education

Department:
Education
North West Provincial Government
REPUBLIC OF SOUTH AFRICA

PROVINCIAL ASSESSMENT/

PROVINSIALE ASSESSERING

GRADE/*GRAAD* **10**

MARKS/*PUNTE***: 150**

These marking guidelines consist of 13 pages.
Hierdie nasienriglyne bestaan uit 13 bladsye.

QUESTION 1: MULTIPLE-CHOICE QUESTIONS/
VRAAG 1: MEERVOUDIGEKEUSE-VRAE

1.1 C ✓✓   (2)

1.2 B ✓✓   (2)

1.3 C ✓✓   (2)

1.4 A ✓✓   (2)

1.5 D ✓✓   (2)

1.6 A ✓✓   (2)

1.7 C ✓✓   (2)

1.8 D ✓✓   (2)

1.9 B ✓✓   (2)

1.10 B ✓✓   (2)
[20]

QUESTION 2/ *VRAAG 2*

2.1   2.1.1 $580 \div 1\,000$ ✓ $= 0.58$ kg ✓   (2)

        2.1.2 $3 \times 3\,600$ ✓ $= 10\,800$ s✓   (2)

        2.1.3 $8 \times 1\,000$ ✓ $= 8\,000$ m ✓   (2)

        2.1.4 $80 \div 3.6$ ✓ $= 22.22$ m·s^{-1} ✓

               OR/*OF*

               $80 \times \dfrac{1\,000}{3\,600}$ ✓ $= 22.22$ m·s^{-1} ✓   (2)

        2.1.5 $0.000\,006$ m $= 6 \times 10^{-6}$ m ✓✓   (2)

2.2 $I = \dfrac{V}{R}$ ✓✓

                                         (2)
                                         [12]

QUESTION 3/ *VRAAG 3*

3.1   Scalar is a <u>physical quantity</u> with <u>magnitude</u> ONLY. ✓✓
    Vector is a <u>physical quantity</u> that has <u>magnitude AND direction</u>. ✓✓

    Skalaar is 'n <u>fiese hoeveelheid</u> met <u>grootte</u> ALLEENLIK. ✓✓
    Vektor is 'n <u>fisiese hoeveelheid</u> met <u>grootte EN rigting</u>. ✓✓   (4)

3.2   3.2.1   Scalar/ *Skalaar* ✓   (1)

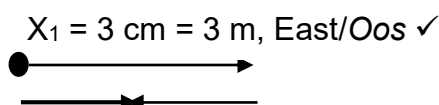   3.2.2   Vector/*Vektor* ✓   (1)

        3.2.3   Vector/ *Vektor* ✓   (1)

        3.2.4   Scalar/ *Skalaar* ✓   (1)

3.3   3.3.1   Resultant is defined as <u>a single vector/force</u> which has the <u>same</u>
               <u>effect as two or more vectors/forces together/</u>
               <u>combined.</u> ✓✓

               Resultant is gedefineer as 'n <u>enkele vector/krag</u> wat <u>dieselfde</u>
               <u>effek het as twee of meer vektore/kragte saam/</u>
               <u>gekombineerd</u>. ✓✓

                                            (2)

        3.3.2

$X_1 = 3$ cm $= 3$ m, East/*Oos* ✓

$X_{res} = 1$ cm $= 1$ m, East/*Oos* ✓ $X_2 = 2$ cm $= 2$ m, West/*Wes* ✓

                                            (3)

3.3.3

Option 1/*Opsie 1*	Option 2/ *Opsie 2*
<u>East/ *Oos* as</u> +	<u>West/ *Wes* as</u> +
$x_{res} = x_1 + x_2$	$x_{res} = x_1 + x_2$
$= (+3) + (-2)$ ✓	$= (+2) + (-3)$ ✓
$= 1$ m	$= -1$ m
$= 1$ m ✓, East/*Oos* ✓	$= 1$ m ✓, East/ *Oos* ✓

(3)

[16]

QUESTION 4/ *VRAAG 4*

4.1.1　The <u>rate</u> of <u>change of distance</u>. ✓✓
　　　　Die <u>tempo</u> van <u>verandering van afstand</u>.✓✓ (2)

4.1.2　Distance/*Afstand* = 2 000 + 1 500 ✓ = 3 500 m ✓ (2)

4.1.3

Positive marking from Q 4.1.2/ *Positiewe nasien vanaf V 4.1.2*
$v_{ave/gmd} = \dfrac{D}{\Delta t}$　✓ (or formulae in words/ *of formule in woorde*) $\quad = \dfrac{3\ 500}{30\ x\ 60}$ ✓ $v_{ave/gmd} = 1.94$ m·s^{-1} ✓

