LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF
EDUCATION

NATIONAL

SENIOR CERTIFICATE

GRADE 12

PHYSICAL SCIENCES

CONTROL TEST 1

17 MARCH 2025

MARKS : 100

TIME : 2 HOURS

This question paper consists of 19 pages including data sheets.

INSTRUCTIONS AND INFORMATION

1. Write your name on the top of your ANSWER SCRIPT.
2. This question paper consists of 7 questions. Answer ALL the questions on your ANSWER SCRIPT.
3. You may use a non-programmable calculator.
4. You may use appropriate mathematical instruments.
5. Number the answers correctly according to the numbering system used in this QUESTION PAPER.
6. YOU ARE ADVISED TO USE THE ATTACHED DATA SHEETS.
7. Give brief motivations, discussions, et cetera where required.
8. Round off your final numerical answers to a minimum of TWO decimal places.

QUESTION 1 MULTIPLE-CHOICE QUESTIONS

Various options are provided as possible answers to the following questions. Each question has only ONE correct answer. Choose the answer and write only the letter (A – D) next to the question numbers. (1.1 – 1.10) in the ANSWER BOOK, e.g. 1.11 D.

1.1 Which one of the following physical quantities is a vector?

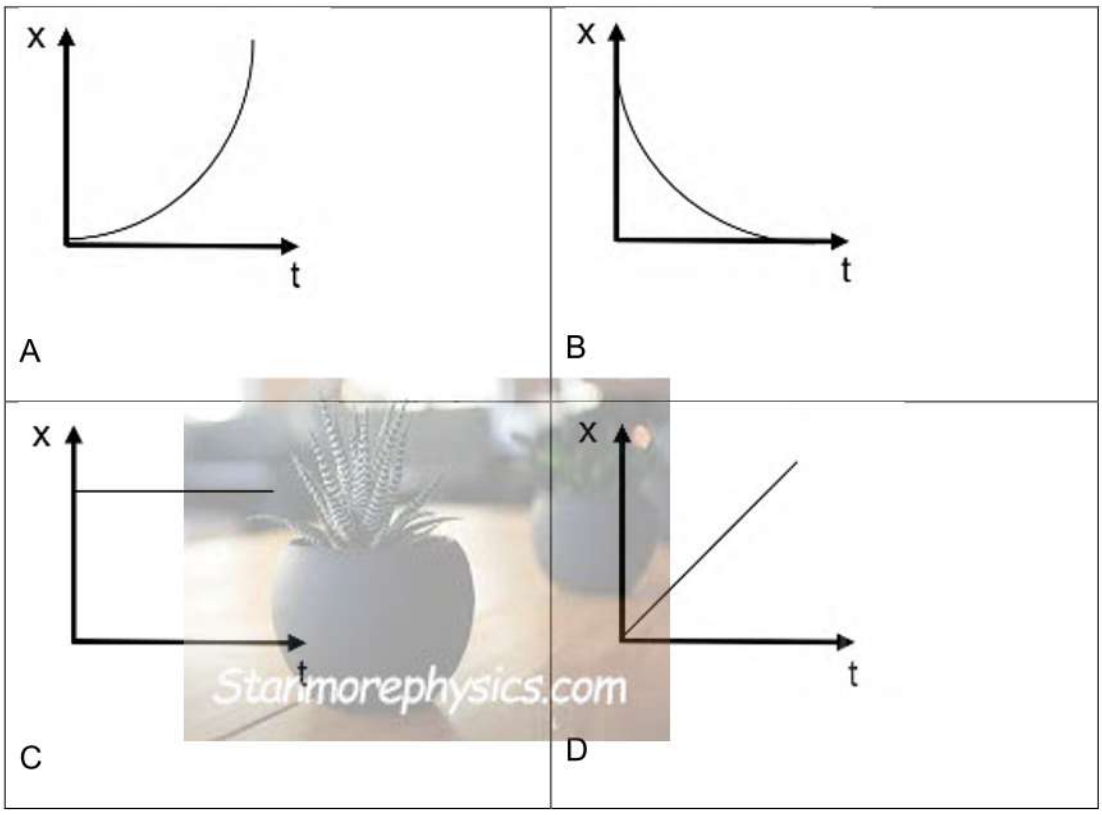
A Impulse

B Kinetic energy

C Time

D Mass (2)

1.2 Which of the following position-time graphs represent the motion of an object moving with constant, non-zero velocity?



(2)

1.3 A person stands on a bathroom scale in a stationary elevator. The reading on the scale is 490 N. When the elevator is in motion, the reading on the scale changes to 470 N.

Which ONE of the following combinations best describes the DIRECTION OF THE MOTION and the DIRECTION OF THE ACCELERATION of the elevator during the motion?

	Direction of motion	Direction of acceleration
A	Upwards	Upwards
B	Downwards	Downwards
C	Upwards	Downwards
D	Downwards	Upwards

(2)

1.4 The gravitational acceleration, g, on or near the surface of the earth depends on the…

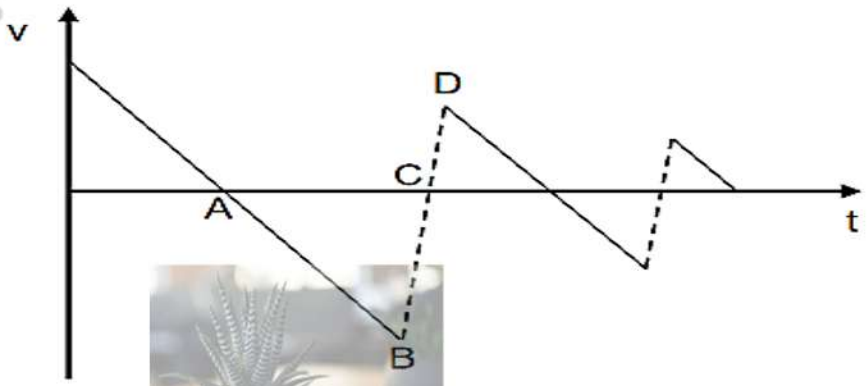
A mass of the earth and the diameter of the earth

B mass of the earth and the distance from its centre

C mass of the earth only

D distance from its centre (2)

1.5 An object is thrown upwards with unknown velocity. The velocity time graph below shows the entire motion of the object.



