



## **education**

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Noord-Wes Onderwys Departement  
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**NORTH WEST PROVINCE**

**NATIONAL SENIOR CERTIFICATE/  
NASIONALE SENIOR SERTIFIKAAT**

**GRADE/GRAAD 12**

**PHYSICAL SCIENCES: PHYSICS (P1)  
FISIESE WETENSKAPPE: FISIKA (V1)**

**SEPTEMBER 2022**

**MARKING GUIDELINES/NASIENRIGLYNE**

**MARKS/ PUNTE: 150**

**These marking guidelines consist of 16 pages including the cognitive table/  
Hierdie nasienriglyne bestaan uit 16 bladsye wat die kognitiewe tabel insluit.**

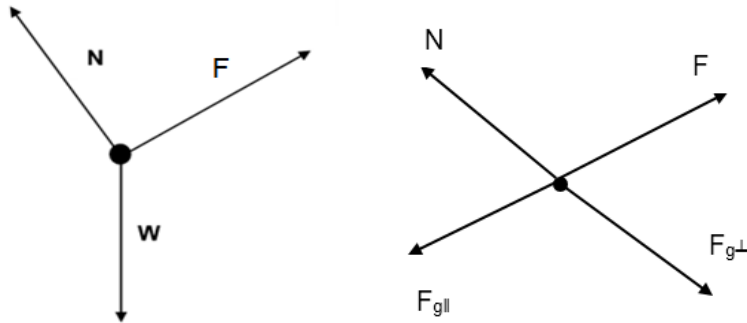
**QUESTION 1/VRAAG 1**

1.1	C	✓✓	(2)
1.2	D	✓✓	(2)
1.3	A	✓✓	(2)
1.4	D	✓✓	(2)
1.5	B	✓✓	(2)
1.6	C	✓✓	(2)
1.7	D	✓✓	(2)
1.8	A	✓✓	(2)
1.9	C	✓✓	(2)
1.10	B	✓✓	(2)

**[20]**

**QUESTION 2 /VRAAG 2**

2.1

**Accept the following symbols**

N ✓	$F_N$ /Normal/Normal force <i>Normaal/Normaalkrag</i>
F ✓	$F_A$ /Applied force force/ 5000 N <i>F<sub>A</sub>/Toegepaste krag/ 5000 N</i>
w ✓ OR $F_{g  }$ and $F_{g⊥}$	$F_g$ /mg/weight/ gravitational force <i>F<sub>g</sub>/mg/gewig/ gravitasiekrag</i>

(3)

2.2  $F_{g||} = w \sin \theta$  ✓

$5000 = w \sin 15^\circ$  ✓

$w = 19318,52 \text{ N}$

$M_E = \frac{(19318,52) - 800}{9,8}$  ✓

$= 1171,28 \text{ kg}$  ✓

(4)

2.3.1 Increases/*Verhoog.* ✓

(1)

2.3.2 Crate is moving at constant acceleration/*Die krat beweeg teen `n konstante versnelling* ✓

(1)

2.4.1 The force or the component of a force which a surface exerts on an object with which it is in contact, and which is perpendicular to the surface.

*/Die krag of die komponent van die krag wat `n voorwerp op `n oppervlakte uitoefen waarmee dit in kontak is, en wat loodreg op die oppervlakte is.* ✓✓**(2 or/of 0)**

(2)

$$\begin{aligned}2.4.2 \quad F_{g\parallel} &= w \sin\theta \\ &= (98) (\sin\theta) \\ F_{g\perp} &= w \cos\theta \\ &= (98) (\cos\theta) \\ 7 F_{g\parallel} &= 4 F_{g\perp} \checkmark \\ 7 (98) (\sin\theta) &= 4 (98) (\cos\theta) \checkmark \\ \tan\theta &= 0,5714 \\ \theta &= 25,53^\circ \checkmark\end{aligned}$$

**Note: By using  $\tan\theta$  - 2/3 marks**

**Nota: Gebruik van  $\tan\theta$  - 2/3 punte**

$$\begin{aligned}\tan\theta &= \frac{4}{7} \checkmark \\ \theta &= 25,53^\circ \checkmark\end{aligned}$$

