



GRADE 10 / GRAAD 10

TERM 2 / KWARTAAL 2

PHYSICAL SCIENCES /  
FISIESE WETENSKAPPE

JUNE EXAM / JUNIE EKSAMEN

MEMORANDUM

**MERK RIGLYNE / MARKING GUIDELINES**

**VRAAG / QUESTION 1 : Meervoudige Keusevrae / Multiple Questions (20)**

1.1	1.2	1.3	1.4	1.5
B ✓✓	B ✓✓	A ✓✓	B ✓✓	C ✓✓
1.6	1.7	1.8	1.9	1.10
D ✓✓	B ✓✓	D ✓✓	C ✓✓	B ✓✓

[10 X 2= 20]

## VRAAG / QUESTION 2: WAVES (20)

2.1 (5)

$$v = f\lambda \quad \checkmark \quad 25 \text{ cm} = 0.25 \text{ m} \checkmark$$

$$= 20 \times 0,25 \checkmark$$

$$= 5.0 \text{ m}\cdot\text{s}^{-1} \quad \checkmark\checkmark$$

2.2.1 Twee punte in fase / Two points in phase: BJ / DL/ CK / AI / IG/ EM / FN / HP

2.2.2 Twee punte uit fase / Two points out of phase: ALL OTHER

2.2.3 Halwe golflengte / Half a wavelength: AE / EI / IM/ MQ

(3)

2.3.1 (2)

$$T = 1/f = 1/260 \checkmark = 0.0038\text{s} = 0.04\text{s} \checkmark$$

2.3.2 (4)

$$v = f\lambda \checkmark$$

$$320 \checkmark = (0.04) \lambda \checkmark$$

$$\lambda = 8000\text{m} \checkmark$$

2.4 (6)

$v = \Delta x / \Delta t \checkmark$	Or/of	$v = \Delta x / \Delta t \checkmark$
$1500 \checkmark = \Delta x / 2.5 \checkmark$		$1500 \checkmark = \Delta x / 25/2 \checkmark\checkmark$
$\Delta x = 3750 \text{ m} \checkmark$		$\Delta x = 1875 \text{ m} \checkmark\checkmark$
$3750 / 2 = 1875\text{m} \checkmark\checkmark$		

[20]

## VRAAG / QUESTION 3: WAVES (14)

3.1 (2).

Geen medium / No medium

$$c = 3 \times 10^8 \text{ ms}^{-1} \quad \checkmark\checkmark$$

3.2.1 Radiogolwe / Radio waves  $\checkmark$ 3.2.2 Gammastrale / Gamma-rays  $\checkmark$ 3.2.3 Ultraviolet lig / Ultra-violet light  $\checkmark$ 

(3)

3.3.1 (2)

'n Foton: Energiepakkies (kwanta) wat energie oordra aan deeltjies van materie

*A photon: Energy parcels (quanta) that transfers energy to particles of matter*  $\checkmark\checkmark$ 

3.3.2.1 (4)

$$E = hc/\lambda \quad \checkmark$$

$$= (6,63 \times 10^{-34} \times 3 \times 10^8) \checkmark / 2,1 \times 10^{-9} \checkmark$$

$$= 9,47 \times 10^{-17} \text{ J} \checkmark$$

3.3.2.2 (3)

$c = f\lambda \checkmark$	OF/OR	$E = hf \checkmark$
$3 \times 10^8 = f \times 2,1 \times 10^{-9} \checkmark$		$9,47 \times 10^{-17} = 6,63 \times 10^{-34} f \checkmark$
$f = 1,43 \times 10^{17} \text{ Hz} \checkmark$		$f = 1,43 \times 10^{17} \text{ Hz} \checkmark$

[14]

VRAAG / QUESTION 4: Magnetism (7)
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- 4.1 Die ruimte om 'n magneet waar 'n ander magneet 'n krag ondervind /  
*the space around a magnet where another magnet experiences a force* **√√** (2)
- 4.2 Ferro-magnetisme / *Ferro-magnetism* **√** (1)
- 4.3.1 Bly in die middel / *Remain in the middle* **√√** (2)
- 4.3.2 C to D, **√** C is N**√** (2)
- [7]**

VRAAG / QUESTION 5: Electrostatics (16)
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- 5.1 Ladings kan nie geskep of vernietig word nie, maar slegs oorgedra word van een  
voorwerp na 'n ander / *charges cannot be created or destroyed, only transferred for one  
object to another* **√√** (2)
- 5.2.1  $Q_A + Q_B / 2 = +7.5 \text{ nC} + -4.5 \text{ nC} / 2 = +7.5 \times 10^{-9} \text{ C} + -4.5 \times 10^{-9} \text{ C} / 2 = +1.5 \times 10^{-9} \text{ C}$  **√√** (2)
- 5.2.2 Van / From B to A; slegs elektrone kan beweeg / *only electrons can be transferred* **√√** (2)
- 5.2.3  $+7.5 \times 10^{-9} \text{ C} \rightarrow 1.5 \times 10^{-9} \text{ C} \rightarrow -6 \times 10^{-9} \text{ C}$  (verloor / loss) **√√**  
 $-4.5 \times 10^{-9} \text{ C} \rightarrow 1.5 \times 10^{-9} \text{ C} \rightarrow +6 \times 10^{-9} \text{ C}$  (wins / gain) **√√** (4)
- 5.3  $Q_1 + Q_2 / 2 = -96 \times 10^{-18} \text{ C} + (60) \times -1.6 \times 10^{-19} \text{ C} / 2 = -5,28 \times 10^{-17} \text{ C}$  **√**  
 $Q_2 + Q_3 / 2 = -5,28 \times 10^{-17} \text{ C} + 0 \text{ C} / 2 = +2,64 \times 10^{-17} \text{ C}$  **√** elk / each (6)
- [16]**

## VRAAG / QUESTION 6: Electricity (23)

6.1 (2)

Potensiaalverskil is die energie wat oorgedra word per eenheidslading oor die ente van 'n geleier waardeur die lading vloei. / *Potential difference is the energy transferred per unit charge over the ends of a conductor which conducts charges* ✓✓

6.21 (4)

$$R = V/I \quad \checkmark$$

$$3 = V_2/2 \quad \checkmark$$

$$V_2 = 6 \text{ V} \quad \checkmark$$

$$V_1 = V_2 = 6 \text{ V} \quad \checkmark$$

6.2.2 (2)

$$V_T = V_1 + V_2$$

$$= 6 + 6$$

$$= 12 \text{ V} \quad \checkmark$$

$$V_{\text{tot}} = V_1 + V_2 + V_n \quad \checkmark$$

6.2.3 (4)

$$R = V/I$$

$$4 = 6/I \quad \checkmark$$

$$I_4 = 1.5 \text{ A}$$

$$I = I_4 + I_R \quad \checkmark$$

$$2 = 1.5 + I_R \quad \checkmark$$

$$I_R = 0.5 \text{ A} \quad \checkmark$$

6.2.4 (5)

$$R = V/I \quad \checkmark$$

$$= 6/0.5 \quad \checkmark\checkmark$$

$$= 12 \Omega \quad \checkmark\checkmark$$

6.2.5 (6)

$$I = Q/t \quad \checkmark$$

$$2 \checkmark = Q/5 \times 60 \quad \checkmark\checkmark$$

$$Q = 600 \text{ C} \quad \checkmark\checkmark$$

[23]

GRAND TOTAL : 100