At which point **A** – **D** will the object have the greatest momentum.

A. A

B. B

C. C

D. D

(2)

1.6 A ball is dropped downwards from the height, **h** and hits the ground with a speed v. The speed of the ball when it reaches half its initial height is…

A v

B $\frac{v}{\sqrt{2}}$

C $\frac{v}{2}$

D $\frac{v}{4}$

(2)

1.7 Consider the compound below:

$(CH_3)_3CCCCH(CH_3)_2$

The IUPAC name for the above compound is…

A 2,2,5-trimetielhex-3-yn

B 2,5,5-trimetielhex-3-yn

C 2,2-dimetiel hept-3-yn

D 2,5- dimetielhept-3-yn (2)

1.8 Which one of the following reactions will produce an alkene?

A Esterification reaction

B Substitution reaction

C Elimination reaction

D Addition reaction (2)

1.9 Which one of the following compounds has the lowest vapour pressure?

A Propane

B Propan-1-ol

C Propanoic acid

D Propanone (2)

1.10 List of reactants and reaction conditions are given below for a learner to use so that he/she can produce a primary alcohol from **3-ethyl-3-iodo-2-methylpentane**.

Concentrated H_2SO_4, water, heat, concentrated KOH and dilute H_2SO_4

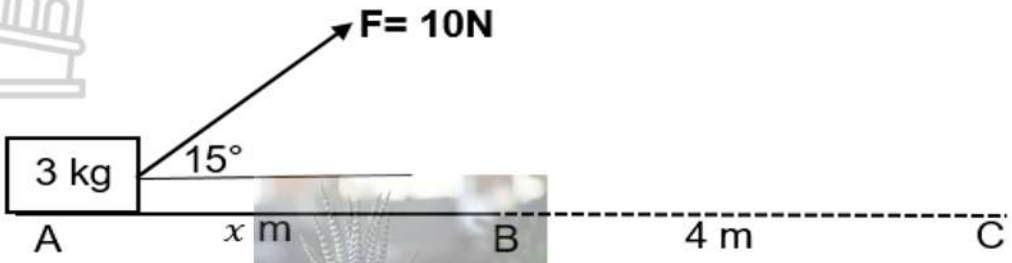
How will the learner use the above reactants and reaction condition to produce a primary alcohol in 4 steps?

	STEP 1	**STEP 2**	**STEP 3**	**STEP 4**
A	Heat and concentrated KOH	Water and dilute H_2SO_4	Heat and concentrated H_2SO_4	Water and dilute H_2SO_4
B	Heat and Concentrated H_2SO_4	Water and dilute H_2SO_4	Heat and concentrated KOH	Water and dilute H_2SO_4
C	Water and dilute H_2SO_4	Heat and concentrated KOH	Heat and concentrated H_2SO_4	Water and dilute H_2SO_4
D	Water and dilute H_2SO_4	Heat and concentrated KOH	Water and dilute H_2SO_4	Heat and concentrated H_2SO_4

(2)
[20]

QUESTION 2

A block of mass 3 kg is pulled from rest on a straight horizontal surface as shown below by a force **F = 10 N** which make an angle of 15° to the horizontal.



Path **AB** is x m and is frictionless and path **BC** is 4 m and is rough. The coefficient of kinetic friction between the block and the surface **BC** is 0,53. The block comes to rest at point **C**.

2.1 Draw a force diagram showing all the forces acting on the body as it slides on path **AB**. (3)

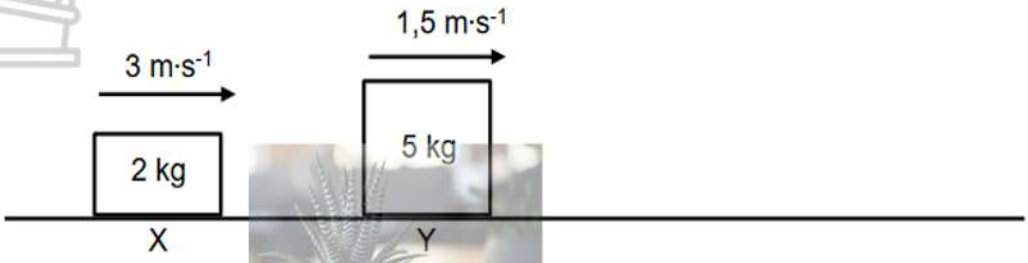
2.2 Calculate the speed of the block at point **B**. (5)

2.3 How will the speed calculated in 2.2 be affected if the angel between the surface and the force (F) was reduced to 10°?
Write INCREASE, DECREASE or REMAIN THE SAME. Give a reason for your answer. (2)

2.4 Draw the graph of $\mathbf{F_{net}}$ vs **time** for the entire motion of the block.
No numerical values are required. (3)
[13]

QUESTION 3

Two blocks are moving to the right along a frictionless surface. Block **X** has a mass of 2 kg and is moving at 3 $m.s^{-1}$. Block **Y** has a mass of 5 kg and is travelling at 1, 5 $m.s^{-1}$. The blocks collide and block **Y** continues in its original direction with a speed of 2, 5 $m.s^{-1}$ after their collision.