(3)  
[14]

**QUESTION 3/ VRAAG 3**

3.1 Motion during which the only force acting on an object is the force of gravity.  
*Beweging waar die enigste krag wat op die voorwerp inwerk gravitasiekrag is.* ✓✓ (2 or/of 0) (2)

3.2.1 1,4 s ✓ (1)

3.2.2 9,8 m·s<sup>-2</sup> ✓ downwards ✓/ afwaarts ✓ (2)

3.2.3 1,4 + 0,8 = 2,2 s ✓✓ (2)

3.3.1  $v_f = v_i + a\Delta t$  ✓  
 $0 = v_i + (-9,8)(1,4)$  ✓  
 $v_i = 13,72 \text{ m}\cdot\text{s}^{-1}$  ✓ (3)

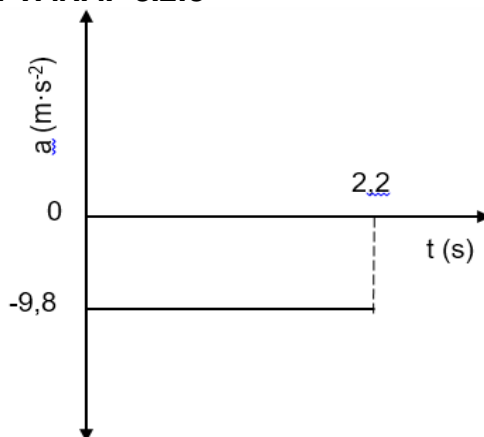
3.3.2 **POSITIVE MARKING FROM QUESTION 3.3.1 and 3.2.3/**  
**POSITIEWE NASIEN VANAF 3.3.1 and 3.2.3**

$$\Delta y = v_i\Delta t + \frac{1}{2} a\Delta t^2 \quad \checkmark$$

$$\Delta y = (13,72)(2,2) + \frac{1}{2} (-9,8)(2,2^2) \quad \checkmark$$

$$= 6,47 \text{ m} \quad \checkmark \quad (3)$$

3.4 **POSITIVE MARKING FROM QUESTION 3.2.3**  
**POSITIEWE NASIEN VANAF 3.2.3**

**Marking Criteria**

- Labelling -9,8 and 2,2 on the graph ✓
- Shape and graph lies below x axis ✓

**Nasien kriteria**

- Toon -9,8 en 2,2 op die grafiek ✓
- Vorm van grafiek en grafiek lê onder die x-as ✓ (2)

3.5 Change in the velocity ✓  
*Verandering is die snelheid* ✓ (1)

**[16]**

**QUESTION 4 / VRAAG 4**

- 4.1 The net force acting on an object is equal to rate of change of momentum of the object ✓✓

*Die netto krag wat op 'n voorwerp inwerk is gelyk aan die verandering in die momentum van die voorwerp ✓✓*

**(2 or/of 0)**

(2)

- 4.2  $F_{\text{net}} \Delta t = \Delta P$  ✓  
 $(-1,2)(\Delta t) = (-0,24)$  ✓  
 $\Delta t = 0,2 \text{ s}$  ✓

(3)

- 4.3 **OPTION 1**

$$F_{\text{net}} \Delta t = \Delta P = m(v_f - v_i) \checkmark$$

$$(-1,2)(0,2) = 0,6(v_f - 0,5) \checkmark$$

$$v_f = 0,1 \text{ m} \cdot \text{s}^{-1} \text{ towards east } \checkmark$$

- OPTION 2**

$$\Delta P = m(v_f - v_i) \checkmark$$

$$(-0,24) = 0,6(v_f - 0,5) \checkmark$$

$$v_f = 0,1 \text{ m} \cdot \text{s}^{-1} \text{ towards east } \checkmark$$

(3)

- 4.4  $E_{\text{kbefore}} = E_{\text{kafter}}$  } any one / enige een ✓  
 $E_k = \frac{1}{2} mv^2$  }  
 $0,042 = \frac{1}{2} (0,8)(v_f)^2$  ✓  
 $v_f = 0,32 \text{ m} \cdot \text{s}^{-1}$  ✓

