JINA .....NAMBARI YA

USAJILI.....MKONDO.....NAMBARI YA MTAHINIWA.....

TAREHE.....SAHIHI YA MTAHINIWA.....

ACK MASENO WEST JOINT EXAMINATION

CHETI CHA KUHITIMU ELIMU YA SEKONDARI KENYA

KISWAHILI
KARATASI YA 3
FASIHI
MUDA : SAA 2 ½

MAAGIZO

Maagizo
(a) Andika jina lako na na maelezo mengine muhimu katika nafasi ulizoachiwa hapo juu.
(b) Jibu maswali manne pekee.
(c) Swali la kwanza ni la lazima.
(d) Maswali hayo mengine matatu yachaguliwe kutoka sehemu nne zilizobaki; yaani: Tamthilia,Hadithi fupi, Riwaya na Fasihi simulizi.
(e) Usijibu maswali mawili kutoka sehemu moja.
(f) Majibu yote lazima yaandikwe kwa lugha ya Kiswahili.
(g) Majibu yote sharti yaandikwe kwenye karatasi zilizoandamanishwa kwenye maswali haya.

NB: Andika nambari za maswali uliyoyajibu kwenye sanduku hili kando na swali la kwanza

SWALI	1				JUMLA
ALAMA					

SEHEMU YA A: USHAIRI.

1. Lazima.

Yanilemea malezi, nateseka na Watoto
Yamekuwa kwangu kazi, ngumu yenye na uzito
Nalala sipati njozi, silali kufunga mato
Fufuka baba Watoto, nateseka na Watoto

Baba Watoto fufuka, fufuka baba Watoto
Mwenzio ninateseka, nateseka na Watoto
Ni lini huno wahaka, lini utafika mwito?
Fufuka baba Watoto, nateseka na Watoto.

Una mateso ujane, na udhia na majuto
Zama zile tuchumbane, nili na kiwi ya mato
Kumbe twaja tutengane, nitabike na Watoto
Fufuka baba Watoto, nateseka na Watoto.

Maisha yao ya chungu, ya chungu pia ya mato
Na mashaka na wanangu, wa bado mno Watoto
Nimekosani kwa Mungu, nistahili mazito?
Fufuka baba Watoto, nateseka na Watoto.

Zaidi nina imani, maisha ni kama mto
Namuachia Manani, mwenye kupea mapato
Yeye yu mwenye hisani, yanapojiri mazito
Fufuka baba Watoto, nateseka na Watoto.

Maswali.

a). Eleza ujumbe wa shairi hili. (alama. 5).
b). Huku ukitoa mifano , onyesha mbinu **tatu** ambazo mshairi ametumia kutosheleza mahitaji ya kiarudhi. (alama. 3).
c). Tambua bahari ya shairi hili kwa kuzingatia kigezo cha:(alama. 2).
    i). Idadi ya vipande
    ii). Mpangilio wa vina.
d).Fafanua muundo wa shairi hili. (alama. 4).
e). Andika ubeti wa **tano** katika lugha nathari. (alama. 4).
f).Eleza toni ya shairi hili.(alama 1).
g). Tambua nafsi neni katika shairi hili. (alama. 1)

SEHEMU YA B. TAMTHILIA YA BEMBEA YA MAISHA.

2."Ndiyo maisha hayo. Usipoyumbishwa unakaa mjinga. Huwezi kuvuta fikra. **Adha, wanasema, ndiyo chanzo cha uvumbuzi."**
a). Weka dondoo hili katika muktadha wake. (alama. 4)
b). Eleza umuhimu wa msemaji wa maneno haya. (alama. 4).
c). Thibitisha ukweli wa kauli iliyopigwa mstari kwa kurejelea tamthilia nzima. (alama. 12)

AU.