3.1 State the principle or law which is applicable AT THE POINT OF COLLISION. (2)

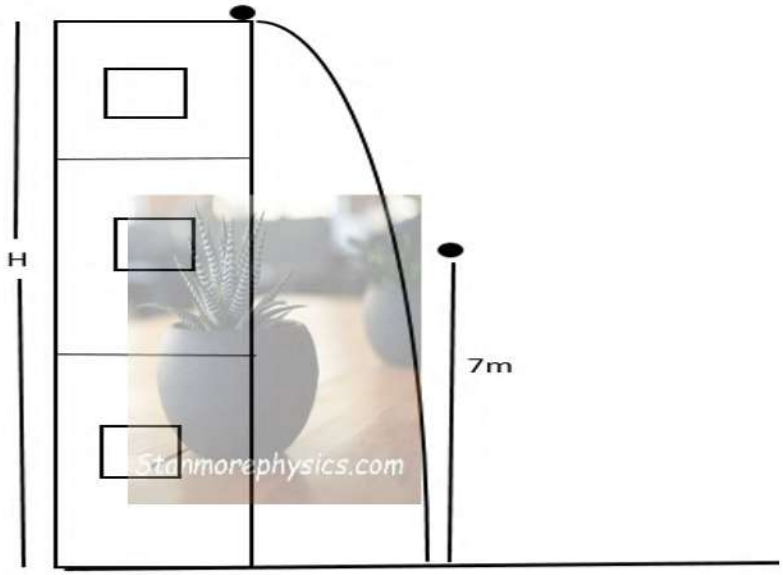
3.2 Give a reason why the speed of the 5 kg block increases after collision. (1)

3.3 Calculate the impulse experienced by the 5 kg block. (3)

3.4 Determine the magnitude of the velocity of block **X** after collision. (4)
[10]

QUESTION 4

A ball of mass 1.5 kg is thrown down from the top of the building with a velocity of 12 $m.s^{-1}$. The ball hit the ground and bounces off to the maximum height of 7 m. Ignore the effect of air resistance.



4.1 Define the term *free fall* in words. (2)

4.2 Calculate the velocity which the ball leaves (bounces) the ground with. (4)

4.3 When the ball was in contact with the ground, 344,1 J of its kinetic energy was converted into the other forms of energy.

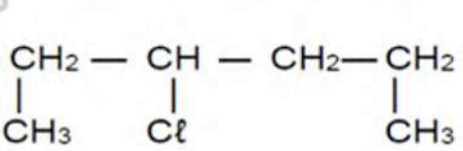
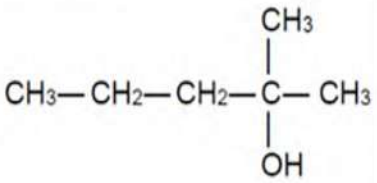
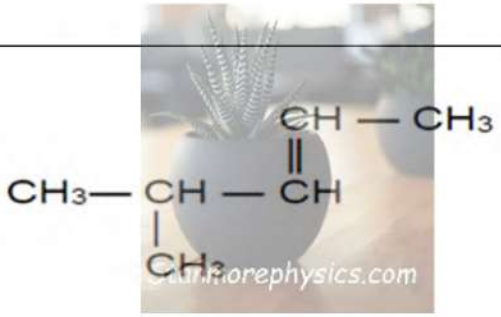
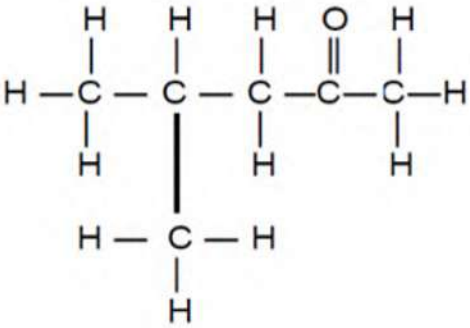
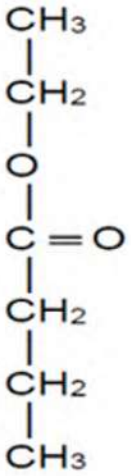
Calculate the:

4.3.1 speed that the ball hit the ground with. HINT: Use ENERGY FORMULAE. (4)

4.3.2 time the ball will take to travel distance **H**. (3)
[13]

QUESTION 5

The letters **A** to **F** in the table below represent six organic compounds.

A 	**B** 
C 	**D** 4-methylpentanoic acid
E 	**F** 

5.1 Write down the letter(s) that represent(s) each of the following:

5.1.1 compounds that can **PRODUCE** unsaturated hydrocarbon (2)

5.1.2 compound that uses platinum/palladium/nickel as a catalyst when it reacts. (1)

5.2 Write the IUPAC name of the following:

5.2.1 compound **A.** (2)

5.2.2 compound **E.** (3)

5.3 Draw the structural formula of functional group of compound **D.** (2)

5.4 Write the general formula of compound **C.** (1)

5.5 Consider compound **F.**

5.5.1 Write down the NAME of the catalyst used during preparation of compound **F.** (1)

5.5.2 Is the reaction for preparation of compound **F** ENDOTHERMIC or EXOTHERMIC? (1)

[13]

QUESTION 6

The relationship between strength of intermolecular forces and the boiling point is investigated using five organic compounds. The compounds and their boiling points are given in the table below.

