

**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**

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**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

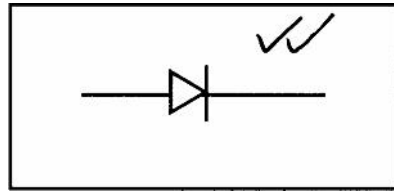
- 3.1 3.1.1 3V (2)
- 3.1.2  $1/R_p = 1/R_1 + 1/R_2 = 1/3+3+3+3+3+3 + 1/3+3+3$   
 $= 0,056+0,111 = 0,167$   
 $R_p = 1/0,167 = 6 \text{ O } \ddot{u}$  (6)
- 3.1.3  $R_{TOT} = R_p + R_s = 6+3 = 9 \text{ O}$  (2)
- 3.1.4  $I = V/R$   
 $= 3 \text{ V}/9 \text{ O} = 0,33 \text{ A}$  (4)
- 3.1.5  $V = I r_p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