

**GAUTENG DEPARTMENT OF EDUCATION /
GAUTENGSE DEPARTEMENT VAN ONDERWYS
SENIOR CERTIFICATE EXAMINATION /
SENIORSERTIFIKAAT-EKSAMEN**

**FUNCTIONAL PHYSICAL SCIENCE SG
FUNKSIONELE NATUUR- EN SKEIKUNDE SG
(First Paper: Physics/Eerste Vraestel: Fisika)**

POSSIBLE ANSWERS / MOONTLIKE ANTWOORDE SUPP 2007

QUESTION 1 / VRAAG 1

- 1.1 C
- 1.2 A
- 1.3 A
- 1.4 C
- 1.5 B
- 1.6 C
- 1.7 B
- 1.8 A
- 1.9 B
- 1.10 C
- 1.11 D
- 1.12 D
- 1.13 A
- 1.14 D
- 1.15 B

15x3=[45]

QUESTION 2 / VRAAG 2

- 2.1 2.1.1 Clockwise. / Kloksgewys (regsom). (2)
- 2.1.2 Motor effect: A force is experienced by a current bearing conductor in a magnetic field. (2)
- 2.1.2 Motoreffek: 'n Stroomdraende geleier in 'n magneetveld sal 'n krag ondervind. (4)
- 2.1.3 Left-hand motor rule. / linkerhand-motorreël. (2)
- 2.1.4 Clockwise. / Kloksgewys. (2)
- 2.1.5 Electric motors and (A) (V) (G). / Elektriese motors en (A) (V) (G). (4)
- 2.1.6 More turns; / Meer windings; (2)
Larger current strength; / Sterker stroom; (2)
Stronger magnetic field. / Sterker magneetveld. (2)
- 2.2 2.2.1 Brushes. / Borsels. (2)
- 2.2.2 Splitring commutator. / Splitringskommulator. (2)
- 2.3 To change the direction of the current so that the turn keep rotating in one direction. (3)
- 2.3 Om stroomrigting om te keer sodat die winding in dieselfde rigting bly roteer. (3)

[27]

QUESTION 3 / VRAAG 3

- 3.1 AC: Current strength and -direction change constantly
 DC: Current strength and -direction stay constant

WS: *Stroomsterkte en -rigting wissel gedurig.*

GS: *Stroomsterkte en -rigting bly konstant.*

(4)

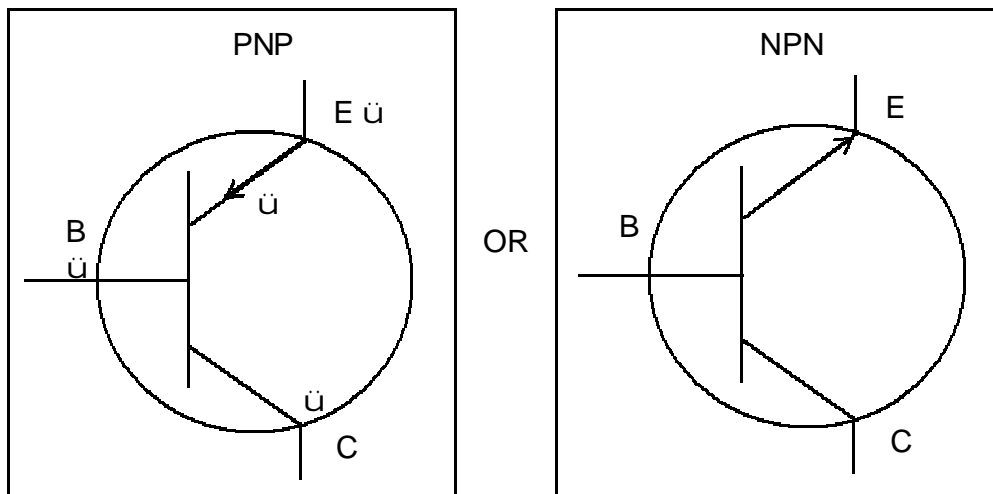
- 3.2 3.2.1 Diode. üü

(2)

- 3.2.2 To rectify current. / *Om stroom gelyk te rig./ in slegs een rigting te laat vloei*
 To allow current to flow in only one direction

