



education

Department:
Education
North West Provincial Government
REPUBLIC OF SOUTH AFRICA

PROVINCIAL ASSESSMENT PROVINSIALE ASSESSERING

GRADE 11/GRAAD 11

TECHNICAL SCIENCES P1/TEGNIESE WETENSKAPPE V1

JUNE/JUNIE 2024

MARKING GUIDELINES/NASIENRIGLYNE

MARKS/ PUNTE: 150

**These marking guidelines consist of 11 pages.
Hierdie nasienriglyne bestaan uit 11 bladsye.**

SECTION A/AFDELING A

QUESTION 1/VRAAG 1

- 1.1 A ✓✓ (2)
1.2 B ✓✓ (2)
1.3 B ✓✓ (2)
1.4 D ✓✓ (2)
1.5 C ✓✓ (2)
1.6 A ✓✓ (2)
1.7 A ✓✓ (2)
1.8 C ✓✓ (2)
1.9 A ✓✓ (2)
1.10 D ✓✓ (2)
[20]

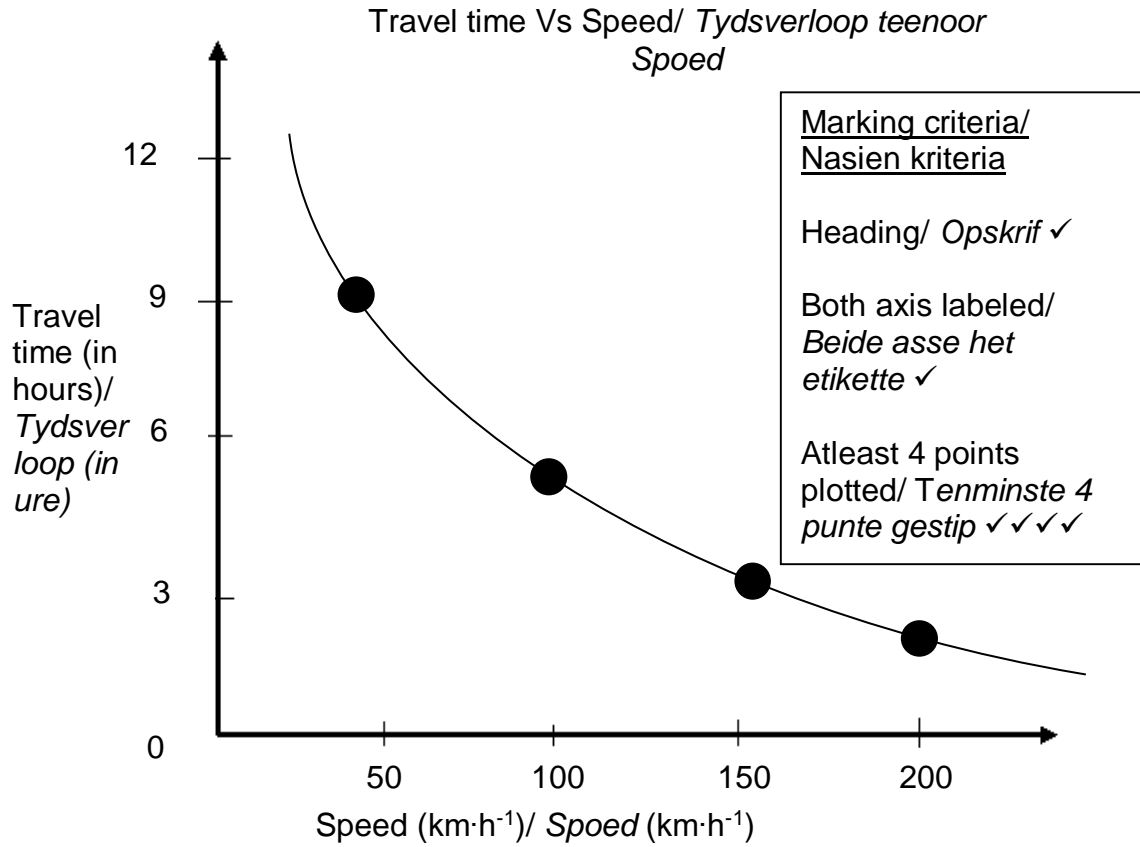
QUESTION 2/ VRAAG 2

- 2.1 G ✓ (1)
2.2 I ✓ (1)
2.3 A ✓ (1)
2.4 B ✓ (1)
2.5 C ✓ (1)
2.6 D ✓ (1)
2.7 J ✓ (1)
2.8 F ✓ (1)
2.9 H ✓ (1)
2.10 E ✓ (1)
[10]

SECTION B/ AFDELING B

QUESTION 3/ VRAAG 3

3.1



(6)

3.2 Calculations:/ Berekeninge:

$60 \times 10 = 600$ ✓

$100 \times 6 = 600$ ✓

$150 \times 4 = 600$ ✓

$200 \times 3 = 600$ ✓

Direct proportion/ Direk eweredig ✓

(5)

[11]

QUESTION 4/ VRAAG 4

- 4.1 A single vector that has the same effect as two or more vectors acting on an object ✓✓
'n Enkele vektor wat dieselfde effek het as twee of meer vektore op 'n voorwerp.

