GAUTENG DEPARTMENT OF EDUCATION
SENIOR CERTIFICATE EXAMINATION

POSSIBLE ANSWERS FOR : FUNCTIONAL PHYSICAL SCIENCE SG (First Paper: Physics)

QUESTION 1

1. A.
2. B.
3. B.
4. B.
5. C.
6. D.
7. B.
8. A.
9. D.
10. D.
11. B.
12. B.
13. A.
14. C.
15. B.

15x3=(45)

QUESTION 2

2.1 No reading because magnet is not moving. (2)

2.2.1 NORTH: Lenz's law: magnet pole induced that opposes the movement. (2)

2.2.2 Big needle movement to one side; big and quick movement to the otherside; returns to zero. (4)

2.3.1 $\frac{Vp}{Np} = \frac{Vs}{Ns}$

$\frac{Vp}{600} = \frac{5}{400} \quad Vp = \frac{600(5)}{400} = 7{,}5V$ (4)

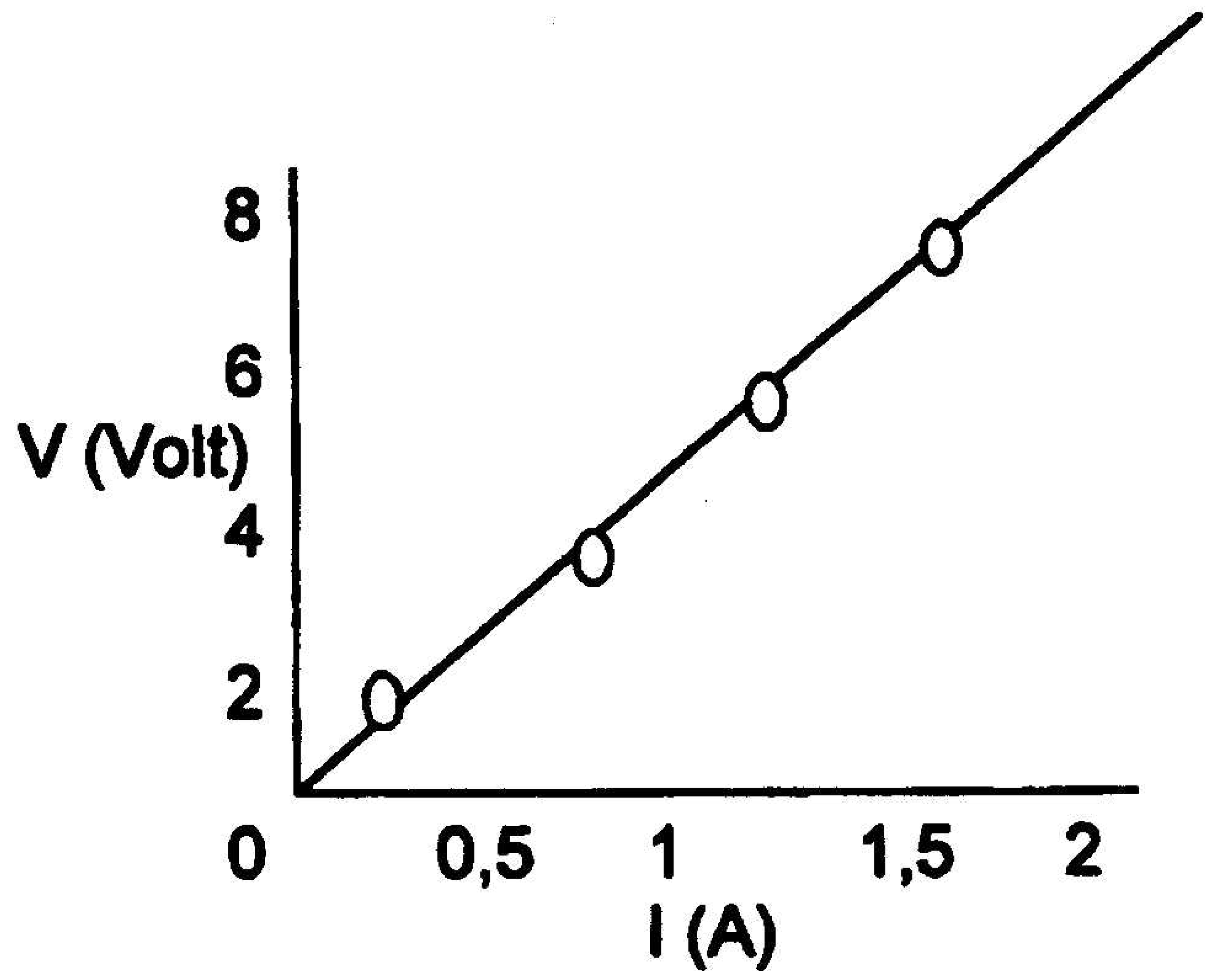
2.3.2 $I = \frac{Vs}{Rs} = \frac{5V}{10\,\Omega}$
$= 0{,}5A$ (3)

