

# Gr.12 Science Paper 2 Memo

June 00

- |                               |                                  |       |
|-------------------------------|----------------------------------|-------|
| 1.1 Coulomb                   | 2.1 $J \cdot s^{-1}$             | 3.1 B |
| 1.2 Gamma                     | 2.2 Gamma/Longest                | 3.2 C |
| 1.3 isomers/homologous series | 2.3 directly prop                | 3.3 D |
| 1.4 functional group          | 2.4 ... $H_2O$ / v.d. Waals with | 3.4   |
| 1.5 amine                     | 2.5 ... Carboxyl group           | 3.5 D |

Carboxylic acids  
Alcohols  
Ketones contain carbonyl group

$$4.1 \frac{1}{R_{eq}} = \frac{1}{R_1} + \frac{1}{R_2} = \frac{1}{9} + \frac{1}{23}$$

$$R = 6,47 \Omega$$

$$R_{tot} = 6,47 + 2 + 0,2 = 8,67 \Omega$$

$$I = \frac{V}{R} = \frac{12}{8,67} = 1,38 A$$

(12.1.3) (8)

4.2 Decreases

Effective resistance of circuit decreases (No current through 15  $\Omega$  and 8  $\Omega$  resistances)  
Current increases  
Ir (lost volts) increases  
 $V_{external}$  decreases

5.1 DC A splitting-commutator is used to ensure that the current in the loop remains in the same direction through the complete cycle.

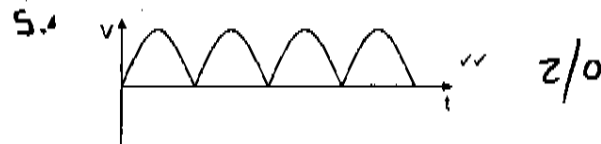
(12.1.2) (2)

5.2 B to A

(12.1.2) (1)

5.3 Electromagnetic induction / Elektromagnetiese induksie

(12.2.1) (1)



(12.1.2) (2)

5.5 When the magnet rotates the changing magnetic flux cuts through the windings of the coil and induces a current in the coil.

(12.2.3) (2)  
[8]

6.1.1  $V_{rms} = \frac{V}{\sqrt{2}} \therefore V_{max} = 15(\sqrt{2}) = 21,21 V$

6.1.2  $R_{total} = 6,2 + 10,4 = 16,6 \Omega$   
 $I = \frac{V}{R} = \frac{15}{16,6} = 0,91 A$

$I_{rms} = \frac{I_{max}}{\sqrt{2}} = \frac{1,14}{\sqrt{2}} = 0,81 A$

$P_{av} = \frac{V_{rms}^2}{R} = \frac{6,42}{10,4}$

$P = I^2 R = (0,81)^2 (10,4) = 6,76 W$  / 6,82 W (12.1.3) (6)

6.2 • With alternating current long distance transmission may be at high voltage and low current, less loss in energy and therefore more energy available for use.

• AC allows power stations to be relatively remote from users, so users are isolated from environmental affects of the stations. This remote delivery may save energy elsewhere (e.g. goods transport and commuting). (2) [10]

• Transformers can be used...