(3)

**[11]**

**QUESTION 5 / VRAAG 5**

- 5.1 The net/total work done on an object is equal to the change in the object's kinetic energy. ✓✓

*/ Die netto werk verrig op 'n voorwerp is gelyk aan sy verandering in kinetiese energie.*

OR

The work done on an object by a resultant/net force is equal to the change in the objects kinetic energy. ✓✓

*/ Die werk verrig op 'n voorwerp deur 'n netto/resultante krag is gelyk aan sy verandering in kinetiese energie.*

(2)

- 5.2  $W_{nc} = \Delta E_K + \Delta E_p$  } any one / enige een ✓

$$W_{nc} = (E_{Kf} - E_{Ki}) + (E_{pf} - E_{pi})$$

$$0 \checkmark = (E_{Kf} - 0) + (0 - (75)(9,8)(25)) \checkmark$$

$$E_{Kf} = 18375 \text{ J } \checkmark$$

(4)

- 5.3 **POSITIVE MARKING FROM QUESTION 5.2**

**POSITIEWE NASIEN VANAF 5.2**

$$W_{nc} = \Delta E_K + \Delta E_p$$

$$W_{nc} = (E_{Kf} - E_{Ki}) + (E_{pf} - E_{pi})$$

$$= (0 - 18375) \checkmark + (0 - (75)(9,8)(20)) \checkmark$$

$$= (-18375) + (-14700)$$

$$= -33075 \text{ J } \checkmark$$

(3)

- 5.4 33075 J ✓

(1)

- 5.5 **POSITIVE MARKING FROM QUESTION 5.3**

**POSITIEWE NASIEN VANAF 5.3**

$$W_{nc} = F \Delta x \cos \theta \checkmark$$

$$-33075 \checkmark = F_T \times 20 \cos 180^\circ \checkmark$$

$$F_T = 1653,75 \text{ N } \checkmark$$

(4)

**[14]**

**QUESTION 6 / VRAAG 6**

- 6.1 The change in frequency (or pitch) ✓ of the sound detected by a listener because the sound source and the listener have different velocities relative to the medium of sound propagation. / Die verandering in die frekwensie (toonhoogte) van die waargenome klank deur die luisteraar agv die klankbron en die luisteraar wat verskillende snelhede relatief tot mekaar het.

**OR/OF**

An (apparent) change in (observed/detected) frequency (pitch), ✓ as a result of the relative motion between a source and an observer ✓ (listener). 'n (Skynbare) verandering in (waargenome) frekwensie ✓ (toonhoogte), as gevolg van die relatiewe beweging tussen die bron en 'n waarnemer/luisteraar. ✓

(2)

6.2

**OPTION 1**

$$f_{(\text{recorded})} = \frac{(4)}{(1 \times 10^{-4})} \checkmark$$

$$= 40000 \text{ Hz}$$

$$= 40 \text{ kHz}$$

$$40 - 38 = 2 \text{ kHz} \checkmark$$

**OPTION 2**

$$f_{(\text{recorded})} = \frac{(2)}{(5 \times 10^{-5})} \checkmark$$

$$= 40000 \text{ Hz}$$

$$= 40 \text{ kHz}$$

$$40 - 38 = 2 \text{ kHz} \checkmark$$

(2)

- 6.3 When the dolphin is moving towards the recorder, there is a compression of the wave fronts, ✓ more waves are arriving per second. ✓  
*Wanneer die dolfyn na die klankopnemer beweeg vind 'n kompressie van golf fronte plaas ✓ en meer golwe arriveer per sekonde ✓*

(2)

**6.4 OPTION 1 / OPSIE 1**

$$f_L = \frac{v \pm v_L}{v \pm v_s} f_s \checkmark$$

$$40000 \checkmark = \frac{(1500+0)}{(1500-v_s)} \checkmark 38000 \checkmark$$

$$v_s = 71,43 \text{ m} \cdot \text{s}^{-1} \checkmark$$

(5)