2.3.3 Alternating current. (1)

[16]

QUESTION 3

3.1



(4)

3.2 $R = \frac{V}{I}$

$= \frac{8-0}{2-0}$ (4)

$= \frac{8}{2} = 4\Omega$

3.3 Allows a set of different pairs of potential difference / current to be recorded. (3)

3.4 Changes experience resistance because atoms vibrate and collide. The longer the current is flowing the more heat energy the atoms are receiving, thus more vibrations and collisions and resistance to the charges. (2)

[13]

QUESTION 4

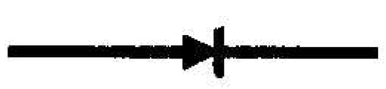
4.1 D.C.: Current flow is constant and the emf does not differ.

A.C.: Current strength is not constant. Its direction differs from maximum in both directions and returns to zero. (4)

4.2.1 Diode. (2)

4.2.2 Rectify alternating current to direct current. (2)

4.2.3 Half wave rectification. (2)

4.2.4 

(2)

4.3.1 Capacitor. (2)

4.3.2 (a) To smooth the wave by. (2)

4.3.2 (b) Storing the charge. (2)

GAUTENGSE DEPARTEMENT VAN ONDERWYS
SENIORSERTIFIKAAT-EKSAMEN

MOONTLIKE ANTWOORDE VIR : FUNKSIONELE NATUUR- EN SKEIKUNDE SG
(Eerste Vraestel: Fisika)

VRAAG 1

1. A.
2. B.
3. B.
4. B.
5. C.
6. D.
7. B.
8. A.
9. D.
10. D.
11. B.
12. B.
13. A.
14. C.
15. B.

15X3=(45)

VRAAG 2

2.1 Geen lesing want magneet beweeg nie. (2)

2.2.1 NOORD: Lenz se wet: magneetpool geïnduseer wat beweging teëstaan. (2)

2.2.2 Groot uitwyking van naald na eenkant; vinnig en groot uitwyking na anderkant; keer terug na nul. (4)

2.3.1 $\frac{Vp}{Np} = \frac{Vs}{Ns}$

$$\frac{Vp}{600} = \frac{5}{400} \quad Vp = \frac{600(5)}{400} = 7{,}5V$$ (4)