3."Maradhi! Madhila yake hayasemeki. Yakimla mtu humthakilisha. Humwacha hoi, hana mbele wala nyuma. Yakitaka huzichezea dawa mwajificho. Dawa zikiingia huku, maradhi hutokea pale hali pesa zinakwenda, shughuli zinasimama. Mifuko hufukarika lakini zaidi huleta wasiwasi usioisha. Nigekuwa na uwezo ningefanya chochote madhila ugonjwa uondoke. Dunia ina mitihani tosha lakini panapo maradhi sugu,uzito wake hauthaminiki."

a). Changanua vipengele vya kimtindo vinavyojitokeza katika kifungu hiki. (alama. 10).
b).'Ndoa imeyatia doa maisha yako...sasa mimi ninataka uhuru wangu..."
Fafanua hali **kumi** zinazotia maisha ya wanajamii doa tamthiliani. (alama. 10).

SEHEMU YA C: RIWAYA YA NGUU ZA JADI.

4."Ni sawa kwa sababu **tokea mwanzo sisi ni Wanyama tu**. Tofauti ni kwamba tunatumia miguu miwili kutembea ilhali wale tunaodhani ni Wanyama kutushinda, wanatumia minne."

a).Eleza muktadha wa dondoo hili. (alama. 4).
b).Bainisha sifa nne za msemewa wa maneno haya. (alama. 4).
c).Tambua mbinu mbili za lugha katika dondoo hili. (alama. 2).
d).Kwa hoja **KUMI**, thibitisha ukweli wa kauli uliopigiwa mstari katika dondoo kwa kurejelea wahusika **mbalimbali** riwayani.(alama. 10).

AU.

5. "Mrima alikuwa akitabaradi kwenye ndoto zake, hana Habari wala taarifa. Mkewe aliamua kumwita kwa nguvu huku akimfinya sikio. Mrima alihisi maumivu, akafungua jicho moja na kusema, "Nikilaala...shida i ...ko wapi? Kwendeeni huko...ma...loofa nyie. Waliamua kumwinua. Walimbeba hobelahobela hadi kwenye gari. Alikuwa hatazamiki. Uchafu wa siku nyingi ulumfanya kunuka kama kisonzo. Nywele zilisokotana. Meno yalipiga manjano kutokana na ugaga uliokolea. Alivaa nguo bwaga mtwae tu. Nguo hizo zilicheua harufu mbaya mithili ya kicheche. Mangwasha chozi la huzuni lilimdondoka. Lonare aliamua kumpeleka hospitali moja kwa moja. Hali yake iliitaji matibabu ya dharura. Matibabu ya mwili na akili."

Maswali

a).Bainisha taswira zinazojitokeza katika dondoo hili. (ala.5).

b). Eleza umuhimu wa mandhari ambamo maneno haya yametolewa (ala.5)

c) . Fafanua changamoto zinazokabili asasi ya ndoa kwa kurejelea riwaya nzima. (ala.10).

SEHEMU YA D: DIWANI YA MAPAMBAZUKO YA MACHWEO NA HADITHI NYINGINE.

6. HARUBU ya MAISHA(Paul Nganga Mutua).

"Aah, brother! Mpaka unifanyie kazi? Ingia ndani. Hatuwezi kukosa lau kidogo cha leo..."

a). Weka maneno haya katika muktadha wake.(alama. 4)

b). Tambua mbinu **Nne** za lugha katika dondoo hili. (alama. 4).

c). Eleza toni inayojitokeza katika dondoo hili. (alama. 2)

d). Kwa kurejelea hadithi nzima, fafanua changamoto **KUMI** zinazowakumba wafanyikazi. (alama. 10)

AU.

7. KIFO CHA SULUHU(Domnic Maina Oigo)

Mume wangu,hebu zivute fikra zako miaka kumi na mitano iliyopita tulipoingia katika mkataba wa ndoa.Kwa nini unataka kujitia hamnazo kuhusu ahadi ulizozitoa?Umesahau namna tulivyohangaika,tukachekwa na watu,tukakosa hata marafiki na hatimaye tukabandikwa majina ya ajabu? Umesahau,mume wangu? Umesahau namna kazi yako ya kuuza makaa ilivyofika hatima ya ghafla baada ya serikali kupiga marufuku ukataji wa miti katika eneo la Dafrao?Naomba ukumbuke.Ninaamini huenda umesahau!Ama cheo chako cha ubunge ulichokipata kwa mbinu nizijuazo mimi kimekulevya na kukufanya uisahau familia yako?