Experiment	Compound/Molecular Formulae		Boiling point (°C)
1	A	C_5H_{12}	36
	B	C_5H_{12}	28
	C	C_5H_{12}	10
2	D	C_4H_8O	54
	E	C_4H_8O	68

6.1 Define the term *boiling point*. (2)

6.2 Consider experiment 2.

6.2.1 To which homologous series does compound **D** and **E** belong? (1)

6.2.2 Name the type of intermolecular force found in compound **D** and **E**. (1)

6.2.3 Write down the IUPAC name of compound **D**. (2)

6.3 Fully explain the difference in boiling point between compound **A** and compound **B** in experiment 1. (3)

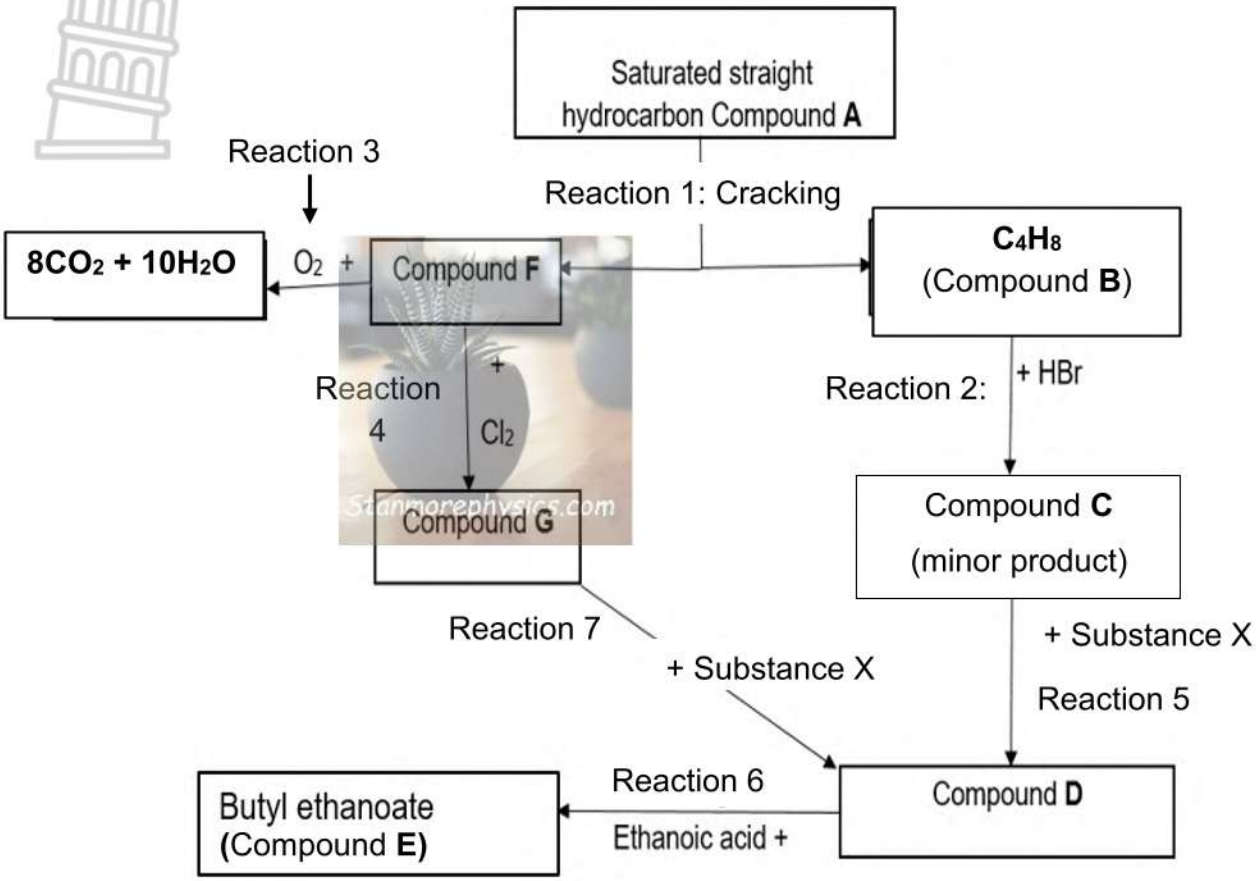
6.4 Draw the structural formula of compound **C**. (2)

6.5 From the table above, which compound is a gas at room temperature? Write only the letter (A – E). (1)

[12]

QUESTION 7

The flow diagram below has reactions 1 – 7. Compounds **A – G** represent organic compounds. Study the flow diagram and answer the questions that follow.



7.1 Write down the **type** of:

7.1.1 reaction 3. (1)

7.1.2 reaction 4. (1)

7.2 Write down the **name/formula** of:

7.2.1 substance X. (1)

7.2.2 inorganic product of reaction 4. (1)

7.3 Compound **C** and compound **G** are structural isomers.

Is the above UNDERLINED statement TRUE or FALSE?
Write TRUE or FALSE and give a reason for your answer. (2)

7.4 Write down the IUPAC name of compound **D**. (2)

7.5 Using structural formula write down a balance chemical reaction for reaction 1. (5)

7.6 Write down the structural formula of the positional isomer of the organic PRODUCT of reaction 4. (2)

7.7 Compound **G** can be converted to compound **B**.
Write down TWO reaction conditions required to convert compound **G** to compound **B.** (2)

7.8 Draw the structural formula of the functional isomer of compound **E.** (2)
[19]

TOTAL: 100

DATA FOR PHYSICAL SCIENCES GRADE 12
PAPER 1 (PHYSICS)

TABLE 1: PHYSICAL CONSTANTS

NAME	SYMBOL	VALUE
Acceleration due to gravity	g	9,8 $m \cdot s^{-2}$
Universal gravitational constant	G	6,67 x 10^{-11} $N \cdot m^2 \cdot kg^{-2}$
Speed of light in a vacuum	c	3,0 x 10^8 $m \cdot s^{-1}$
Planck's constant	h	6,63 x 10^{-34} J·s
Coulomb's constant	k	9,0 x 10^9 $N \cdot m^2 \cdot C^{-2}$
Charge on electron	e	1,6 x 10^{-19} C
Electron mass	m_e	9,11 x 10^{-31} kg
Mass of the Earth	M	5,98 x 10^{24} kg
Radius of the Earth	R_E	6,38 x 10^6 m

