higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NASIENRIGLYN

NASIONALE SERTIFIKAAT

INDUSTRIËLE ELEKTRONIKA N1

10 APRIL 2018

Hierdie nasienriglyn bestaan uit 7 bladsye.

Kopiereg voorbehou

VRAAG 1

1.1

1.1.1	F
1.1.2	M
1.1.3	J
1.1.4	B
1.1.5	C
1.1.6	D
1.1.7	E
1.1.8	G
1.1.9	H
1.1.10	I

(10 × 1) (10)

1.2 1.2.1

$$\frac{1}{R_{//}} = \frac{1}{R_2} + \frac{1}{R_3}$$

$$\frac{1}{R_{//}} = \frac{1}{15} + \frac{1}{20} \surd$$

$$\frac{1}{R_{//}} = \frac{4+3}{60} \surd$$

$$\frac{1}{R_{//}} = \frac{7}{60}$$

therefore

$$R_{//} = \frac{60}{7} \surd$$

$$R_{//} = 8,571\Omega \surd$$

OF

$$R_{//} = \frac{R_2 \times R_3}{R_2 + R_3} \surd$$

$$R_{//} = \frac{15 \times 20}{15 + 20} \surd$$

$$R_{//} = \frac{300}{35} \surd$$

$$R_{//} = 8,571\Omega \surd$$

(4)

1.2.2

$$R_S = R_1 + R_4$$

$$= 10 + 25 \surd$$

$$= 35\Omega \surd$$

(2)

1.2.3

$$R_T = R_{//} + R_S \surd$$

$$= 8,571 + 35 \surd$$

$$= 43,571\Omega \surd$$

(3)

1.2.4

$$I_T = \frac{V_T}{R_T} \surd$$

$$= \frac{50}{43,571} \surd$$

$$= 1,148A \surd$$

(3)

1.2.5 $V_{//} = I_T \times R_{//} \surd$

$= 1,148 \times 8,571 \surd$

$= 9,840V \surd$ (3)

1.2.6

$P_{//} = V_{//} \times I \surd$

$= 9,480 \times 1,148 \surd$ OF

$= 11,3W \surd$

$P_{//} = \frac{V_{//}^{\ 2}}{R_{//}} \surd$

$= \frac{9,840^2}{8,571} \surd$ OR

$= 11,3W \surd$

$P_{//} = I^2 \times R_{//} \surd$

$= 1,148^2 \times 8,571 \surd$

$= 11.3W \surd$ (3)

1.2.7 Rooi-Groen-Swart-Rooi (4)

1.2.8 $I_{R2} = \frac{V_{//}}{R_2} \surd$

$= \frac{9,840}{15} \surd$

$= 0,656A \surd$ (3)

[35]

VRAAG 2

2.1 2.1.1 $\frac{I_S}{I_P} = \frac{N_P}{N_S}$

$\frac{I_S}{4,5} = \frac{5}{25} \surd$

$I_S \times 25 = 4,5 \times 5$

$I_S = \frac{4,5 \times 5}{25} \surd$

$= 0,9A \surd$ (3)

2.1.2 $\frac{V_P}{V_S} = \frac{I_S}{I_P}$

$\frac{240}{V_S} = \frac{0,9}{4,5} \surd$

$V_S \times 0,9 = 240 \times 4.5$

$V_S = \frac{240 \times 4,5}{0,9} \surd$

$= 1200V \surd$

OF

$\frac{V_P}{V_S} = \frac{N_P}{N_S}$

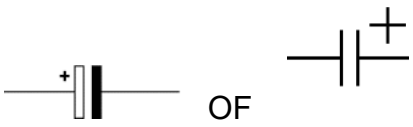
$\frac{240}{V_S} = \frac{5}{25} \surd$

$V_S \times 5 = 240 \times 25$

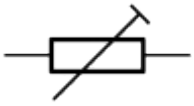
$V_S = \frac{240 \times 25}{5} \surd$

$= 1200V \surd$ (3)

2.1.3 Uitgebrande wikkelings wat deur oormatige stroom veroorsaak is
Kortsluitwikkelings tussen primêre en sekondêre wikkelings
Oop kring primêre en of sekondêre wikkelingspen
Wikkelings wat aan die kern geaard is
Kortsluitings tussen naasmekaarliggende draaie van draad
(Enige DRIE x 1 punt elk) (3)

2.2 2.2.1  OF

2.2.2 

2.2.3 

2.2.4 

2.2.5 

2.2.6  OF 

(6 × 1) (6)

2.3 2.3.1 Ohm

2.3.2 Henry

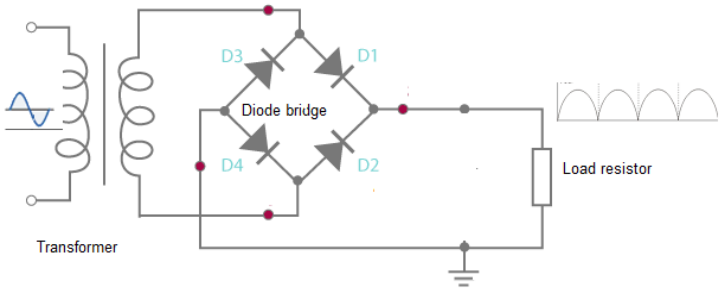
2.3.3 Farad

2.3.4 Volt

2.3.5 Volt (5)
[20]

VRAAG 3

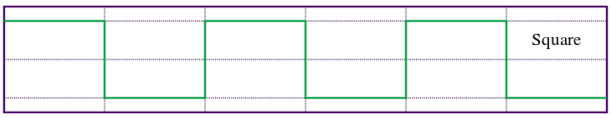
3.1



Korrekte diagram = 6 punte
Golfvorms en name = 4 punte
As diodes nie korrek geposioneer is nie, trek 2 punte af. (10)

