KWAZULU-NATAL PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 10

PHYSICAL SCIENCES

COMMON TEST

MARCH 2023

MARKING GUIDELINE

TIME: 1 ½ Hour

MARKS: 75

These marking guideline consists of 5 pages.

QUESTION 1

1.1 B ✓✓ (2)

1.2 D ✓✓ (2)

1.3 D ✓✓ (2)

1.4 A ✓✓ (2)

1.5 D ✓✓ (2)

1.6 A ✓✓ (2)
[12]

QUESTION 2

2.1 A single disturbance in a medium ✓✓ (2)

2.2 Destructive ✓ (1)

2.3 8 cm ✓ (1)

2.4

2.4.1 No ✓ (1)

2.4.2 According to the principle of superposition✓
Pulse P will continue moving in its original direction✓ (2)
[7]

QUESTION 3

3.1 Transverse ✓ (1)

3.2 They are moving in different /opposite direction ✓ (1)

3.3

f= 1/T✓

= 1/2,5✓
= 0,4 Hz✓ (3)

3.4

v = f x λ✓
0,08 = 0,4 x λ ✓
λ = 0,2 m
x = 0,35m✓✓ (4)

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3.5 8,75 seconds✓✓ (2)

[11]

QUESTION 4

4.1 A sound wave that is reflected ✓off a surface ✓ (2)

4.2 $v = f \times \lambda$✓
$1500 = 25000 \times \lambda$ ✓
$\lambda = 0{,}06\text{m}$ ✓ (3)

4.3 No. ✓ frequency is beyond range for the human ear ✓ (2)

4.4 speed = $\frac{D}{\Delta t}$ ✓
$1500 = \frac{D}{5}$✓✓
D = 7500 m ✓ (4)
[11]

QUESTION 5

5.1 Light behaves as a wave✓ and as a particle ✓ (2)

5.2
5.2.1 Ultraviolet ✓ (1)
5.2.2 Radio waves ✓ (1)

5.3 Causes skin cancer ✓ (1)
✓

5.4
$$E = \frac{hc}{\lambda} \quad ✓$$
$$= \frac{(6{,}63x10^{-34})(3x10^{8})}{(700x10^{-9})} \quad ✓ \quad ✓$$
$$= 2{,}84x10^{-10}\text{ J} \quad ✓$$
(5)

5.5 Increases✓. Energy is inversely proportional to wavelength ✓ (2)
[12]

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QUESTION 6

6.1

$$n_e = \frac{Q}{Qe} \quad \checkmark$$

$$30 = \frac{Q}{1,6 \times 10^{-19}} \quad \checkmark$$

$$Q = -4,8 \times 10^{-18} C \quad \checkmark$$

(3)

6.2.1 Total charge in an isolated system remains constant. ✓✓ (2)

6.2.2 Both spheres carry identical charges✓ (1)

6.2.3

$$Q_{new} = \frac{Q_1 + Q_2}{2} \quad \checkmark$$

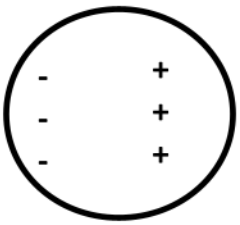
$$= \frac{(6,4x10^{-18}) + (-4,8x10^{18})}{2} \quad \checkmark$$

$$= 8x10^{-19}C \quad \checkmark$$

(3)

6.3.1 The number of electrons is equal to the number of protons ✓✓ (2)

6.3.2



✓✓ (2)

[13]

QUESTION 7

7.1 Reading across the terminals ✓ of a battery when current flows in the circuit ✓ (2)

7.2

$$V = \frac{W}{Q} \quad \checkmark$$

$$= \frac{3 \times 10^4}{2,5 \times 10^3} \checkmark$$

$$= 12V \checkmark$$

(3)

7.3 0,97 A ✓✓ (2)

7.4 GREATER THAN✓ (1)

7.5 emf ✓ (1)

[9]

TOTAL MARKS: [75]

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