TABLE 2: FORMULAE

MOTION

$v_f = v_i + a\Delta t$	$\Delta x = v_i\Delta t + \frac{1}{2}a\Delta t^2$ OR $\Delta y = v_i\Delta t + \frac{1}{2}a\Delta t^2$
$v_f^2 = v_i^2 + 2a\Delta x$ OR $v_f^2 = v_i^2 + 2a\Delta y$	$\Delta x = \left(\frac{v_i + v_f}{2}\right)\Delta t$ OR $\Delta y = \left(\frac{v_i + v_f}{2}\right)\Delta t$

FORCE

$F_{net} = ma$	$p = mv$
$f_s^{max} = \mu_s N$	$f_k = \mu_k N$
$F_{net}\Delta t = \Delta p$ $\Delta p = mv_f - mv_i$	$w = mg$
$F = \frac{Gm_1m_2}{d^2}$ OR $F = \frac{Gm_1m_2}{r^2}$	$g = \frac{GM}{d^2}$ OR $g = \frac{GM}{r^2}$

WORK, ENERGY AND POWER/*ARBEID, ENERGIE EN DRYWING*

$W = F\Delta x\cos\theta$	$U = mgh$ OR $E_P = mgh$
$K = \frac{1}{2}mv^2$ OR $E_k = \frac{1}{2}mv^2$	$W_{net} = \Delta K$ OR $W_{net} = \Delta E_k$ $\Delta K = K_f - K_i$ OR $\Delta E_k = E_{kf} - E_{ki}$
$W_{nc} = \Delta K + \Delta U$ OR $W_{nc} = \Delta E_k + \Delta E_p$	$P = \frac{W}{\Delta t}$
$P_{ave} = Fv_{ave}$	

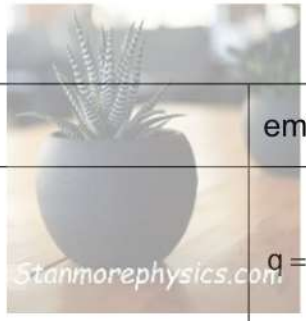
WAVES, SOUND AND LIGHT

$v = f\lambda$	$T = \frac{1}{f}$
$f_L = \frac{v \pm v_L}{v \pm v_s}f_s$	$E = hf$ OR $E = h\frac{c}{\lambda}$
$E = W_o + E_{k(max)}$ OR $E = W_o + K_{max}$ where $E = hf$ and $W_0 = hf_0$ and $E_{k(max)} = \frac{1}{2}mv_{max}^2$ OR $K_{max} = \frac{1}{2}mv_{max}^2$	

ELECTROSTATICS

$F = \frac{kQ_1Q_2}{r^2}$	$E = \frac{kQ}{r^2}$
$V = \frac{W}{q}$	$E = \frac{F}{q}$
$n = \frac{Q}{e}$ OR $n = \frac{Q}{q_e}$	

ELECTRIC CIRCUITS



$R = \frac{V}{I}$	emf (ε) = I(R + r)
$R_s = R_1 + R_2 + \ldots$ $\frac{1}{R_p} = \frac{1}{R_1} + \frac{1}{R_2} + \ldots$	$q = I\,\Delta t$
$W = Vq$ $W = VI\Delta t$ $W = I^2R\Delta t$ $W = \frac{V^2\Delta t}{R}$	$P = \frac{W}{\Delta t}$ $P = VI$ $P = I^2R$ $P = \frac{V^2}{R}$

ALTERNATING CURRENT

$I_{rms} = \frac{I_{max}}{\sqrt{2}}$ $V_{rms} = \frac{V_{max}}{\sqrt{2}}$	$P_{ave} = V_{rms}I_{rms}$ $P_{ave} = I_{rms}^2R$ $P_{ave} = \frac{V_{rms}^2}{R}$

TABLE 3: THE PERIODIC TABLE OF ELEMENTS
TABEL 3: DIE PERIODIEKE TABEL VAN ELEMENTE

KEY/*SLEUTEL*

Electronegativity / *Elektronegatiwiteit*	Atomic number / *Atoomgetal*	Symbol / *Simbool*	Approximate relative atomic mass / *Benaderde relatiewe atoommassa*
1,9	29	Cu	63,5

1 (I)	2 (II)	3	4	5	6	7	8	9	10	11	12	13 (III)	14 (IV)	15 (V)	16 (VI)	17 (VII)	18 (VIII)
1 H 1 (2,1)																	2 He 4
3 Li 7 (1,0)	4 Be 9 (1,5)											5 B 11 (2,0)	6 C 12 (2,5)	7 N 14 (3,0)	8 O 16 (3,5)	9 F 19 (4,0)	10 Ne 20
11 Na 23 (0,9)	12 Mg 24 (1,2)											13 Aℓ 27 (1,5)	14 Si 28 (1,8)	15 P 31 (2,1)	16 S 32 (2,5)	17 Cℓ 35,5 (3,0)	18 Ar 40
19 K 39 (0,8)	20 Ca 40 (1,0)	21 Sc 45 (1,3)	22 Ti 48 (1,5)	23 V 51 (1,6)	24 Cr 52 (1,6)	25 Mn 55 (1,5)	26 Fe 56 (1,8)	27 Co 59 (1,8)	28 Ni 59 (1,8)	29 Cu 63,5 (1,9)	30 Zn 65 (1,6)	31 Ga 70 (1,6)	32 Ge 73 (1,8)	33 As 75 (2,0)	34 Se 79 (2,4)	35 Br 80 (2,8)	36 Kr 84
37 Rb 86 (0,8)	38 Sr 88 (1,0)	39 Y 89 (1,2)	40 Zr 91 (1,4)	41 Nb 92	42 Mo 96 (1,8)	43 Tc (1,9)	44 Ru 101 (2,2)	45 Rh 103 (2,2)	46 Pd 106 (2,2)	47 Ag 108 (1,9)	48 Cd 112 (1,7)	49 In 115 (1,7)	50 Sn 119 (1,8)	51 Sb 122 (1,9)	52 Te 128 (2,1)	53 I 127 (2,5)	54 Xe 131
55 Cs 133 (0,7)	56 Ba 137 (0,9)	57 La 139	72 Hf 179 (1,6)	73 Ta 181	74 W 184	75 Re 186	76 Os 190	77 Ir 192	78 Pt 195	79 Au 197	80 Hg 201	81 Tℓ 204 (1,8)	82 Pb 207 (1,8)	83 Bi 209 (1,9)	84 Po (2,0)	85 At (2,5)	86 Rn
87 Fr (0,7)	88 Ra 226 (0,9)	89 Ac															

