Ekurhuleni North D6

DISTRICT COMMON TEST

2025

GRADE 11



PHYSICAL SCIENCES

March Test

Marking Memorandum

Question 1 – Multiple choice

1.1 A ✓✓ 2

1.2 B ✓✓ 2

1.3 D ✓✓ 2

1.4 B ✓✓ 2

1.5 D ✓✓ 2

1.6 C ✓✓ 2

1.7 A ✓✓ 2



1.8 C ✓✓ 2

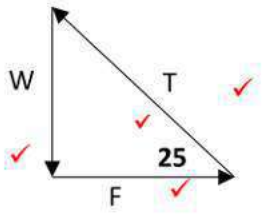
1.9 A ✓✓ 2

1.10 B ✓✓ 2

[10 x 2 = 20]

Question 2

2.1 4



2.2 $\tan 25^0$ ✓ = $\frac{50}{F}$ ✓ or $\tan 65^0$ ✓ = $\frac{F}{50}$ ✓ 3

$F = 107,23N$ ✓ $F = 107,23N$ ✓

2.3 $T^2 = W^2 + F^2$ ✓ or $\sin 25^0$ ✓ = $\frac{50}{T}$ ✓ 3

$= (50)^2 + (107,23)^2$ ✓

$T = 118,31N$ ✓ $T = 118,31N$ ✓

[10]

Question 3

3.1 The components of a vector are vectors that together have the same effect as the original vector. ✓✓ 2

3.2 4

Rope A	Rope B
Cos 20^0 = X/100 ✓	Cos 35^0 = X/120 ✓
X =93,97N ✓	X = 98,30N ✓

3.3 4

Rope A	Rope B
sin 20^0 = X/100 ✓	Sin 35^0 = X/120 ✓
X =34,20N ✓	X = 68,83N ✓

Stanmorephysics.com

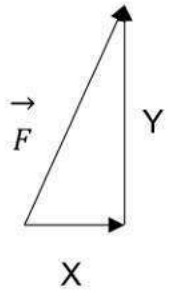
3.4 X component = -93,97+98,30 = 4,33N ✓

Y component = -34,20 +68,83 = 34,63N ✓

$\vec{F}^{\,2} = X^2 + Y^2$

$\vec{F}^{\,2} = (4,33)^2 + (34,63)^2$ ✓

$\vec{F} = 34,89N$ ✓



5

[15]

Question 4

4.1.1 $1m.s^{-2}$ ✓ 1

4.1.2 a ∞ Fnet ✓ 1

4.1.3 1,25N ✓ 1

4.1.4 It will not pass through the origin. ✓✓ 2

4.1.5 An object will accelerate in the direction of a net force. The acceleration is directly proportional the net force and inversely proportional to the mass. ✓✓ 2

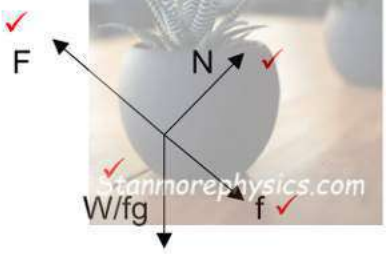
4.2.1 T – W = Fnet (ma) ✓
48 – (4)(9,8) ✓ = 4a✓
a =2,2$m.s^{-2}$ ✓ 4

4.2.2 Fnet = ma ✓
P – T = ma
P – 48 ✓ = (1)(2,2) ✓ 4
P = 50,2N ✓

[15]

Question 5

5.1 A body will remain in its state of rest or continue in its state of uniform motion, unless acted upon by an unbalance force ✓✓ 2

5.2 

4

5.3 Fnet = ma ✓
Fnet = 0
F - fk - Fg∥ = ma
F – 19,78 ✓ - (5)(9,8)sin 40^0 ✓ = 0 ✓
F - 19,78 - 31,50 = 0
F = 51,28N ✓ 5

[11]

Question 6

6.1 Every particle in the universe will attract every other particle with a force that is directly proportional to the product of their masses and is inversely proportional to the square of the distance between them. ✓✓ 2

6.2 W = mg …1 Fg = $\frac{GmM}{r^2}$ ….2 ✓ 3

(1)=(2)
mg = $\frac{GmM}{r^2}$ ✓✓ g = $\frac{G\ M}{r^2}$

6.3 g = $\frac{G\ M}{r^2}$ ✓ 4

3,8 ✓ = $\frac{(6,67 \times 10^{-11})\ (6,4 \times 10^{23})}{r^2}$ ✓

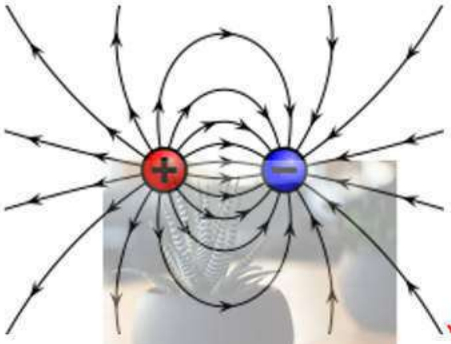
r = 3351668,87m ✓

[9]

Question 7

7.1.1 The force between two charges at rest is directly proportional to the prroduct of the charges and inversely proportional to the square of the distance between them. ✓✓ 2

7.1.2



✓✓ 2

7.1.3 $F = \frac{KQ_1Q_2}{r^2}$ ✓ $= \frac{(9 \times 10^9)(8 \times 10^{-9})(12 \times 10^{-9})}{(0,0006)^2}$ ✓ = 0,024N attr✓ 4

7.1.4 $F = \frac{KQ_1Q_2}{r^2} = \frac{(9 \times 10^9)(8 \times 10^{-9})(10 \times 10^{-9})}{(0,012)^2}$ ✓ ✓ = 0,005N ✓

Fnet = + 0,024 – 0,005 = 0,019N left ✓ 4

7.2.1 Force exerted per unit positive charge. ✓✓ 2

7.2.2 $E = \frac{KQ}{r^2}$ ✓ $= \frac{(9 \times 10^9)(3 \times 10^{-9})}{(0,1)^2}$ ✓ = 2700N.C^{-1}✓ 3

7.2.3 F = Eq ✓= (2700)(6,4 x 10^{-19}) ✓= 1,73 x 10^{-15}N✓ 3

[20]

THE END

TOTAL = 100 Marks