OR/ OF

A single vector that has the same effect as two or more vectors together/combined. ✓✓
'n Enkele vector wat dieselfde effek het as twee of meer vector saam/gekombineerd.

OR/ OF

A vector sum of all vectors acting on an object ✓✓
'n Vektor som van al die vektore wat op die voorwerp inwerk. (2)

- 4.2.1 At a bearing of 150°/ *'n Peiling van 150°* ✓✓ (2)

- 4.2.2 60° South of east / 30° East of south ✓✓
60° Suid van Oos/ 30° Oos van Suid (2)

- 4.3.1 Co-linear ✓ They lie on the same straight line ✓✓ /They lie on the same line of action. ✓✓
Ko-linêere, Hulle lê op dieselfde reguit lyn/ Hulle lê op dieselfde lyn van aksie. (3)

4.3.2 **OPTION 1/ OPSIE 1**

OPTION 2/ OPSIE 2

Left as +/ *Links as +*

Right as +/ *Regs as +*

$$\vec{F}_R = \vec{F}_1 + \vec{F}_2 \quad \checkmark$$

$$\vec{F}_R = \vec{F}_1 + \vec{F}_2$$

$$\vec{F}_R = -150 + 200 \quad \checkmark$$

$$F_{res} = (+150) + (-200)$$

$$\vec{F}_R = 50 \text{ N} \quad \checkmark$$

$$F_{res} = -50 \text{ N}$$

(3)

- 4.4 $r^2 = x^2 + y^2 \quad \checkmark$

$$10^2 = d^2 + 3^2 \quad \checkmark$$

$$d = 9.54 \text{ m} \quad \checkmark$$

(3)

[15]

QUESTION 5/ VRAAG 5

5.1.1 $\vec{F}_x = \vec{F} \cos \theta$ ✓

$\vec{F}_x = 500 \cos 30^\circ$ ✓

$\vec{F}_x = 433.01 \text{ N}$ ✓

(3)

5.1.2 $\vec{F}_y = \vec{F} \sin \theta$ ✓

$\vec{F}_y = 500 \sin 30^\circ$ ✓

$\vec{F}_y = 250 \text{ N}$ ✓

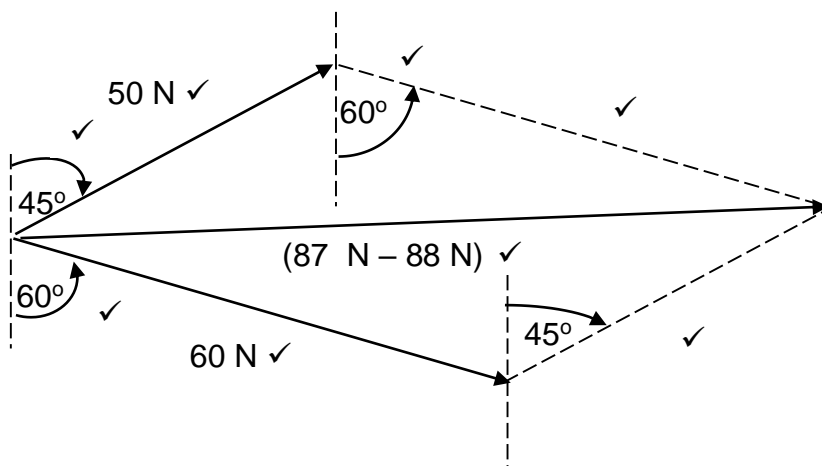
(3)

5.2.1 If two forces acting at a point can be represented by the adjacent sides of a parallelogram both in magnitude and direction ✓, the diagonal from the point gives the resultant of the two forces. ✓

As die omvang en rigting van twee kragte wat by 'n punt uitoefen word deur die aanliggende sye van 'n parallellogram deur beide kry en grootte voorgestel word, gee die diagonal van die punt die resultant van die twee kragte.