58 Ce 140	59 Pr 141	60 Nd 144	61 Pm	62 Sm 150	63 Eu 152	64 Gd 157	65 Tb 159	66 Dy 163	67 Ho 165	68 Er 167	69 Tm 169	70 Yb 173	71 Lu 175
90 Th 232	91 Pa	92 U 238	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No	103 Lr

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GRADE 12

PHYSICAL SCIENCES/*FISIESE WETENSKAPPE*

CONTROL TEST 1 MARKING GUIDELINE/*KONTROLE TOETS 1 NASIENRIGLYNE*

17 March/*Maart* 2025

MARKS/*PUNTE* : **100**

This marking guideline consists of 12 pages/*Hierdie nasienriglyne bestaan uit 12 bladsye*

QUESTION/*VRAAG* 1

1.1 A ✓✓

1.2 D✓✓

1.3 B ✓✓

1.4 B ✓✓

1.5 B✓✓

1.6 B ✓✓

1.7 A ✓✓

1.8 C ✓✓

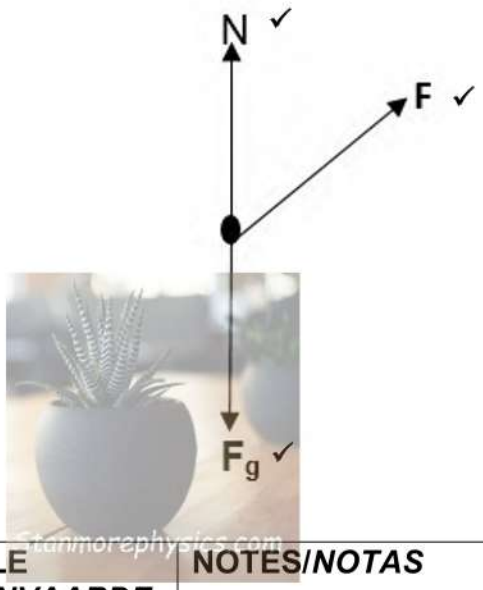
1.9 C✓✓

1.10 A✓✓

[20]

QUESTION/*VRAAG* 2

2.1



ACCEPTABLE LABELS/*AANVAARDE BYSKRIFTE*	**NOTES/*NOTAS***
F_N: Normal/Normaal F_g: w/weight/force due to gravity / *gewig/krag agv gravitasie* F_A: 10 N/Applied force/*Toegepaste krag*	ONE mark for each force represented by an arrow with a correct label/*Een punt vir elke krag wat deur 'n pyl met 'n korrekte byskrif voorgestel word* **Penalise** ONCE for each of the following:/***Penaliseer** EEN KEER vir elk van die volgende*: • No arrow/*geen pyl* • There is no dot/*daar is nie 'n kol nie* • Gap between the line and the dot/*spasie tussen die lyne en die kol* • Dotted line is used/*stippellyn word gebruik* • A force diagram is used/*kragtediagram is gebruik*

(3)

2.2 $F_{net} = ma$
$F_x - f_k = ma$
$10\cos 15^o - 0,53(3\times 9,8) - 10\sin 15^o$ ✓= 3a✓
$a = -\ 1,51712 m.s^{-2}$
$v_f{}^2 = v_i{}^2 + 2a\Delta x$✓
$0 = v_i{}^2 + 2(-1,51712)4$✓
$v = 3,48\ m.s^{-1}\ (right/regs)$ ✓

Marking criteria for choosing right as positive/*Nasien kritiria as regs as positief gekies word*

- **1 mark for/*punt vir* :**

$0{,}53(3(9{,}8) - 10sin15)$

- **1 mark for/*punt vir*:**

$10\cos 15\ and/en\ 3a$

- **1 mark for/*punt vir*:**

$v_f{}^2 = v_i{}^2 + 2a\Delta x$

- **1 mark for/*punt vir*:**

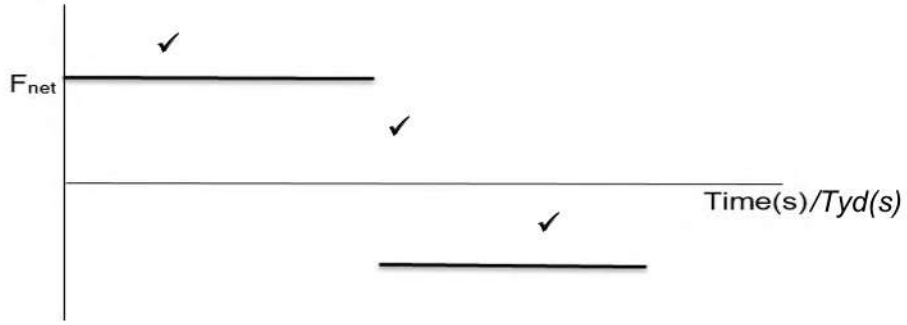
$0 = v_i{}^2 + 2(-1{,}51712)4$

- **1 mark for/*punt vir*:**

$v = 3{,}48 m.s^{-1}$ (right/*regs*) (5)