Maswali

a) Eleza mbinu **Tatu** za kutambua sifa za mume anayerejelewa katika kifungu hiki kwa kurejelea hadithi nzima. (alama. 6)
   alitamani amwaangamize mkewe ili abaki na Abigael
b) (i) Fafanua mbinu za kimtindo zilizotumika katika dondoo hili.(alama 5)
   (ii) Fadili njia Chanya ambazo vijana wanatumia kukabiliana na changamoto zinazowakumba kulingana na hadithi hii. (alama. 5).
d). Fafanua jinsi maudhui ya elimu yalivyoshughulikiwa katika hadithi hii. (alama. 4).

SEHEMU YA E: FASIHI SIMULIZI

8. Soma kifungu kifuatacho kisha ujibu maswali

"Hapo zamani za kale katika kitongoji cha Shwari,paliishi Sungura na Fisi.Sungura na Fisi walikuwa marafiki wa chanda na pete.Walizama na kuibuka pamoja katika bahari mbalimabli za maisha.Marafiki hawa walizilea aila zao pamoja.Walifanya kazi kwa ujima mashambani na kushiriki vunoni pamoja.Mvua nayo ilinyesha msimu baada ya mwingine.Makonde yao yakanawiri na maghala yao yakaanza kulalamika shibe.Pia walifuga mifugo pamoja.

Watoto wa Sungura na Fisi walicheza pamoja bila kujali tofauti zao za kimaumbile.Waliamka alfajiri na mapema kwenda kuchunga mifugo wa wazazi wao.Kadri siku zilivyosonga,ndivyo gundi iliugandisha undugu kati ya familia hizi ilivyoendelea kunata.

Hata hivyo,siku za neema zilipisha shari.Mvua ilikataa katakata kukitembelea kijiji chao.Polepole,akiba ya chakula waliyokuwa wameweka ikaanza kupungua.Mwishowe ikakauka kabisa

Fisi alikesha kitandani kwa tafakuri kuu.Hali ya baadaye ya familia hizi mbili ilimsononesha.Alihofia kuwaona wanao wakigeuka magofu.Asubuhi moja baada ya yeye na familia yake kula usiku uliotangulia,alimwendea Sungura kumtaka washauriane kuhusu mikakati ya kukabiliana na hali mbaya iliyowasibu.

Baada ya kutia na kutoa,wazo zuri lilimjia Sungura."Ndugu yangu, janga hili la njaa ni tokeo la hasira za mizimu.Jana usiku,mizimu ilinijia usingizini.Iliniambia kwamba njia ya pekee ya kujiopoa na familia zetu ni kwa kuituliza kwa kuitoa kafara.Tukifanya hivyo,mvua itanyesha mara moja na tutaweza kuyanusuru maisha ya watoto wetu."|

Kipaji cha Fisi kilinawiri kwa furaha.Hata hivyo,tabasamu yake haikudumu.Alizama tena katika fikira. Baada ya kutafakari kwa muda,alimuuliza Sungura,"Ndugu yangu,mifugo wetu wote wamesalimishwa amri na ukame.Maghala yetu hayana chochote.Hata kuwalisha watoto wetu ni tatizo.Je,tutatoa wapi kafara?"

Sungara alijibu kwa huzuni,"Mizimu yenyewe haitaki mifugo wala nafaka.Inataka damu.Damu ya binadamu pekee ndiyo inayoweza kufuta dhambi za mababa zetu."

"Na binadamu wenyewe watatoka wapi?"Aliuliza Fisi."Hilo ndilo tatizo.Mizimu inataka tuwatoe sadaka mama zetu na vifunguamimba wetu.Leo usiku,wanataka kila mmoja wetu amuue mama yake na kumtoa sadaka kwenye mbuyu ulio karibu na mto."Sungura alisema.