2.3.2 $I = \frac{Vs}{Rs} = \frac{5V}{10\Omega}$

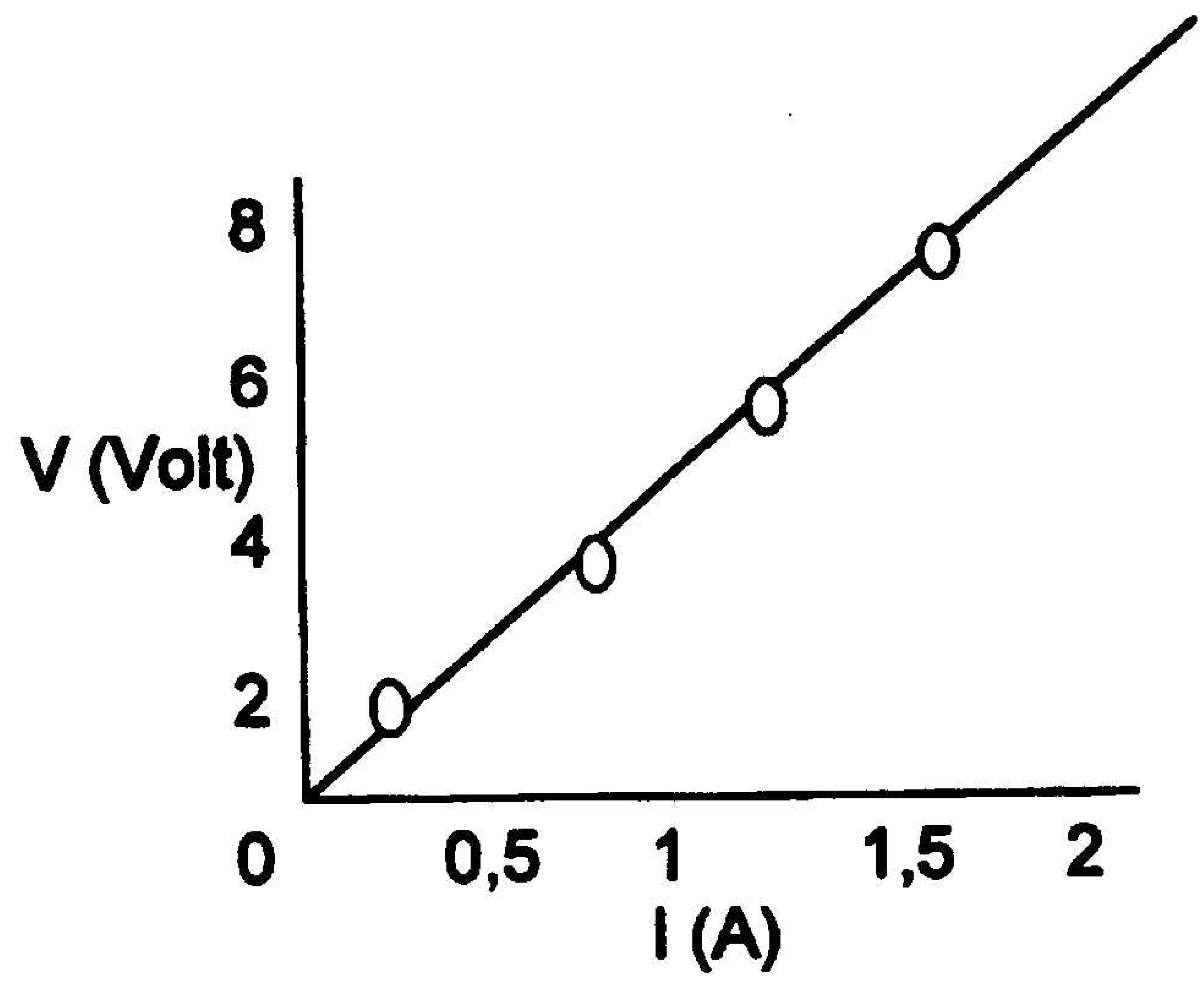
$= 0{,}5A$ (3)

2.3.3 Wisselstroom (1)

[16]

VRAAG 3

3.1



(4)

3.1 $R = \dfrac{V}{I}$

$= \dfrac{8-0}{2-0}$ (4)

$= \dfrac{8}{2} = 4\Omega$

3.3 Stel 'n paar verskillende potensiaalverskil- en stroomsterktelesings daar. (3)

3.4 Ladings ondervind weerstand a.g.v. atome wat vibreer en bots. Hoe langer stroom vloei hoe meer warmte-energie ontvang die atome, dus meer vibrasies en botsings dus groter weerstand aan ladings. (2)

[13]

VRAAG 4

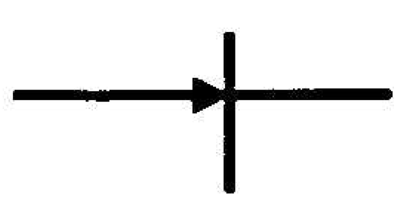
4.1 G.S.: Stroomvloei is konstant en die emk wissel nie.

