓ (3)

6.3 λ = 6 m ÷ 3
= 2 m✓✓ (2)

6.4

OPTION 1	**OPTION 2**	**OPTION 3**
v = fλ✓ 2 = f (2)✓ f = 1 Hz✓	f = $\frac{no.of\ waves}{time}$✓ f = $\frac{3}{3}$✓ f = 1 Hz✓	f = $\frac{1}{T}$✓ f = $\frac{1}{1}$✓ f = 1 Hz✓

(3)

[10]

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QUESTION 7

7.1.1 P - Compression✓ (1)

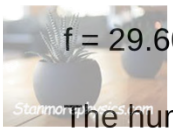
7.1.2 Q – Wavelength✓ (1)

7.2 v = fλ✓

1 480 = f (0.05) ✓

f = 29 600 Hz

f = 29.60 kHz ✓



The human ear cannot hear the frequency produced by the Dolphin✓ (4)

7.3 $v = {}^{\Delta x}/_{\Delta t}$

$340 = {}^{\Delta x}/_{0.1}$✓

Δx = 34 m✓

$v = {}^{\Delta x}/_{\Delta t}$

$340 = {}^{\Delta x}/_{1.5}$✓

Δx = 510 m✓

Distance = 34 m + 510 m

= 544 m✓ (5)

[11]

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QUESTION 8

8.1 **S**✓ (1)

8.2 $n = \frac{Q}{e}$✓

$n = \frac{-7 \times 10^{-9}}{-1.6 \times 10^{-19}}$✓

$= 4.38 \times 10^{10}$ electrons✓ (3)

8.3 **S** to **T**✓ (1)

8.4 $Q = \frac{Q_1 + Q_2}{2}$✓

$= \frac{-7 \times 10^{-9} + 5 \times 10^{-9}}{2}$✓

$= -1 \times 10^{-9}$ C✓ (3)

[8]

QUESTION 9

9.1 *The ratio of the potential difference across a resistor to the current in the resistor.* ✓✓ (2)

9.2.1 $R_{//} = \frac{R_1 \times R_2}{R_1 + R_2}$✓

$= \frac{24 \times 8}{24 + 8}$✓

$= 6\ \Omega$✓ (3)

9.2.2 $R_T = R_S + R_{//}$

$= 2\ \Omega + 6\ \Omega$✓

$= 8\ \Omega$✓ (2)

9.3 $V_{//} = 24\ V - 6\ V$

$= 18\ V$ (1)

9.4

OPTION 1	**OPTION 2**
$Q = I\Delta t$ $18 = I\ (6)$ $I = 3\ A$	$R = \frac{V}{I}$ $2 = \frac{6}{I}$ $I = 3\ A$

(3)

[11]

TOTAL: 100

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