- 6.5 The light coming from the distant planet observed from the Earth has a lower frequency and therefore a longer wavelength. ✓  
Therefore it is shifted towards the red end of the spectrum. ✓  
*Die lig vanaf verafgeleë planete wat observeer word van die aarde het 'n laer frekwensie en langer golflengte ✓, daarom vind 'n verskuiwing na die rooi gedeelte van die speltrum plaas ✓*

(2)

**[13]**

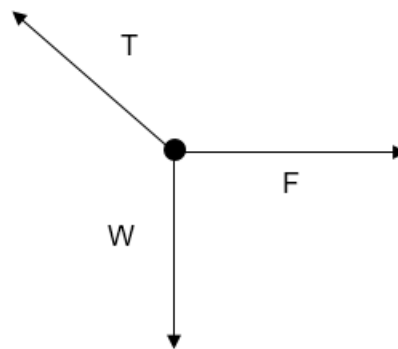


**QUESTION 7 / VRAAG 7**

- 7.1 The magnitude of the electrostatic force exerted by one point charge ( $Q_1$ ) on another point charge ( $Q_2$ ) is directly proportional to the product of the magnitudes of their charges ✓ and inversely proportional to the square of the distance ( $r$ ) between them ✓  
 / Die grootte van die elektrostatische krag wat deur een puntlading ( $Q_1$ ) op 'n ander puntlading ( $Q_2$ ) uitgeoefen word, is direk eweredig aan die produk van die groottes van die ladings ✓ en omgekeerd eweredig aan die kwadraat van die afstand ( $r$ ) tussen hulle ✓

(2)

7.2



Accept the following symbols	
T ✓	Tension in the spring / Spanning in die tou
F ✓	Electrostatic force of repulsion / Elektrostatische afstotingskrag
w ✓	$F_g/mg/weight/F_{\text{earth on sphere}}/gravitational\ force$ $F_g/mg/gewig/F_{\text{aarde op sfeer}}/gravitasiekrag\ force$

(3)

- 7.3.1 Forces are in equilibrium / *Kragte is in ewewig*

$$w = mg$$

$$= (0,0009)(9,8) \checkmark$$

$$= 0,0088 \text{ N}$$

$$\tan 45^\circ = \frac{(F)}{(0,0088)} \checkmark$$

$$(0,0088)$$

$$= 0,008 \text{ N repulsion to the right. / afstotend na regs} \checkmark$$

(3)

7.3.2 **POSITIVE MARKING FROM QUESTION 7.1.3**  
**POSITIEWE NASIEN VANAF 7.1.3**

$$F = \frac{kQ_1Q_2}{r^2} \quad \checkmark$$

$$0,0088 = \frac{(9 \times 10^9) (Q)^2}{(0,04)^2} \quad \checkmark$$

$$Q = 3,8 \times 10^{-8} \text{ C} \quad \checkmark \text{ Accept the range } 3,8 \text{ to } 3,9 \times 10^{-8} \text{ C}$$

$$Q = 3,8 \times 10^{-8} \text{ C} \quad \checkmark \text{ Aanvaar omvang } 3,8 \text{ tot } 3,9 \times 10^{-8} \text{ C}$$

(3)

## 7.4.1

$$F = \frac{kQ_1Q_2}{r^2}$$

'F' at 'C' due to A

$$F_{CA} = \frac{(9,0 \times 10^9) (4 \times 10^{-6}) (8 \times 10^{-6})}{0,5^2} \quad \checkmark$$

$$= 1,152 \text{ N to the right / na regs}$$

'F' at 'C' due to B

$$F_{CB} = \frac{(9,0 \times 10^9) (4 \times 10^{-6}) (3 \times 10^{-6})}{0,2^2} \quad \checkmark$$

$$= 2,7 \text{ N to the left / na links}$$

$$\text{Net electrostatic force at C} = 1,152 - 2,7 = -1,548 \text{ N to the left} \quad \checkmark$$

$$\text{Netto elektrostatiiese krag by C} = 1,152 - 2,7 = -1,548 \text{ N na links} \quad \checkmark$$

(3)