W.S.: Die grootte van die stroom is nie konstant nie. Dit wissel van rigting bereik maksimum in beide rigtings en daal weer na nul. (4)

4.2.1 Diode. (2)

4.2.2 Rig wisselstroom gelyk na gelykstroom (gelykrigter). (2)

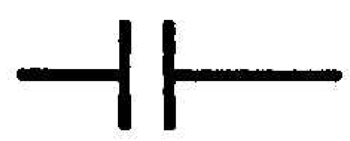
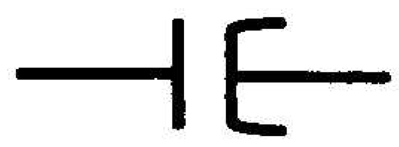
4.2.3 Halfgolfgelykrigting. (2)

4.2.4  (2)

4.3.1 Kapasitor (2)

4.3.2 (a) Vermoë om ladings te stoor. (2)

4.3.2 (b) Om halfgolfgerigte pulse af te plat. (2)

4.3.3  of  (2)

[20]

VRAAG 5

5.1.1 Versteurings/pulse is loodreg m.b.t. bewegingsrigting van die golf. (2)

5.1.2 $T = \frac{1}{f} = 0{,}5\text{s}$ (2)

5.1.3

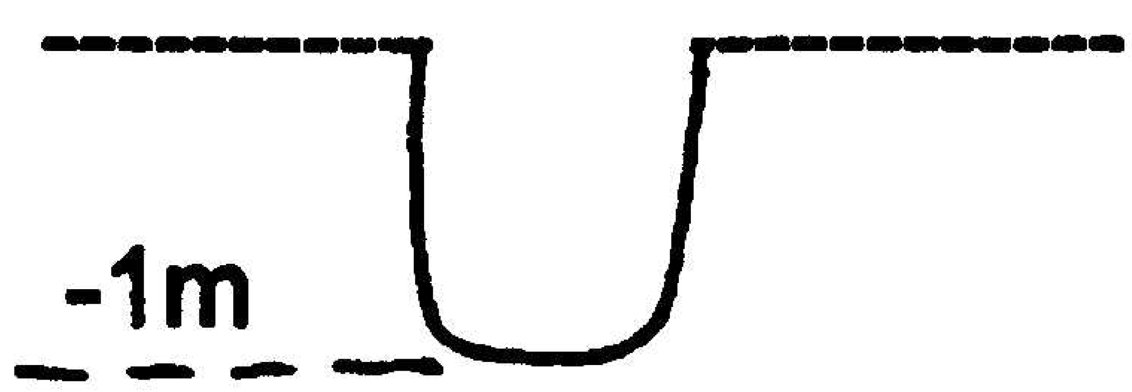
$f = \frac{1}{T} = \frac{1}{0{,}5} = 2\text{Hz}$ (3)

5.1.4 $V = f\lambda = 2(0{,}5) = 1\text{m/s}$ (4)

5.2.1 Destruktiewe interferensie. (2)

5.2.2 1 m + (-2 m) = - 1 m (2)

5.2.3



(2)

5.3.1 Spoed en golflengte verander. (2)

5.3.2 Spoed en golflengte neem af. (4)

[23]

VRAAG 6

6.1 20 W Blou: blou lig het 'n hoë frekwensie. (4)

6.2.1 Fotone is die draers van energie buite die sel (straling). (1)

6.2.2 Elektrone is draers van lading binne in sel. (1)

6.3 Daar sal geen lesing wees nie. Frekwensie van rooi lig steeds te laag. (4)

6.4 Die invallende lig van die gloeilamp. (2)

[12]

VRAAG 7

7.1 Lynspektrum. (2)

7.2 Elektrone wat versnel na hoër energievlakke en terugval en lig met 'n spesifieke frekwensie uitstraal. (4)

7.3 Frekwensie. (2)
[8]

VRAAG 8

8.1 Vrystelling van elektrone uit 'n verhitte metaal (3)

8.2.1 Anode (1)

8.2.2 Katode (1)

8.3 Katode verhit word sodat elektrone kan afkook na anode (2)

8.4.1 Katode straalbuise (2)

8.4.2 Ossiloskoop (2)

8.5 GEEN EFFEK. Hierdie battery verskaf slegs energie om die katode te verhit. (2)
[13]

TOTAAL: 150