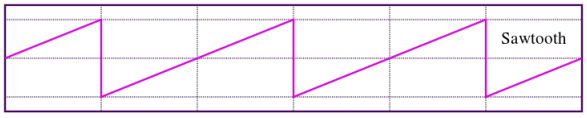
3.2
- Lengte
- Dwarsdeursnee area
- Tipe materiaal
- Temperatuur (4)

3.3 3.3.1



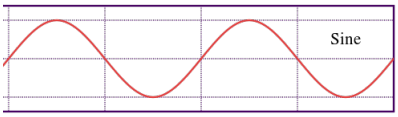
(2)

3.3.2



(2)

3.3.3



(2)

3.4 3.4.1
- Akkuraat
- ‘Auto range’ funksie / eienskap
- ‘Out of’ eienskap
- Geen fout van parallaks
- Groot vertoonskerm
- Maklik om te gebruik
- Het ‘n ‘hou’ funksie om lesings te stoor (Enige 3 × 1)

- Fout van parallaks
- Nie akkuraat nie
- Ohm-skaal is nielineêr
- Moeilik om te gebruik
- Wyser moet aanhoudend gezero word Enige 2 × 1) (5)

[25]

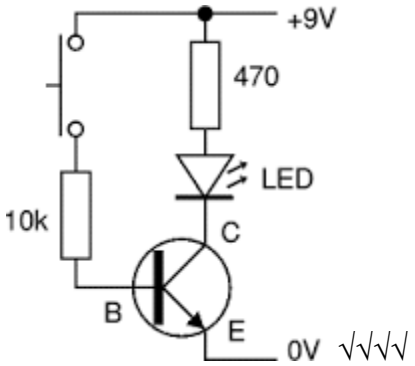
VRAAG 4

4.1

4.1.1	D
4.1.2	D
4.1.3	D
4.1.4	C
4.1.5	C
4.1.6	D
4.1.7	D
4.1.8	B
4.1.9	B
4.1.10	C

(10 × 1) (10)

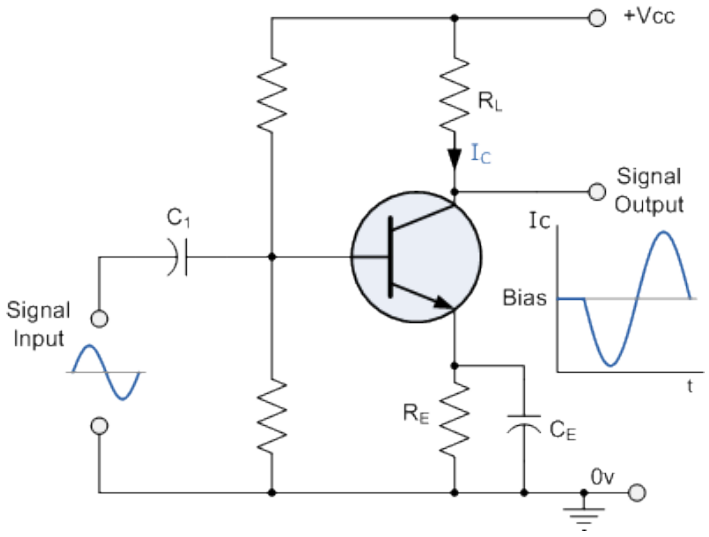
4.2 4.2.1



√√√√ (4)

Enige soortgelyke diagram = 3 punte (basis moet geskakel wees + vir pnp)
Benaminge = 1 Punt

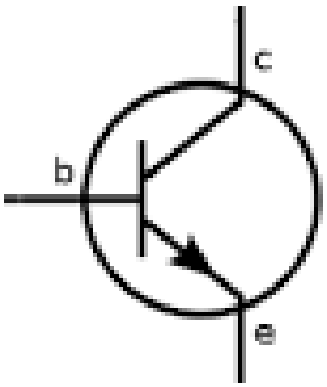
4.2.2



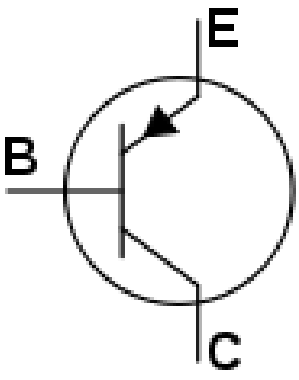
(4)

Enige soortgelyke diagram = 3 punte
Korrekte invoer en afvoer golfvorms = half punt elk

4.2.3



NPN



PNP (2)

[20]

TOTAAL: 100

Kopiereg voorbehou