**[14]**

**QUESTION 8 / VRAAG 8**

8.1 Internal resistance is the *resistance found inside the battery due to the movement of charges.* ✓✓

*Interne weerstand is die weerstand in die battery as gevolg van die beweging van lading*

(2)

8.2  $V_2 = 2V_3$  ✓

OR

$$V_3 = \frac{1}{2} V_2$$

(1)

8.3  $V_1 = V_2 + V_3$

$$21 = V_2 + \frac{1}{2} V_2$$

$$V_2 = 14 \text{ V } \checkmark$$

$$V_3 = 7 \text{ V } \checkmark$$

(2)

8.4.1  $V_{\text{lost}} = 24 - 21$

$$= 3 \text{ V } \checkmark$$

$$V_{\text{lost}} = I_r \checkmark$$

$$3 = 3r \checkmark$$

$$r = 1 \Omega \checkmark$$

(4)

8.4.2

**OPTION 1**

$$R = \frac{V}{I} \checkmark$$

I

$$V_2 = 14 \text{ V}$$

$$14 = 3R \checkmark$$

$$R = 4,67 \Omega \checkmark$$

**OPTION 2**

$$R = \frac{V}{I} \checkmark$$

I

$$V_3 = 7 \text{ V}$$

$$7 = 3R_T$$

$$7 = \frac{(3)(R)}{2} \checkmark$$

2

$$R = 4,67 \Omega \checkmark$$

(3)

8.5  $P = VI$

$$60 = 12 \times I \checkmark$$

$$I = 5 \text{ A}$$

$$Q = It \checkmark$$

$$= 5 \times 2 \times 60 \checkmark$$

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

(4)

**[16]**

**QUESTION 9 / VRAAG 9**

9.1.1 Slip rings✓ / *Sleepringe* (1)

9.1.2 Slip rings keep the armature in contact with the brushes, and thus ensure flow of current to the external circuit. ✓✓  
*Sleepringe hou die spoel in kontak met die koolstofborsels en verseker die vloei van stroom na die eksterne stroombaan* ✓✓ (2)

9.2 Induction of an electromotive force by the motion of conductor across a magnetic field.  
 OR  
 Whenever there is a change in the magnetic flux linkage with a conductor an emf is induced. ✓✓  
*Induksie van 'n elektromotoriese krag deur die beweging van 'n geleier oor 'n magnetiese veld.*  
 OF  
*Wanneer daar 'n verandering in die magnetiese vloedkoppeling is met 'n geleier waarin 'n emk dan geïnduseer word* (2)

9.3 A to B / A na B✓ (1)

9.4 Remains the same ✓ Bly dieselfde ✓ (1)

9.5 Coil will be parallel to the field✓✓ / *Spoel sal parallel aan die veld wees* (2)

9.6.1  

$$V_{\text{rms}} = \frac{V_{\text{max}}}{\sqrt{2}} \quad \checkmark$$

$$V_{\text{rms}} = \frac{17}{\sqrt{2}} \quad \checkmark$$

$$V_{\text{rms}} = 12,02 \text{ V} \quad \checkmark$$

$$V_{\text{wgk}} = \frac{V_{\text{max}}}{\sqrt{2}}$$

$$V_{\text{wgk}} = \frac{17}{\sqrt{2}}$$

$$V_{\text{wgk}} = 12,02 \text{ V}$$
 (3)