(2)

5.2.2



MARKING CRITERIA

- $F_1 = 50 \text{ N}$ ✓
- 45° ✓
- $F_2 = 60 \text{ N}$ ✓
- 60° ✓
- $F_{\text{res}} = 87 - 88 \text{ N}$ ✓
- Parallelogram shape (both dotted lines) / *Parallelogram vorm (beide stippellyne)* ✓✓

(7)

[15]

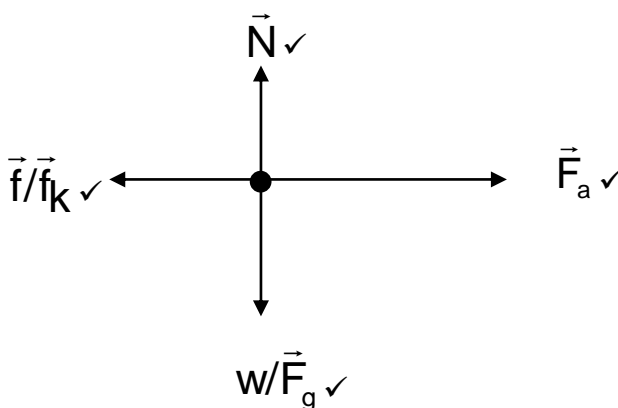
QUESTION 6/ VRAAG 6

6.1 A force that opposes the motion or attempted motion of an object ✓✓

'n Krag wat die beweging van 'n voorwerp teenstaan of poog om teen te staan.

(2)

6.2.1



(4)

6.2.2 $N = w = mg$ ✓

$$\vec{N} = (25)(9,8) \quad \checkmark$$

$$\vec{N} = 245 \text{ N} \quad \checkmark$$

(3)

6.2.3 **POSITIVE MARKING FROM Q 6.2.2/ POSITIEWE NASIEN VANAF V 6.2.2**

$$\vec{F}_s^{\max} = \mu_s \vec{N} / \vec{F}_s = \mu_s \vec{N} \quad \checkmark$$

$$\vec{F}_s = (0,12)(245) \quad \checkmark$$

$$\vec{F}_s = 29,4 \text{ N} \quad \checkmark$$

(3)

6.2.4 **POSITIVE MARKING FROM Q 6.2.2/ POSITIEWE NASIEN VANAF 6.2.2**

$$\vec{F}_k = \mu_k \vec{N} \quad \checkmark$$

$$\vec{F}_k = (0,10)(245) \quad \checkmark$$

$$\vec{F}_k = 24,5 \text{ N} \quad \checkmark$$

(3)

[15]

QUESTION 7/ VRAAG 7

- 7.1 A material that can attract other materials and can produce its own magnetic field ✓✓
'n Materiaal wat ander materiale kan aantrek en wat sy eie magneetveld kan voortplant. (2)
- 7.2 North ✓ The direction of magnetic fields lines are pointing away from the pole ✓✓
Noord Die rigting van die magneetveldlyne wys uitwaarts vanaf die pole. (3)
- 7.3 Magnetic field lines never touch or cross one another ✓
Magnetic field lines are continuous from north to south outside the magnet ✓
Magnetic field lines are concentrated on the poles of the magnets ✓
Magneetveldlyne mag nooit raak of kruis nie.
Magneetveldlyne is aaneenlopend vanaf noord na suid buite die magneet.
Magneetveldlyne is gekonsentreerd by die pole van die magneet. (3)
- 7.4 First place the magnet on a flat surface ✓
Place a blank A4 paper on top of the magnet ✓
Sprinkle the iron filings on top of the A4 paper while gently taping the paper ✓
Hold the compass over the magnetic field lines to see the direction ✓
Plaas die magneet op 'n plat oppervlakte
Plaas 'n skoon A4 vel papier bo-op die magneet.
Sprinkel die ystervylsels bo-oor die A4 papier en tik liggies die papier.
Hou die kompas oor die magneetveldlyne en neem die rigting waar. (4)
- 7.5 Heating ✓
Hitting ✓
Dropping ✓
Storing magnets incorrectly ✓
ACCEPT ANY TWO
Verhit
Slaan
Val
Stoor die magnete verkeerd
AANVAAR ENIGE TWEE (2)

7.6.1 Magnetosphere/ *Magnetosfeer* ✓ (1)

7.6.2 It protects the earth by deflecting electrically charged particles ✓✓
Dit beskerm die aarde deur elektriese gelaaiete deeltjies te deflekteer. (2)

7.7 Manufacturing Speakers ✓
Used in Fridge doors ✓
Modern trains use magnets to levitate them on the tracks ✓
Used in Magnetic Resonance Imaging (MRI) scanners in hospital ✓
In medical vets to pick up metal pieces in the stomach of large animals ✓
Electronical devices ✓
ANY THREE

Vervaardiging van Luidsprekers

Gebruik Yskas deure

Moderne treine gebruik magnete om bo die spoor die sweef

Gebruik in MRI skandeerders in hospitale

In die mediese veld gebruik veeartse magnete om metaalstukkie in die maag te van groot diere op te spoor.

