Education

KwaZulu-Natal Department of Education
REPUBLIC OF SOUTH AFRICA

PHYSICAL SCIENCES

MARKING GUIDELINES

COMMON TEST

JUNE 2025

Final Memo

NATIONAL

SENIOR CERTIFICATE

GRADE 11

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NB: This marking guideline consists of 6 pages.

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QUESTION ONE

1.1 B ✓✓
1.2 C ✓✓
1.3 B ✓✓
1.4 D ✓✓
1.5 A ✓✓

5 x 2 = [10]

QUESTION TWO

2.1 The resultant force acting on the system is zero. ✓✓ (2 or 0) (2)

2.2
W = mg
= (2,50 x 9,8)
= 24,5 N

$T^2 = R_X^2 + R_Y^2$
$= (50)^2$ ✓ $+ (24,50)^2$ ✓
T = 55,68 N ✓ (3)

[5]

QUESTION 3

3.1 $T = \frac{1}{f}$

$= \frac{1}{50}$ ✓

= 0,02 s ✓ (2)

3.2 The trolley is starting from rest ✓. Initially very small distances are covered (per time period). ✓ (2)

3.3 Decreased ✓ (1)

3.4 Zero / 0 N ✓ (1)

3.5.1 A. ✓ It has the largest gradient, and hence the largest acceleration. ✓ (2)

3.5.2



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Marking Rubric : Graph	
Criteria	Mark allocation
Straight line graph with a positive gradient	1 mark
Line passing through the origin	1 mark

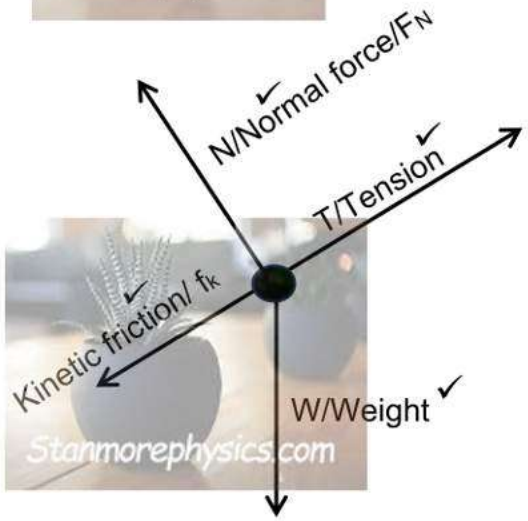
(2)

[10]

QUESTION 4

4.1.1 When a net/resultant force acts on an object, the object accelerates in the direction of the resultant force. This acceleration is directly proportional to the force ✓ and inversely proportional to the mass of the object.✓ (2)

4.1.2



(4)

4.1.3 $f_k = \mu_k N$✓

$= (0,25)(800(9,8)\cos 30^0)$ ✓

$= 1697,41$ N✓ (3)

4.1.4 $F_{NET} = ma$

$1520 = 2500\ a$✓

$a = 0,608\ ms^{-2}$

$F_{NET} = ma$

$T + (-fk) + (-W//) = ma$ } ✓ (Any one)

$T + (-1697,41) + (-(800)(9,8)\sin 30^0)$ ✓ $= 800(0,608)$ ✓

$T = 6103,81$ N✓ (5)

4.2

4.2.1 Every body in the universe attracts every other body with a gravitational force that is directly proportional to the product of their masses✓ and inversely proportional to the square of the distance between their centres. ✓
(Marks must only be awarded if the definition is in context with the gravitational law) (2)

4.2.2 $F = \frac{Gm_1m_2}{r^2}$✓

2458✓ = $\frac{(6,67X10^{-11})(1250)(5,98X10^{24})}{(r)^2}$ ✓

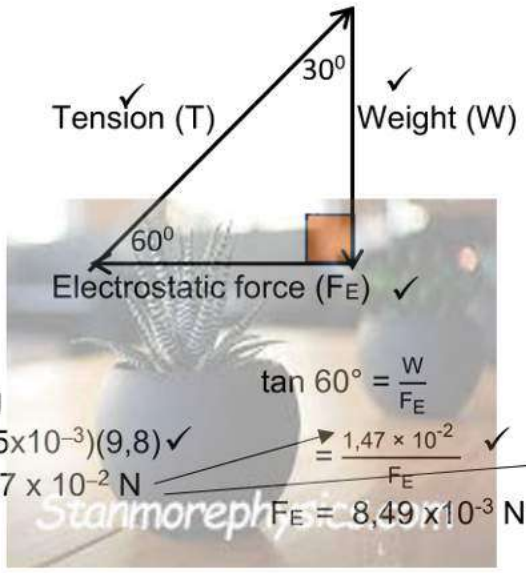
r = 1,42 x 10^7 m✓ (4)

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[20]

QUESTION 5

5.1.1



Any two angles correctly shown✓

(4)

5.1.2 W = mg
= (1,5x10^{-3})(9,8)✓
= 1,47 x 10^{-2} N

tan 60° = $\frac{W}{F_E}$
= $\frac{1,47 \times 10^{-2}}{F_E}$ ✓
F_E = 8,49 x10^{-3} N✓

OR

tan 30° = $\frac{F_E}{W}$
F_E = 1,47 x 10^{-3} tan 30°✓
F_E = 8,49 x10^{-3} N✓

(3)

5.1.3 **Positive marking from Question 5.1.2**

E = F/q✓

E= $\frac{8,49 \times 10^{-3}}{4,8 \times 10^{-9}}$ ✓

= 1,77 x10^6 N·C^{-1}✓ (3)

5.2.1 The induced emf in a conductor is directly proportional to the rate of change of the magnetic flux linkage through the conductor. ✓✓ (2)

5.2.2 $A = s \times s$

$= 0,25 \times 0,25$

$= 0,0625\ m^2$

$\Phi = BA\cos\theta$

$= (0,750)(0,0625)\cos 0° ✓$

$= 4,69 \times 10^{-2}\ Wb$

$\varepsilon = -N\frac{\Delta\Phi}{\Delta t}$ ✓

$= -\frac{200(4,69 \times 10^{-2} - 0)}{0,20}$ ✓ ✓

$= 46,9\ V$ ✓ (Ignore the negative sign) (5)

[17]

QUESTION 6

6.1 The current flowing through a conductor at a constant temperature ✓ is directly proportional to the potential difference across it. ✓ (2)

6.2 $V = IR = (8)(0,5) = 4\ V$

$I_{4\Omega} = \frac{4}{4}$

$= 1A$

$I_{A_1} = 1$ ✓ $+ 0,5$ ✓ $= 1,5A$ ✓ (3)

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6.3 $\frac{1}{R_p} = \frac{1}{R_1} + \frac{1}{R_2}$ ✓

$Rp = (\frac{1}{8} + \frac{1}{4})^{-1}$ ✓

$= 2,666\ \Omega$

$V_{(Rp + 12\Omega)} = IR$

$= \underline{(1,5)\ (2,666+12)}$ ✓

$= 22\ V$

I_{A2}

$P = VI$ ✓

$12 = 22\ I$ ✓

$I_{A2} = 0,55\ A$ ✓



(5)

6.5 $\varepsilon = IR + Ir$ ✓

$= 22 + (1,5 + 0,55)(0,5)$ ✓

$= 23,025\ V$ ✓

(3)

[13]

TOTAL : 75 MARKS