9.6.2 **POSITIVE MARKING FROM QUESTION 9.2.1**

$$P_{\text{ave}} = I_{\text{rms}} \times V_{\text{rms}} \checkmark$$

$$15 = I_{\text{rms}} \times 12,02 \checkmark$$

$$I_{\text{rms}} = 1,25 \text{ A}$$

$$I_{\text{rms}} = \frac{I_{\text{max}}}{\sqrt{2}} \checkmark$$

$$1,25 = \frac{I_{\text{max}}}{\sqrt{2}} \checkmark$$

$$I_{\text{max}} = 1,77 \text{ A} \checkmark$$

**POSITIEWE NASIEN VANAF VRAAG 9.2.1**

$$P_{\text{gem}} = I_{\text{wgk}} \times V_{\text{wgk}} \checkmark$$

$$15 = I_{\text{wgk}} \times 12,02 \checkmark$$

$$I_{\text{wgk}} = 1,25 \text{ A}$$

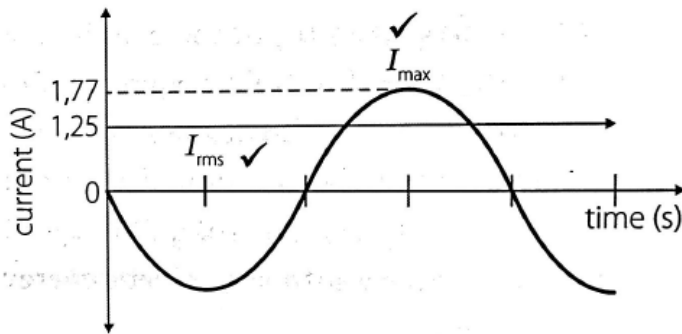
$$I_{\text{rms}} = \frac{I_{\text{max}}}{\sqrt{2}} \checkmark$$

$$1,25 = \frac{I_{\text{max}}}{\sqrt{2}} \checkmark$$

$$I_{\text{maks}} = 1,77 \text{ A} \checkmark$$

(5)

9.6.3 **POSITIVE MARKING FROM QUESTION 9.2.2**  
**POSITIEWE NASIEN VANAF VRAAG 9.2.2**



**Marking Criteria / Nasien kriteria**

- Labelling  $I_{\text{max}}$  on the graph /  $I_{\text{maks}}$  aangedui op die grafiek ✓
- Labelling  $I_{\text{rms}}$  on the graph /  $I_{\text{wgk}}$  aangedui op die grafiek ✓

(2)

**[19]**

**QUESTION 10 / VRAAG 10**

- 10.1 Threshold frequency / *Drumpelfrekwensie* ✓ (1)
- 10.2  $E = W_o + E_{k(max)}$  } any one / enige een ✓  
 $E = hf_o + \frac{1}{2} mv^2$  }  
 $(6,63 \times 10^{-34}) (5 \times 10^{15}) \checkmark = (6,63 \times 10^{-34})(f_o) \checkmark + (\frac{1}{2} \times 9,1 \times 10^{-31})(5 \times 10^5)^2 \checkmark$   
 $f_o = 4,8 \times 10^{15} \text{ Hz} \checkmark$  (5)
- 10.3.1 The work function of a metal is the minimum energy that an electron needs to be emitted from the metal surface ✓✓  
*Die werksfunksie van 'n metaal is die minimum hoeveelheid energie benodig om elektrone uit die oppervlakte van die metaal vry te stel*  
**(2 or/of 0)** (2)
- 10.3.2  $W_o = hf_o \checkmark$   
 $9,44 \times 10^{-19} = (6,63 \times 10^{-34})(f_o) \checkmark$   
 $f_o = 1,42 \times 10^{15} \text{ Hz} \checkmark$  (3)
- 10.3.3 The frequency of blue light is less than that of threshold frequency of selenium, ✓ and the frequency of ultraviolet light (found in day light) is greater than threshold frequency of selenium. ✓  
*Die frekwensie van blou lig is laer as die drumpelfrekwensie van selenium, ✓ en die frekwensie van ultraviolet lig (wat in die dag gekry word) is groter as die drumpelfrekwensie van selenium. ✓* (2)

