

**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
Feb / Mar / Maart 2006**

QUESTION 1 / VRAAG 1

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

15x3=[45]

QUESTION 2 / VRAAG 2

- 2.1 2.1.1 Alternating current
Wisselstroom (2)
- 2.1.2 Step-up transformer
Verhogingstransformator (2)
- 2.1.3 High voltage
Hoë spanning (2)
- 2.1.4 Step-down transformer
Verlagingsstransformator (2)
- 2.1.5 C (2)
- 2.1.6 C (2)
- 2.2 Alternating allows the current and voltage transmitted to be easily transformed
Wisselstroom makliker te verhoog / verlaag-stroom en p.v. wat versprei word. (2)
- 2.3 Prevent the propagation of eddy currents in the iron core
Voorkom die ontstaan van werwelstroompies in die ysterkern (3)
- [18]**

QUESTION 3 / VRAAG 3

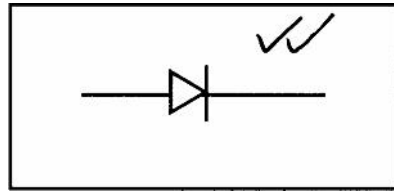
- 3.1 3.1.1 3V (2)
- 3.1.2 $1/R_p = 1/R_1 + 1/R_2 = 1/3+3+3+3+3+3 + 1/3+3+3$
 $= 0,056+0,111 = 0,167$
 $R_p = 1/0,167 = 6 \text{ } \Omega$ (6)
- 3.1.3 $R_{TOT} = R_p + R_s = 6+3 = 9 \text{ } \Omega$ (2)
- 3.1.4 $I = V/R$
 $= 3 \text{ V}/9 \text{ } \Omega = 0,33 \text{ A}$ (4)
- 3.1.5 $V = I r_p = 0,33(6) = 1,98 = 2 \text{ V}$ (4)
- [18]**

QUESTION 4 / VRAAG 4

- 4.1 4.1.1 Sliprings
Sleepringe (1)
- 4.1.2 Brushes
Borsels (1)
- 4.2 P -> Q (2)

- 4.3 4.3.1 Place a diode in circuit
'n Diode invoeg (2)

4.3.2



(2)

- 4.4 A.C : Magnitude and direction of current changes constantly
D.C : Magnitude and direction of current stay constant
W.S : *Grootte en rigting van stroom wissel gedurig*
G.S : *Grootte en rigting van stroom bly konstant* (4)

- 4.5 More turns; greater rotational speed and stronger magnetic field (any two)
Meer windings; groter rotasiespoed en sterker magneetveld (enige twee) (4)
[16]

QUESTION 5 / VRAAG 5

- 5.1 5.1.1 Repeating dark, green, dark stripes
Herhalende donker, groen, donker strepe (2)
- 5.1.2 Interference pattern as result of diffraction of light through two adjacent slits
Interferensiestrepe a.g.v ligdiffraksie deur dubbelspleet (4)
- 5.1.3 The same : No alterations
Dieselfde : Geen verandering nie (2)
- 5.1.4 Interference pattern of red and black lines (2), which are broader than the pattern above (2)
Interferensie en swart strepe (2) wat verder uitmekaar is as die groen strepe (2) (2)
- 5.1.5 Further apart because of red's longer wave length.
Langer golflengte van rooi laat strepe verder uitmekaar as groen s'n val (4)
- 5.1.6 The stripes will be closer together
Die strepe gaan nader aan mekaar wees (2)
- 5.1.7 Less diffraction taking place
Minder diffraksie wat plaasvind (2)
[18]

QUESTION 6 / VRAAG 6

- 6.1 6.1.1 Speed reduction, and refraction – Ray is partially reflected and absorbed
Spood verminder, en breek – Strale is gedeeltelik weerkaats en geabsorbeer. (6)
- 6.1.2 A. Reduce *Afneem*
B. Remains the same *Bly dieselfde*
C. Remains the same *Bly dieselfde*
D. Reduce *Afneem* 4x1=(4)
- 6.2 6.2.1 Radio waves
Radiogolwe (2)
- 6.2.2 Ultra-violet rays
Ultra-violet strale (2)
- 6.3 6.3.1 Line spectra
Lynspektra (2)
- 6.3.2 Energy radiated as light by charged electrons, fall to lower energy levels
Energie uitgestraal as lig deur opgewekte elektrone, val terug na laer energie vlakke (4)
- 6.3.3 No
Nee (1)
- 6.3.4 Identifying elements through their line spectra of their flame colours
Identifisering van elemente deur hul lynspektra van hul vlamkleure. (2)
- [22]**

QUESTION 7 / VRAAG 7

- 7.1 7.1.1 A; C (2)
- 7.1.2 Photo-cell (B Cathode) consists of metal with lower threshold frequency that releases electrons
Foto-sel (B Katode) bestaan uit metaal met laer drumpelfrekwensie wat wel elektrone vrystel (4)
- 7.1.3 A1 will have a bigger reading because of a higher intensity bulb
A2 no reading: threshold frequency of cathode still too high
A1 sal 'n groter lesing gee a.g.v. hoërintensiteit-gloeilamp
A2 geen lesing: drumpelfrekwensie van katode nog steeds te hoog (4)
- 7.2 Mechanical friction *Meganiese wrywing*
Thermionic emission *Termioniese emissie*
Gas ionisation *Gas-ionisasie* (3)
- 7.3 Burglar alarms / soundtracks of films
Dief alarm / klankbaan van films (2)
- [13]**

TOTAL / TOTAAL: 150**END / EINDE**