2.3 Increase ✓/*Toeneem*
The <u>resultant force will increase</u>/<u>acceleration will increase</u> causing the velocity to also increase. ✓*I Die <u>resulterende krag sal toeneem/versnelling sal toeneem</u>, wat veroorsaak dat die snelheid ook toeneem.* (2)

2.4



Marking criteria for choosing right as positive/*Nasien kriteria as regs as positief gekies word*
• 1 mark for the line parallel to the x- axis and intersecting with the y axis in the first quadrant/*1 punt vir die lyn parallel aan die x-as en sny met die y-as in die eerste kwadrant*
• 1 mark for the line parallel to the x axis in the fourth quadrant/ *1 punt vir die lyn parallel aan die x-as in die vierde kwadrant*

• 1 mark for the time of change in direction of the net force/ *1 punt vir die tyd van verandering in rigting van die netto krag.*
Note: Two parallel lines in the fourth and the first quadrant both intersecting with the y axis (2/3)/ *Let wel: Twee parallelle lyne in die vierde en die eerste kwadrant wat albei met die y-as sny (2/3)*

(3)
[13]

QUESTION/*VRAAG* 3

3.1 When object A exerts a force on object B, object B simultaneously exert an oppositely directed force of equal magnitude on object A✓✓/ *Wanneer voorwerp A 'n krag op voorwerp B uitoefen, oefen voorwerp B gelyktydig 'n teenoorgestelde gerigte krag van gelyke grootte op voorwerp A uit* (2 or 0)

3.2 Because the direction of resultant force/acceleration is the same as the direction of motion. ✓/ *Omdat die rigting van resulterende krag/versnelling dieselfde is as die rigting van beweging.* (1)

3.3 $F_{net}\,\Delta t = mv_f - mv_i$ ✓
$F_{net}\Delta = \Delta p$

$\Delta p = 5(2,5) - 5(1,5)$ ✓

$\Delta p = 5\text{ N.s right}/regs$ ✓ (3)

3.4
$\sum p_i = \sum p_f$
$mv_{ix} + mv_{iy} = mv_{fx} + mv_{fy}$ ✓

$2(3) + 5(1,5)$✓ $= 2v_{fx} + 5(2,5)$✓
$v_{fx} = 0,5\ m.s^{-1}\ right$✓/*regs*

(4)
[10]

QUESTION/*VRAAG* 4

4.1 The motion during which the only force acting on an object is the gravitational force. ✓✓/ *Die beweging waartydens die enigste krag wat op 'n voorwerp inwerk, die gravitasiekrag is* (2 or 0)

4.2 $v_f^2 = v_i^2 + 2g\Delta x$ or $v_f^2 = v_i^2 + 2g\Delta y$✓
0✓ $= v_i^2 + 2(-9{,}8)(7)$ ✓
$v_i = 11{,}71\ m.s^{-1}\ (upwards/up/)$✓/*boontoe/op* (4)

4.3.1 **Positive marking from 4.2/*Positiewe nasien vanaf 4.2***
$E_{k(\ hi\ \ the\ ground/\ )} = E_{k(that\ it\ bounce\ )} + E_{k(\ converted\ to\ othe\ \ energies)}$
$\frac{1}{2}mv^2_{(hi\ )} = \frac{1}{2}mv^2_{(bounce)} + \frac{1}{2}mv^2_{(convert)}$

$\frac{1}{2}(1{,}5)v^2_{(hit)}$✓ $(\mathrm{m.s} - 1 = \frac{1}{2}(1{,}5)(11{,}71)^2$✓ $+344{,}1$✓
$v_{(hit)} = 24{,}41\ m.s^{-1}(downwards)$✓/*(afwaarts)* (4)

4.3.2 **Positive marking from 4.3.1/*Positiewe nasien vanaf 4.3.1***
$v_f = v_i + gt$✓
$24{,}41 = 12 + (9{,}8)t$✓
$t = 1{,}27s$✓ (3)
[13]

QUESTION/*VRAAG* 5

5.1.1 A ✓and/*en* B✓ (2)

5.1.2 C ✓ (1)

5.2.1 3-chloro✓hexane ✓/*3-chloroheksaan*

Marking criteria/*Nasien kriteria*
• 1 mark for 3-chloro/*1 punt vir 3-chloro*
• 1 mark for hexane/*1 punt vir heksaan*

(2)

5.2.2 4-methyl✓pentan-2-one✓✓/*4-metielpentaan-2-oon*

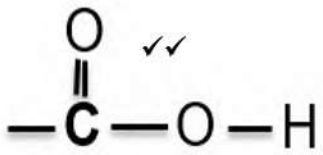
OR/OF

4-methyl✓-2- pentanone✓✓/*4-metiel-2-pentanoon*

Marking criteria/Nasien kriteria
• 1 mark for 4-methyl/*1 punt vir 4-metiel*
• 1 mark for pentanone/*1 punt vir pentaanoon*
• 1 mark for whole name correct/*1 punt vir die hele naam korrek*

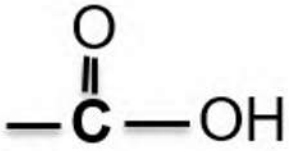
(3)

5.3



✓✓

ACCEPT/*AANVAAR*



(2)

5.4 C_nH_{2n} ✓ (1)

5.5.1 (Concentrated) Sulphuric acid ✓ (No mark for H_2SO_4)/ (1)
(Gekonsentreerde) Swaelsuur (geen punt vir H_2SO_4 nie)