**[13]****TOTAL/TOTAAL: 150**

SUBJECT: PHYSICAL SCIENCES PAPER 1										GRADE 12			
ANALYSIS GRID										SEPTEMBER 2022			
QUESTION	Mark	Cognitive Levels				Topics				TOTAL	Difficulty Levels		
		1	2	3	4	Mechanics ≈ 65 Marks	Waves, Sound & Light ≈ 15 Marks	Electricity & Magnetism ≈ 55 Marks	Matter & Materials ≈ 15 Marks		Easy	Moderate	Difficult
1.1	2	2				2				2	2		
1.2	2			2		2				2	2		
1.3	2			2		2				2	2		
1.4	2		2			2				2		2	
1.5	2		2			2				2	2		
1.6	2	2					2			2		2	
1.7	2			2				2		2			2
1.8	2				2			2		2			2
1.9	2			2				2		2	2		
1.10	2	2							2	2		2	
<b>Ques 1</b>	<b>20</b>	<b>6</b>	<b>4</b>	<b>8</b>	<b>2</b>	<b>10</b>	<b>2</b>	<b>6</b>	<b>2</b>	<b>20</b>	<b>10</b>	<b>6</b>	<b>4</b>
2.1	3		3			3				3	3		
2.2	4				4	4				4			4
2.3.1	1			1		1				1		1	
2.3.2	1			1		1				1		1	
2.4.1	2	2				2				2	2		
2.4.2	3				3	3				3			3
<b>Ques 2</b>	<b>14</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>7</b>	<b>14</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>14</b>	<b>5</b>	<b>2</b>	<b>7</b>
3.1	2	2				2				2	2		
3.2.1	1		1			1				1	1		
3.2.2	2		2			2				2		2	
3.2.3	2			2		2				2			2
3.3.1	3		3			3				3		3	
3.3.2	3			3		3				3		3	
3.4	2		2			2				2		2	
3.5	1			1		1				1			1
<b>Ques 3</b>	<b>16</b>	<b>2</b>	<b>8</b>	<b>6</b>	<b>0</b>	<b>16</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>16</b>	<b>3</b>	<b>10</b>	<b>3</b>
4.1	2	2				2				2	2		
4.2	3		3			3				3		3	
4.3	3		3			3				3		3	
4.4	3			3		3				3		3	
<b>Ques 4</b>	<b>11</b>	<b>2</b>	<b>6</b>	<b>3</b>	<b>0</b>	<b>11</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>11</b>	<b>2</b>	<b>9</b>	<b>0</b>
5.1	2	2				2				2	2		
5.2	4		4			4				4		4	
5.3	3			3		3				3			3
5.4	1		1			1				1		1	
5.5	4			4		4				4			4
<b>Ques 5</b>	<b>14</b>	<b>2</b>	<b>5</b>	<b>7</b>	<b>0</b>	<b>14</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>14</b>	<b>2</b>	<b>5</b>	<b>7</b>
6.1	2	2					2			2	2		
6.2	2			2			2			2			2
6.3	2		2				2			2		2	
6.4	5		5				5			5		5	
6.5	2			2			2			2	2		
<b>Ques 6</b>	<b>13</b>	<b>2</b>	<b>7</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>13</b>	<b>0</b>	<b>0</b>	<b>13</b>	<b>4</b>	<b>7</b>	<b>2</b>
7.1	2	2						2		2	2		
7.2	3			3				3		3		3	
7.3.1	3			3				3		3			3
7.3.2	3		3					3		3		3	