Maneno ya Sungura yaliyafanya masikio ya Fisi kuvuma kwa uchungu wa fikira ya kumpoteza mamake.Alimpenda mama yake kwa dhati.Aidha,alijua kuwa haikuhalisi binadamu kumuua mwenzake.Hata hivyo,nafsi yake ilimnasihi kwamba alihitaji kufanya uamuzi wa dharura.Jioni hiyo,sime yake ilifanya kazi.Alikata koo la mama yake mpenzi huku machozi ya majonzi yakimtiririka.Aliuchoma mwili wa mama yake pale mbuyuni huku akiimba:

Enyi mizimu mtoao vipaji,
Nimewapeni damu ya kipenzi mama yangu,
Itumeni mvua kuineemesha ardhi.

Fisia aliondoka huku akijituliza kuwa hata Sungura naye amemchinja mama yake.Usiku huo,mvua ya gharika ilinyesha.Mashamba ya Sungura na Fisi yakajaa chakula mara moja.Zizini,Ng'ombe wakasikika wakikoroma na ardhi ikavaa vazi la kijani kibichi.Wakati wote huo Sungura hakuonekana nyumbani.Fisi alidhani kwamba huzuni ya kumpoteza mama yake ilimlemea,hivyo akaamua kwenda mbuyuni kumtafuta.Hata kabla hajakivuka kizingiti cha mlango,alikumbana ana kwa ana na mama yake Sungura.Malaika yalimsimama mwilini,mate yakamkauka kwa mshangao!'Kumbe Sungura hakumtoa kafara mama yake?Kumbe maneno yote ya Sungura yalikuwa ulaghai ili mimi Fisi nimtoe kafara mama yangu na kuiauni jamaa ya

Sungura!'Moyo wa Fisi ulifungua kwa fundo kubwa la chuki na kisasi kwa Sungura.Huo ukawa mwisho wa urafiki wao. **Hadithi yangu imeishia hapo."**

MASWALI:

a) i)Thibitisha kuwa hii ni ngano ya hekaya. (Alama 1)

ii)Umepewa fursa ya kutamba ngano hii kwa hadhira. Fafanua njinsi utakavyofanya ili utambaji wako uvutie. (Alama 4)

b) Jadili umuhimu wa kauli iliyopigwa mstari katika ngano hii.(alama.4)

c) i)Eleza umuhimu nne wa wimbo uliotumika kwenye usimulizi huu. (Alama 4)

ii)Taja shughuli mbili za kiuchumi katika jamii hii. (Alama 2)

d) Tungo za aina hii zinaendelea kufifia katika jamii nyingi. Fafanua kwa hoja TANO sababu za hali hii. (Alama 5)

NAME.....INDEXNO.....ADM NO.....

SCHOOL.....SIGN.....DATE.....

ACK MASENO WEST JOINT EXAMINATION

KENYA CERTIFICATE OF SECONDARY EDUCATION

232/3 PHYSICS Paper 3

(Practical)

March/April, 2025 Exam – Time: $2^1/_2$ hours

INSTRUCTIONS TO CANDIDATES:

(a) *Write your **name, admission number** and **stream** in the spaces provided above.*
(b) *Indicate your **school** and **date of exam** in the spaces provided above.*
(c) *You are supposed to spend the first **15** minutes of the **2 ½** hours allowed for this paper reading the whole paper carefully before commencing your work.*
(d) *Marks are given for a clear record of the observation actually made, their suitability, accuracy and the use made of them.*
(e) *Candidates are advised to record their observations as soon as they are made*
(f) *Non-programmable silent electronic calculators **may be** used.*
(g) *Candidates should check the question paper to ascertain that all the pages are printed and that no questions are missing.*

FOR EXAMINER'S USE ONLY.

Question(s)	Maximum Score	Candidate's Score
1	20	
2A	04	
2B	09	
2C	09	
TOTAL	40	

This paper consists of 7 printed pages. Candidates are advised to check and to make sure all pages

QUESTION 1

You are provided with the following:

- Pendulum bob.
- Thin thread.
- Complete retort stand.
- Metre rule.
- Stop watch.
- 2 pieces of wood.
- Vernier callipers.

