



education

Department of
Education
FREE STATE PROVINCE

PRACTICAL TASK / *PRAKTIESE TAAK*

GRADE/*GRAAD* 11

**PHYSICAL SCIENCES
*FISIESE WETENSKAPPE***

SEPTEMBER 2018

MEMORANDUM

MARKS / *PUNTE* : 15

**This memorandum consists of 3 pages.
Die memorandum bestaan uit 3 bladsye.**

QUESTION 1/VRAAG 1

1.1 ANY 2 / ENIGE 2

1 ✓ 4 ✓ 5

(2)

1.2 ANY 2 / ENIGE 2

No Nr	What is wrong with the circuit?/Wat is verkeerd met die stroombaan
2 ✓	Voltmeter is incorrectly connected. ✓/ die voltmeter is verkeerd geskakel Voltmeter is not connected across the resistor./ Die voltmeter is nie oor die weerstand geskakel nie. Voltmeter is connected across ammeter./ Die voltmeter is oor die ammeter geskakel
3 ✓	Positive terminals of cells are connected. ✓/ Die positiewe terminale van die selle is gekoppel Negative terminals of cells are connected./ Die negatiewe terminale van die selle is gekoppel Cells are not connected in series./ Selle is nie in serie geskakel Cells are connected in parallel./ Die selle is in parallel geskakel Potential difference across resistor is not equal to 3 V.
6	Voltmeter is not connected across the resistor and ammeter is not connected in series with resistor./ Die voltmeter is nie oor die resister en die ammeter in serie met die resister nie. Voltmeter is connected in series with resistor and ammeter in parallel with resistor./ Die voltmeter is in serie met die resister en die ammeter in parallel met die resister No current in resistor./ Daar is geen stroom deur die resister nie.

(4)

[6]

QUESTION 2/VRAAG 2**2.1 ANY 2 sets / ENIGE 2 stelle**

Co- ordinate / Koordinate	Potential difference / <i>Potensiaalverskil</i> (V)	Current/ Stroom (mA)
A	1,5	70
B	3,0	160
C	4,5	200
D	6,0	300

✓
✓

(2)

2.2

$\text{Gradient/Gradiënt} = \frac{\Delta I}{\Delta V} \quad \checkmark$ $= \frac{220 \times 10^{-3} - 70 \times 10^{-3}}{4,5 - 1,5} \quad \checkmark$ $= 0,05 \, \Omega^{-1} \quad \checkmark$	Any correct ratio from graph (not from co-ordinates A to D) is acceptable for gradient. Origin not allowed. / <i>Enige korrekte verhouding vanaf die grafiek (nie van koördinate A tot D nie) is aanvaarbaar vir gradiënt. Oorsprong nie toegelaat nie.</i> Accept an answer in $\text{m}\Omega^{-1}$. / <i>Aanvaar antwoord in $\text{m}\Omega^{-1}$</i> Acceptable range / <i>Aanvaarbare waardes:</i> $0,047 \, \Omega^{-1} - 0,051 \, \Omega^{-1}$ $(46,7 \, \text{m}\Omega^{-1} - 50,7 \, \text{m}\Omega^{-1})$
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(3)

2.3 POSITIVE MARKING FROM QUESTION 2.2 / MERK POSITIEF VANAF VRAAG 2.2

$$R = \frac{1}{\text{Gradient}} \quad \text{OR/OF} \quad R = \frac{\Delta V}{\Delta I}$$

$$= \frac{1}{0,05} \quad \checkmark \quad = \frac{4,5 - 1,5}{220 \times 10^{-3} - 70 \times 10^{-3}} \quad \checkmark$$

$$= 20 \, \Omega \quad \checkmark \quad = 20 \, \Omega \quad \checkmark$$

(2)

2.4 The current in the resistor is directly proportional to the potential difference across the resistor ✓✓ when temperature is constant. / *Die stroom in die resistor is direk eweredig aan die potensiaalverskil oor die resistor wanneer die temperatuur konstant gehou word.*(2)
[9]**GRAND TOTAL/GROOTTOTAAL: [15]**