SUBJECT: PHYSICAL SCIENCES PAPER 1										GRADE 12			
ANALYSIS GRID										SEPTEMBER 2022			
QUESTION	Mark	Cognitive Levels				Topics				TOTAL	Difficulty Levels		
		1	2	3	4	Mechanics ≈ 65 Marks	Waves, Sound & Light ≈ 15 Marks	Electricity & Magnetism ≈ 55 Marks	Matter & Materials ≈ 15 Marks		Easy	Moderate	Difficult
7.4.1	3				3					3		3	
<b>Ques 7</b>	<b>14</b>	<b>2</b>	<b>3</b>	<b>6</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>14</b>	<b>0</b>	<b>14</b>	<b>2</b>	<b>9</b>	<b>3</b>
8.1	2	2						2		2	2		
8.2	1			1				1		1		1	
8.3	2		2					2		2		2	
8.4.1	4			4				4		4			4
8.4.2	3			3				3		3			3
8.5	4		4					4		4		4	
<b>Ques 8</b>	<b>16</b>	<b>2</b>	<b>6</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>16</b>	<b>0</b>	<b>16</b>	<b>2</b>	<b>7</b>	<b>7</b>
9.1.1	3			3				3		3	3		
9.1.2	1	1						1		1	1		
9.2	2		2					2		2		2	
9.3	1				1			1		1	1		
9.4	1		1					1		1	1		
9.5	1			1				1		1			1
9.6.1	3			3				3		3		3	
9.6.2	5			5				5		5			5
9.6.3	2			2				2		2	2		
<b>Ques 9</b>	<b>19</b>	<b>1</b>	<b>3</b>	<b>14</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>19</b>	<b>0</b>	<b>19</b>	<b>8</b>	<b>5</b>	<b>6</b>
10.1	1		1						1	1			1
10.2	5		5						5	5			5
10.3.1	2	2							2	2	2		
10.3.2	3			3					3	3	3		
10.3.3	2				2				2	2		2	
<b>Ques 10</b>	<b>13</b>	<b>2</b>	<b>6</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>13</b>	<b>13</b>	<b>5</b>	<b>2</b>	<b>6</b>
<b>SUMMARY</b>													
<b>QUES 1</b>	<b>20</b>	<b>6</b>	<b>4</b>	<b>8</b>	<b>2</b>	<b>10</b>	<b>2</b>	<b>6</b>	<b>2</b>	<b>20</b>	<b>10</b>	<b>6</b>	<b>4</b>
<b>QUES 2</b>	<b>14</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>7</b>	<b>14</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>14</b>	<b>5</b>	<b>2</b>	<b>7</b>
<b>QUES 3</b>	<b>16</b>	<b>2</b>	<b>8</b>	<b>6</b>	<b>0</b>	<b>16</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>16</b>	<b>3</b>	<b>10</b>	<b>3</b>
<b>QUES 4</b>	<b>11</b>	<b>2</b>	<b>6</b>	<b>3</b>	<b>0</b>	<b>11</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>11</b>	<b>2</b>	<b>9</b>	<b>0</b>
<b>QUES 5</b>	<b>14</b>	<b>2</b>	<b>5</b>	<b>7</b>	<b>0</b>	<b>14</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>14</b>	<b>2</b>	<b>5</b>	<b>7</b>
<b>QUES 6</b>	<b>13</b>	<b>2</b>	<b>7</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>13</b>	<b>0</b>	<b>0</b>	<b>13</b>	<b>4</b>	<b>7</b>	<b>2</b>
<b>QUES 7</b>	<b>14</b>	<b>2</b>	<b>3</b>	<b>6</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>14</b>	<b>0</b>	<b>14</b>	<b>2</b>	<b>9</b>	<b>3</b>
<b>QUES 8</b>	<b>16</b>	<b>2</b>	<b>6</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>16</b>	<b>0</b>	<b>16</b>	<b>2</b>	<b>7</b>	<b>7</b>
<b>QUES 9</b>	<b>19</b>	<b>1</b>	<b>3</b>	<b>14</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>19</b>	<b>0</b>	<b>19</b>	<b>8</b>	<b>5</b>	<b>6</b>
<b>QUES 10</b>	<b>13</b>	<b>2</b>	<b>6</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>13</b>	<b>13</b>	<b>5</b>	<b>2</b>	<b>6</b>
<b>Total mark</b>	<b>150</b>	<b>23</b>	<b>51</b>	<b>61</b>	<b>15</b>	<b>65</b>	<b>15</b>	<b>55</b>	<b>15</b>	<b>150</b>	<b>43</b>	<b>62</b>	<b>45</b>
<b>Norm mark</b>	<b>150</b>	<b>22,5</b>	<b>52,5</b>	<b>60</b>	<b>15</b>	<b>65</b>	<b>15</b>	<b>55</b>	<b>15</b>	<b>150</b>	<b>45</b>	<b>60</b>	<b>45</b>
<b>Total %</b>	<b>100</b>	<b>15</b>	<b>34</b>	<b>41</b>	<b>10</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>29</b>	<b>41</b>	<b>30</b>
<b>Norm %</b>	<b>100</b>	<b>15</b>	<b>35</b>	<b>40</b>	<b>10</b>					<b>0</b>	<b>30</b>	<b>40</b>	<b>30</b>