(3)

4.2　4.2.1　The <u>rate</u> of <u>change of velocity.</u> ✓✓
　　　　　　Die <u>tempo</u> van <u>verandering in snelheid</u>.✓✓ (2)

4.2.2　Acceleration = change in velocity ÷ time

　　　　Versnelling = verandering in snelheid ÷ tyd

　　　　　　　　　　　　　　　　　　ANY ONE/

　　　　　　　　　　　　　　　　　　ENIGE EEN ✓

　　$a = \dfrac{v_f - v_i}{\Delta t}$

　　$a = \dfrac{\Delta v}{\Delta t}$

　　$= \dfrac{5 - 0}{5 - 0}$ ✓

　　$a = 1$ m·s^{-2} ✓ North/*Noord* ✓ (4)

[13]

QUESTION 5/ *VRAAG 5*

5.1.1   As the <u>force parallel</u> to the <u>surface</u> that <u>opposes the motion of object</u>
and <u>acts</u> in the <u>direction opposite motion</u> the object. ✓✓
**OR**

The <u>force</u> that acts <u>parallel</u> to the <u>surface</u> in the <u>opposite direction</u> to
the <u>motion</u> and <u>opposes</u> the <u>motion</u>. ✓✓

*As die krag parallel aan die oppervlak wat die beweging van voorwerp
teenstaan en in die rigting teenoorgestelde beweging die voorwerp
inwerk.* ✓✓

OF
*Dit is die krag wat parallel tot die oppervlakte in die teenoorgestelde
rigting as die bewegng teenwerk, en staan die beweging teë.* ✓✓   (2)

5.1.2
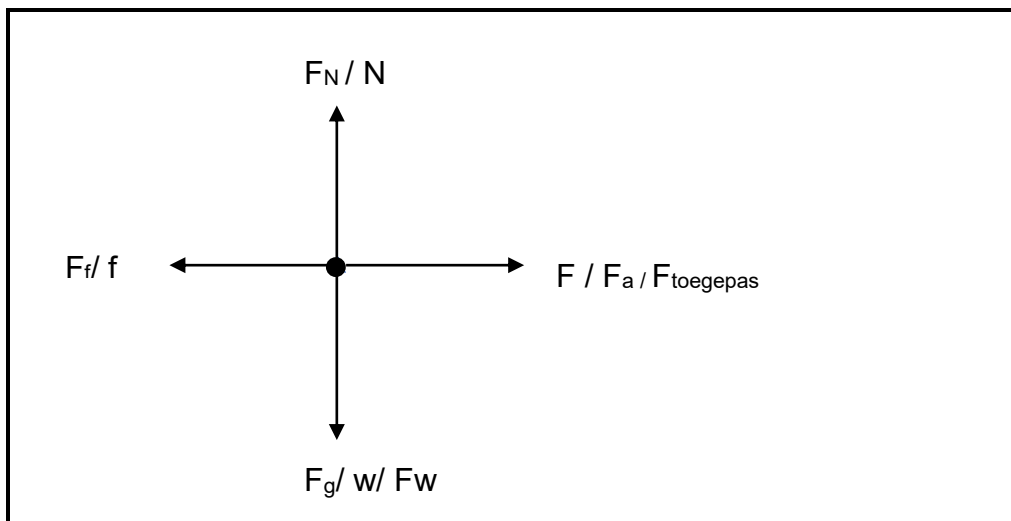
Note: Allocate a mark for arrow and label.

Penalise if:
Force diagram (-1)
No arrow (-1)
Gaps between the line and dot (-1)
Additional force (-1)

Let wel: *Gee punt vir pyltjie en etiket.*

Penaliseer vir:
Kragte diagram (-1)
Geen pyltjies (-1)
Spasie tussen lyn en kol (-1)
Ekstra kragte (-1)

(4)

5.1.3 $w = m.g$ ⎤
        $F_g = m.g$ ⎦   **ANY ONE/*ENIGE EEN*** ✓

        $= (30)(9,8)$ ✓

        $= 294$ N ✓   (3)

5.1.4   Polishing ✓
        Lubrication ✓
        Type of surface
        Wheel bearings
        Balls or wheels
        Shape
        Pull versus push   **Accept any TWO**

        Polering ✓
        Smering ✓
        Tipe oppervlak
        Wiellaers
        Balle of wielle
        Vorm
        Trek teenoor stoot   ***Aanvaar enige TWEE***   (2)
                                                                                  [11]

QUESTION 6/ *VRAAG 6*

6.1   6.1.1   Moment of force is defined as the <u>turning effect</u> of the <u>force</u> about that <u>point.</u>✓✓