Elektroniese toestelle

ENIGE DRIE

(3)
[21]

QUESTION 8/ VRAAG 8

8.1.1 The uppermost point on a transverse wave. ✓✓
Die hoogste deel van die transversale golf. (2)

8.1.2 Maximum displacement of a particle from the rest position ✓✓
Maksimum verplasing van 'n deeltjie vanaf sy rusposisie. (2)

8.1.3 Distance between two successive points that are in phase on a wave ✓✓
Afstand tussen twee opeenvolgende punte wat in fase is. (2)

8.1.4 Time taken for one complete wave to pass a fixed point ✓✓
Tyd wat dit een volledige golf neem om by 'n punt verby te beweeg. (2)

8.2 4 waves/ *golwe* ✓ (1)

8.3 .1 Amplitude ✓✓ (1)

8.3.2 Wavelength/ *golflengte* ✓✓ (1)

$$8.4.1 \quad \frac{8 \text{ m}}{2} = 4 \text{ m} \checkmark\checkmark \quad (2)$$

$$8.4.2 \quad \frac{12 \text{ m}}{4} = 3 \text{ m} \checkmark\checkmark \quad (2)$$

$$8.5.1 \quad T = \frac{1}{f} \checkmark$$

$$T = \frac{1}{50} \checkmark$$

$$T = 0.02 \text{ s} \checkmark$$

(3)

8.5.2 **POSITIVE MARKING FROM 8.4.2 & 8.5.1/ POSITIEWE NASIEN**

VANAF 8.4.2 & 8.5.1

OPTION 1/ OPSIE 1

$$V = \frac{\lambda}{T} \checkmark$$

$$V = \frac{3}{0.02} \checkmark$$

$$V = 150 \text{ m}\cdot\text{s}^{-1} \checkmark$$

POSITIVE MARKING FROM 8.4.2/ POSITIEWE NASIEN VANAF 8.4.2

OPTION 2/ OPSIEN 2

$$V = f\lambda \checkmark$$

$$V = (50)(3) \checkmark$$

$$V = 150 \text{ m}\cdot\text{s}^{-1} \checkmark$$

(3)

[21]

QUESTION 9/VRAAG 9

9.1.1 The measure of how high or low a note is. ✓✓

Die aanduiding hoe hoog of laag die noot is. (2)

9.1.2 How loud or soft the sound is ✓✓

Hoe hard of sag 'n klank is. (2)

9.2 Wave A ✓ It has the highest amplitude ✓✓

Golf A, Dit het die hoogste amplitude (3)

9.3 Wave B ✓ It has lower frequency ✓✓

(ACCEPT: It has less waves per second)

Golf B, Het die laagste frekwensie

(AANVAAR: Minder golwe per sekonde)

(3)
[10]

QUESTION 10/ VRAAG 10

10.1.1 The reflection of sound waves ✓✓

Die weerkaatsing van 'n klankgolf. (2)

10.1.2 Sound with frequency below 20Hz ✓✓

Klank met 'n frekwensie laer as 20 Hz (2)

10.2.1 $V = f\lambda$ ✓

$$1\ 525 = (600) \times \lambda \quad \checkmark$$

$$\lambda = 2.54\text{m} \quad \checkmark \quad (3)$$

10.2.2 **OPTION 1/ OPSIE 1**

$$\bar{v} = \frac{\Delta x}{\Delta t} \checkmark$$

$$1525 = \frac{\Delta x}{0.3} \checkmark 1$$

$$\Delta x = 457,5 \checkmark 2$$

$$\therefore \Delta x = 228,75 \text{ m} \checkmark$$

OPTION 2/ OPSIE 2

$$\bar{v} = \frac{\Delta x}{\Delta t} \checkmark$$

$$1525 = \frac{\Delta x}{0.15} \checkmark \checkmark$$

$$\therefore \Delta x = 228,75 \text{ m} \checkmark$$

(4)

10.3 Determine the age, level of development and potential problems of a fetus ✓

Search for abnormal narrowing of the arteries ✓

To detect/ To examine tumors ✓

To examine aneurysms ✓

To examine gallstones ✓

To measure the rate of blood flow.

To monitor/examine the heartbeat of the fetus ✓

ANY TWO

Bepaal die ouderdom, vlak van ontwikkeling en moontlike probleme by die fetus.

Soek na abnormale vernouings van die are

Om gewasse op te spoor en te diagnoseer

Om bloedklonte te ondersoek

Om galstene te ondersoek

Om die tempo van bloedvloei te ondersoek

Om 'n fetus se hartklop te monitor en ondersoek.

ENIGE TWEE

(2)
[13]

TOTAL/TOTAAL: 150