GAUTENG DEPARTMENT OF EDUCATION
SENIOR CERTIFICATE EXAMINATION

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

1.1 B 1.2 C 1.3 B 1.4 C 1.5 C 1.6 B 1.7 C
1.8 D 1.9 B 1.10 C 1.11 D 1.12 B 1.13 B 1.14 A
1.15 B 3x15=**[45]**

2.1 Die rigting van die induksiestroom deur die spoel is sodanig dat die stroom 'n magneetveld veroorsaak wat neig om die beweging van die magneet teen te werk.

The direction of the induction current through the coil is such that the current propagates a magnetic field which tends to resist the magnet's movement. (4)

2.2 Verlagings transformator/*Stepdown transformer* (1)

2.3 $\frac{Vs}{Vp} = \frac{Ns}{Np} \rightarrow Vs = \frac{NsVp}{Np}$

$= \frac{1(220)}{(300)}$

$= 0,73V$ (5)

2.4 $IsVs = IpVp \rightarrow Is = \frac{IpVp}{Vs} = \frac{15(220)}{0,73} = 4\,520,55A$ (5)

2.5 Voorkom die vorming van werwelstroompies
Prohibits the propagation of eddy currents (3)

2.6 Groot stroom en lae weerstand van ring laat dit so warm word.
Large current and low resistance of ring cause the big heat build-up. (3)
[21]

3.1.1 Stroombaan Z/*Circuit Z* (1)

3.1.2 Stroombaan X/*Circuit X* (1)

3.2.1 $I = \frac{V}{R} = \frac{240}{50+50} = \frac{240}{100} = 2,4A$ (5)

3.2.2 $I = \frac{V}{R} = \frac{240}{50 + B(0)} = 4,8A$ (4)

3.2.3 $\frac{1}{Rp} = \frac{1}{50} + \frac{1}{50} = 0,02 + 0,02 = 0,04$

$Rp = 25\Omega$

$I = \frac{V}{Rp} = \frac{240}{25} = 9,6A$ (6)

3.3.1 Stroombaan X/*Circuit X* (1)

3.3.2 Stroombaan Z/*Circuit Z* (1)
[19]

4.1.1 3m + (-2m) = 1m (2)

4.1.2 Destruktiewe interferensie/*Destructive interference* (2)

4.1.3 Beweeg met dieselfde grootte en rigting voort/*Move on with the same magnitude and direction* (2)

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

4.2.2 Nodale en anti-nodale lyne/*Nodal and anti-nodal lines.* (2)

4.2.3 Deur konstruktiewe en destruktiewe interferensie/*Through constructive and destructive interference* (2)

4.2.4 Openinge te verklein; frekwensie van golwe te verhoog/*Decrease the size of the openings; increase the frequency of the waves* (4)

4.3.1 $\frac{20\ mm}{1000} = 0,02\ m$ (2)

4.3.2 $f = \frac{1}{T} = \frac{1}{0,2} = 5Hz$ (3)

4.3.3 $V = f\lambda = 5(0,08)$
$= 0,4\ m/s$ (4)
[25]

5.1 Met dispersie deur 'n 60° prisma/*With dispersion through a 60° prism / diffraction grating / diffractometer* (3)

5.2 Nee/*No*. Met 'n spektroskoop sal lynspektrum waargeneem word. */With the aid of a spectroscope a line spectrum will be observed.* (5)

5.3 Beskou lig deur een polariedskyf. Indien lig nie donker ("obliterated") vertoon, is dit nie gepolariseerd. / *No light will penetrate crossed polaroid discs.* (3)
[10]

6.1 Wisselstroom: Grootte en rigting verander periodiek.
Alternating current: Magnitude and direction of the current change periodically.

Gelykstroom: Grootte kan wissel en rigting van die stroom bly konstant.
Direct current: Magnitude may vary and direction of the current stays constant. (4)

6.2.1 'n Kapasitor/*A capacitor* (2)

6.2.2 Stoor lading/*Storing charge* (2)

6.2.3 Egalige afplatting van golfpatroon/*Smoothed direct current* (2)

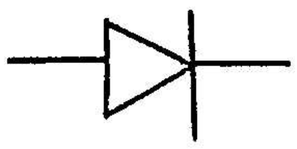
6.3.1 Verskynsel waar elektrone vrygestel word uit 'n verhitte metaal. */Phenomenon where electrons are emitted from a heated metal* (3)

6.3.2 Verhit die katode/*Heats the cathode* (2)

6.3.3 Sal bly by nul/*Will remain at zero* (2)

6.3.4 Negatiewe anode stoot elektrone af wat vrygestel is vanaf katode sodat geen stroom vloei. */ The negative anode will repel the electrons emitted from cathode so that no current flows*. (3)
[20]

7.1 'n Diode/*A diode* (2)

7.2  (2)

7.3 Kan by lae potensiale werk
Kan by hoë frekwensies gebruik word
Laer verstrooiingsvermoë
Hoë weerstand teen radioaktiewe bestraling
Kompakte instrument
Geen verhitting nodig vir inwerkingstelling (enige twee)

Can operate at low potentials
Can be used at high frequencies
Lower distortion abilities
High resistance against radio-active radiation
Compact device
No preheating required for operation (any two). (4)

7.4 Die gelykgerigte stroom is vollediger (afgeplat) */ The rectified current is more complete (smoothed)* (2)
[10]

[150]

END