            Die momente van 'n krag is gedefinieer as die <u>draai-effek van die krag om</u> 'n spesifieke <u>punt.</u> ✓✓   (2)

   6.1.2 $\tau = F \times r_\perp$ ✓

              $= (20)(0.15)$ ✓

              $= 3 \ N.m^{-1}$ ✓ clockwise/*kloksgewys* ✓   (4)

6.2   6.2.1   For a body in equilibrium, the <u>sum of the clockwise moments</u> about the point ✓ must be <u>equal to the sum of anti-clockwise moments</u> about that point. ✓

            Vir 'n liggaam in ewewig, is die <u>som van die kloksgewys momente</u> om 'n punt ✓*is <u>gelyk aan die som van die antikloksgewys moment</u> om 'n spesifieke punt.* ✓   (2)

   6.2.2 $\sum \tau_{clockwise/kloksgewys} = \sum \tau_{anti\text{-}clockwise/antikloksgewys}$ } **ANY ONE/**
               $F \times r_\perp = F \times r_\perp$ ***ENIGE***

             <u>(60)(3)</u> ✓ = <u>F x 2</u> ✓   ***EEN*** ✓

             $F = 90 \ N$ ✓   (4)

6.3   6.3.1   Type 1/ *Tipe 1* ✓   (1)

   6.3.2   Type 3/ *Tipe 3* ✓   (1)

   6.3.3   Type 2/ *Tipe 2* ✓   (1)

6.4   6.4.1   Mechanical advantage is defined as <u>ratio</u> of the <u>load to the effort.</u> ✓✓

            Meganiese voorbeeld is die <u>verhouding van die las tot die mag</u>. ✓✓   (2)

   6.4.2   Mechanical advantage is a <u>ratio between two physical quantities.</u> ✓✓

            Meganiese voordeel is die <u>verhouding tussen twee fisiese hoeveelhede.</u> ✓✓   (2)

6.4.3 $MA = \frac{L}{E}$ $MV = \frac{L}{M}$ }

OR/OF   ✓ **ANY ONE/*ENIGE EEN***

$MA = \frac{load}{effort}$ $MV = \frac{las}{mag}$

$= \frac{780}{820}$ ✓

MA/ *MV* = 0,95 ✓ (no unit/*geen eenheid*)

(3)
[22]

QUESTION 7/ *VRAAG 7*

7.1.1   Kinetic energy is defined as the <u>energy an object has due to its motion/ movement.</u>✓✓

Gravitational potential energy is defined as the<u> energy an object has because of its position from the earth surface</u>. ✓✓

Kinetiese energie word gedefinieer as die <u>energie wat 'n voorwep besit as gevolg van beweging.</u> ✓✓

Gravitasie-potensiële energie word gedefinieer as die <u>energie wat 'n voorwerp besit as gevolg van sy posisie bokant die oppervlakte van die aarde.</u> ✓✓   (4)

7.1.2 $E_k = \frac{1}{2} mv^2$ ✓

$= \frac{1}{2}(2)(0)^2$ ✓

$= 0$ J ✓   (3)

7.1.3 $E_p = mgh$ ✓

$= (2)(9,8)(2)$ ✓

$E_p = 39.2$ J ✓   (3)

7.1.4   As the mug falls, the kinetic energy increase ✓, the gravitational potential energy decrease ✓and the mechanical energy stays the same.✓

Soos die beker val, sal die kinetiese energie toeneem ✓, die gravitasie-potensiële energie afneem ✓ en die meganiese energie sal dieselfde bly. ✓   (3)

7.1.5   INCREASE/ *TOENEEM* ✓   (1)

7.1.6   If the velocity is double, then the kinetic energy will increase ✓ because the kinetic energy is directly proportional to the square of the velocity.✓

As die snelheid verdubbel, sal die kinetiese energy toeneem,✓ want die kinetiese energie is direk eweredig aan die kwadraad van die snelheid ✓

(2)
[16]

QUESTION 8/*VRAAG 8*

8.1   8.1.1   Negatively charged/ Negative charge ✓
                Negatiewe gelaai/Negatiewe lading ✓   (1)

       8.1.2   Friction/ *Wrywing* ✓   (1)

8.2   8.2.1   The principle of conservation of charge is defined as the net
                charge of an isolated system remains constant (during any
                physical process). ✓✓

                OR

                Charges cannot be created nor destroyed; but it can only be
                transferred from one object to another.