(2)

- 3.3



(4)
[12]

QUESTION 4 / VRAAG 4

- 4.1 4.1.1 Low, so as not to influence current in series / *Laag sodat dit nie stroom in serie beïnvloed nie.*

(2)

- 4.1.2 High

Hoë

(2)

$$4.2 \quad \frac{1}{R_P} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \frac{1}{R_5} = 0,33 + 0,2 = 0,53$$

$$R_P = \frac{1}{0,53} = 1,89 \Omega$$

$$R_T = R_P + R_S = 1,89 + 7 + 9 + 17,89 \Omega$$

(6)

4.3 $I = \frac{V_P}{R_P} = \frac{12}{1,8} = 6,35 \text{ A}$ (4)

4.4 Decreases. / Afneem. (2)

4.5 $I \downarrow = \frac{V}{R \uparrow}$
 Resistance of parallel circuit increases.
 Resistance of series circuit increases.
Weerstand in parallelkring neem toe.
Weerstand in seriekring neem toe. (4)

[20]

QUESTION 5 / VRAAG 5

5.1 Blue and dark stripes. / Blou en donker strepe. (2)

5.2 Interference because of diffraction. / Interferensie a.g.v. diffraksie. (2)

5.3 No difference. / Geen verskil. (2)

5.4 Red and dark stripes further apart than in Question 5.1.
Rooi en donker strepe verder uitmekaar as in Vraag 5.1. (2)

5.5 Red's longer wavelength causes it to be further apart than blue.
Rooi se golflengte is langer, vandaar dat hulle verder uitmekaar is. (4)

5.6 Red and dark stripes will be closer together.
Rooi en donker strepe nader aan mekaar. (2)

5.7 The further apart the slits the better the diffraction: the distance between points of constructive interference is decreased
Hoe verder die spleete uit mekaar, hoe kleiner die afstand tussen 2 konstruktiewe interferensiepunte (4)

5.8.1 Gamma & X-rays. / Gamma- & X-strale. (2)

5.8.2 (a) $f = \frac{1}{T} = \frac{1}{4 \times 10^{-15}}$
 $= 2,5 \times 10^{14} \text{ Hz}$ (2)

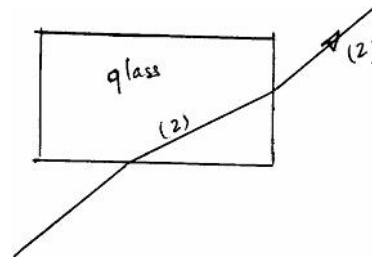
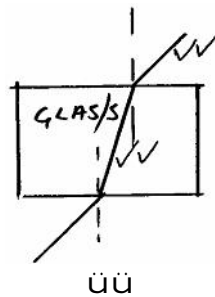
$c = f \lambda$
 $\lambda = \frac{c}{f} = \frac{3 \times 10^8}{2,5 \times 10^{14}}$
 $= 1,2 \times 10^{-6} \text{ m}$ (4)
[26]

QUESTION 6 / VRAAG 6

6.1 6.1.1 Speed, direction and wavelength change.

Spöed, rigting en golflengte verander. (4)

6.1.2



(4)

6.1.3 Refraction / Breking (2)

6.2 6.2.1 See if it undergoes any more dispersion through an even sided prism, or view light through a diffraction grating or spectroscope.

Kyk of dit nog dispersie deur 'n gelyksydige prisma ondergaan, of bekyk lig deur 'n diffraksierooster of spektroskop. (2)

6.2.2 Linespectrum. / Lynspektrum. (1)

6.2.3 e^- accepts energy; moves to further energy level/s; radiates extra energy as a certain colour; moves (fall) back to ground level energy level.

e^- wat energie opneem; beweeg na verdere energievlakke; straal verkrygte energie uit as sekere kleur; beweeg (val) terug na grondtoestand-energievlak. (4)

6.2.4 No. / Nee. (1)

6.2.5 Identifying of unknown metals with their line spectra of their flame salts.

Identifisering van onbekende metale deur hul vlamsoute se lynspektrums. (2)
[20]

TOTAL / TOTAAL: 150