5.5.2 Endothermic ✓/*Endotermies* (1)

[13]

QUESTION/*VRAAG* 6

6.1 The temperature at which the vapour pressure of the substance is equal to the atmospheric pressure. ✓✓/ *Die temperatuur waarby die dampdruk van die stof gelyk is aan die atmosferiese druk.* (2 or 0)

6.2.1 Aldehyde ✓/*Aldehied* (1)

6.2.2 London force/ induced dipole force ✓/*London krag/geïnduseerde dipool krag* (1)

6.2.3 methylpropanal✓✓/*metielpropanaal* (2)

ACCEPT/*AANVAAR*

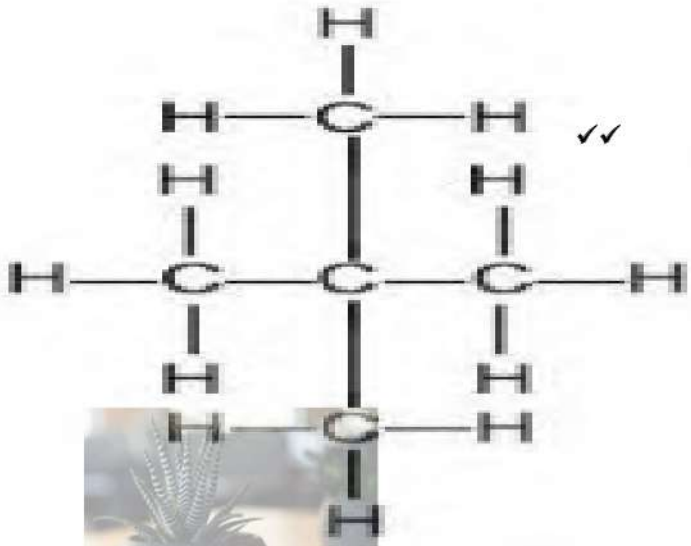
2-methylpropanal/*2-metielpropanaal*

6.3
- Compound A has larger surface area/longer chain length than compound B. ✓/ *Verbinding A het 'n groter oppervlakte/langer kettinglengte as verbinding B*
- Compound A has stronger intermolecular force/London force than compound B. ✓/ *Verbinding A het sterker intermolekulêre krag/Londen-krag as verbinding B*
- More energy is required to overcome the stronger intermolecular force in compound A than compound B ✓/ *Meer energie word benodig om die sterker intermolekulêre krag in verbinding A as verbinding B te oorkom*

Or/*Of*

- Compound B has smaller surface area/smaller chain length than compound A. ✓/ *Verbinding B het 'n kleiner oppervlakte/kleiner kettinglengte as verbinding A.* (3)
- Compound B has weaker intermolecular force/London force than compound A. ✓/ *Verbinding B het swakker intermolekulêre krag/Londen-krag as verbinding A*
- Less energy is required to overcome the weaker intermolecular force/London force in compound B than in compound A ✓/ *Minder energie word benodig om die swakker intermolekulêre krag/Londen krag in verbinding B te oorkom as in verbinding A*

6.4 (2)



✓✓

6.5 C ✓ (1)

[12]

QUESTION/*VRAAG 7*

7.1.1 Combustion/oxidation ✓/*Verbranding/oksidasie* (1)

7.1.2 Substitution ✓/*Substitusie* (1)

7.2.1 NaOH/KOH/H_2O/Sodium hydroxide/potassium hydroxide/water ✓/ *Natriumhidroksied/kaliumhidroksied/water* (1)

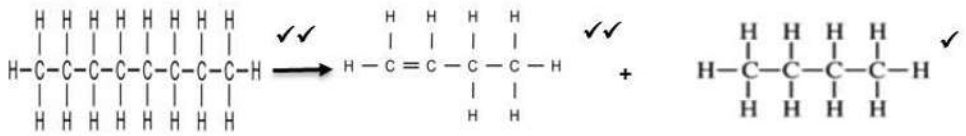
7.2.2 HCl/ hydrogen chloride ✓/ *waterstofchloried* (1)
(NO MARK FOR HYDROCHLORIC ACID/GEEN PUNT VIR SOUTSUUR NIE)

7.3 False✓/*Fals*

-

Compound G and compound C do not have the same molecular mass/ compound G has chlorine while compound C has bromine. ✓/ *Verbinding G en verbinding C het nie dieselfde molekulêre massa nie/ verbinding G het chloor terwyl verbinding C broom het* (2)

7.4 1-butanol/ butan-1-ol✓✓/*1-butaanol/butaan-1-ol* (2)

7.5 

Marking criteria/*Nasien kriteria*

- 2 mark for 8 carbons/*2 punte vir 8 koolstowwe*
- 1 mark for double bonds/*1 punt vir dubbelbindings*
  1 mark for whole structure correct/*1 punt vir hele struktuur korrek*
- 1 mark for butane/*1 punt vir butaan*

(5)

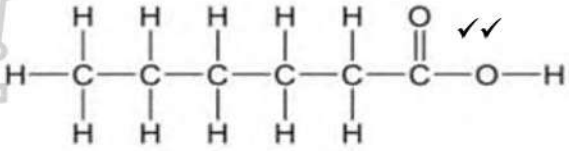
7.6 

(2 or 0)

7.7 Concentrated strong base/ concentrated NaOH/KOH ✓
/gekonsentreerde sterk basis/gekonsentreerde NaOH/KOH

Heat✓/*Hitte* (2)

7.8



✓✓

- 1 mark for functional group/*1 punt vir funksionele groep*
- 1 mark for whole structure correct/*1 punt vir hele struktuur korrek*

(2)
[19]

TOTAL/*TOTAAL*: 100