                *Die wet van behoud van lading word gedefinieer as die netto
                lading van 'n geïsoleerde stelsel bly konstant (gedurend enige
                fisiese proses).* ✓✓

                OF   (2)

                *Ladings kan nie geskep of vernietig word nie, maar slegs
                oorgedra word van eenvoorwerp na 'n ander.*

       8.2.2   Positively charged objects are <u>electron deficient / shortage of
                electrons</u> ✓✓
                Negatively charged objects have an <u>excess of electrons</u>.✓✓

                *Positiewe gelaaide voorwerp is <u>tekort van elektrone/ verlies van
                elektrone.</u>* ✓✓
                Negatiewe gelaaide voorwerp 'n <u>oormaat van elektrone</u> is. ✓✓   (4)

       8.2.3 $Q_{new/nuut} = \dfrac{Q_1 + Q_2}{2}$ ✓

                $= \dfrac{+8 + (-2)}{2}$ ✓
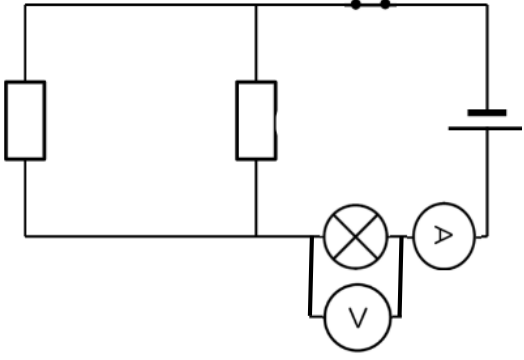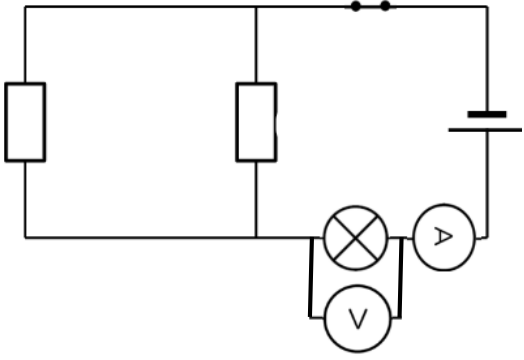
                $Q_{new/nuut} = +3$ C ✓   (3)
                                                                              [11]

QUESTION 9/*VRAAG 9*

9.1.1

Circuit diagram	Marking Criteria
	- Battery 9 V ✓ - Two resistors in parallel ✓ - Ammeter✓ - A close switch✓ - Light bulb is series ✓ - Voltmeter across the light bulb ✓ - Direction of circuit, positive pole to negative pole ✓
Stroomaandiagram	*Nasienkriteria*
	Battery 9 V ✓ *Twee resistors in parallel* ✓ *Ammeter*✓ *'n Geslote skakelaar* ✓ *'n Gloeilamp serie* ✓ *Voltmeter oor die gloeilamp gekoppel*✓ *Rigting van die stroombaan positiewe pool tot negatiewe pool.* ✓

(7)

9.1.2   Current is the <u>rate of flow of charge</u>. ✓✓

Stroom is die <u>tempo waarteen lading vloei.</u> ✓✓

(2)

9.1.3 $I = \dfrac{Q}{\Delta t}$ ✓

$= \dfrac{30}{15}$ ✓

$I = 2 \text{ A}$ ✓

(3)

9.1.4   Potential difference is the <u>work done per unit charge</u>✓✓

Potensiaalverskil is die <u>arbeid wat per eenheidlading verrig</u> word. ✓✓

(2)

9.1.5 $V = \dfrac{W}{Q}$ ✓

      $V = \dfrac{160}{40}$ ✓

      $V = 4\ V$ ✓

(3)
[17]

QUESTION 10/VRAAG 10

10.1.1　Resistance is defined as the <u>opposition to the flow of electric current.</u> ✓✓

W*eerstand word gedefinieer as die <u>teenstand teen die vloei van elektriese stroom.</u>* ✓✓　　　(2)

10.1.2　Series/ *Serie* ✓　　　　　　(1)

10.1.3　$R_s = R_1 + R_2$ ✓

　　　　　$= 5 + 10$ ✓

　　　　$R_s = 15 \ \Omega$ ✓　　　　　(3)

10.1.4　INCREASE/ *TOENEEM* ✓

The total resistance of the circuit increase ✓, therefore the total current decreased. ✓

Die totale weerstand van die stroombaan sal toeneem ✓, daarom sal die totale stroom afneem. ✓　　　(3)

10.1.5
- Temperature ✓
- Length of conductor ✓
- Type of conductor ✓
- Thickness of conductor　　　　　　**Accept any THREE**

- *Temperatuur* ✓
- *Lengte van geleier* ✓
- *Soort geleier* ✓
- *Dikte van geleier*　　　　　　***Aanvaar enige DRIE***　　(3)
　　　　　　　　　　　　　　　　　　　　　　　　　[12]

　　　　　　　　　　　　　TOTAL/*TOTAAL*:　　**150**