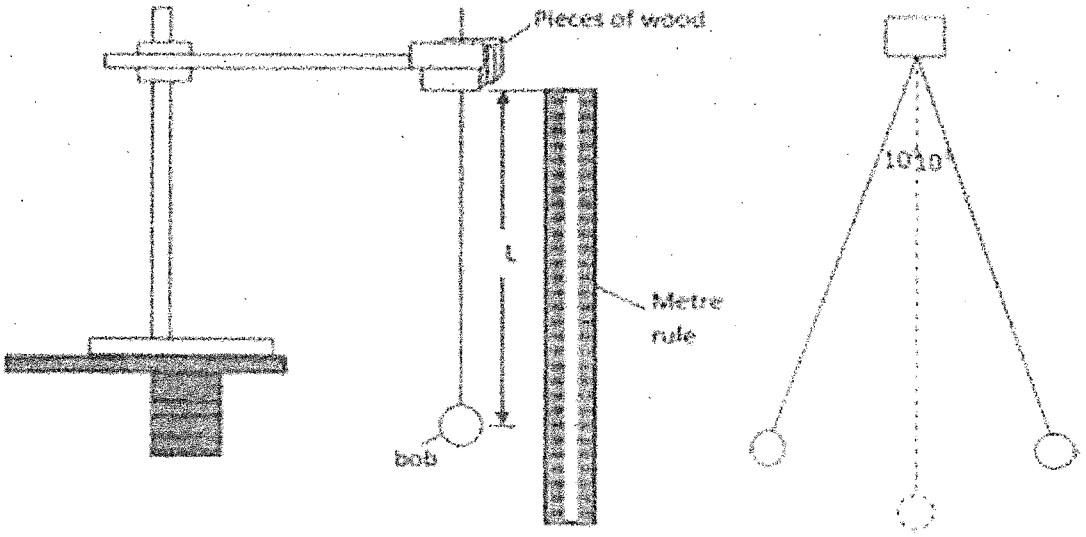
Proceed as follows:

a) Using the Vernier callipers, measure the diameter of the pendulum bob and record its value:

d = ... cm (½ mark)

d = ... m (½ mark)

b) Set up the apparatus as shown below.



c) Starting with a length of thread of 15cm, set the pendulum bob swinging through an angle of about 10° as shown above. Ensure that the pendulum is swinging in a plane. (The length of the pendulum is the length of the thread plus the radius if the bob.)

d) Time 20 oscillations and record the value t_1.

t_1 = ... s (½ mark)

e) Repeat procedure d) above to obtain t_2 and record the value.

t_2 = ... s (½ mark)

f) Determine the average value $t_{av} = \frac{t_1+t_2}{2}$

t_{av}= ..... s (1 mark)

k). Find K given that $K = \frac{4\pi^2}{S}$ where $\pi = 3.142$. (2 marks)

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l) State the quantity represented by the value K. (1 mark)

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QUESTION 2

PART A

You are provided with the following apparatus:

- A carbon resistor marked X.
- Micrometer screw gauge (to be shared)
- Voltmeter.
- Ammeter.
- One dry cell in a cell holder.
- 8 connecting wires.
- Switch.

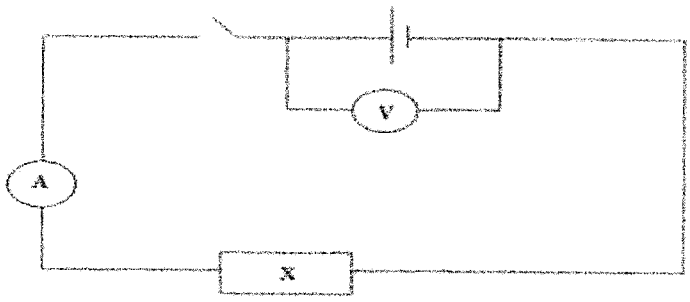
Proceed as follows.

a) Using the micrometer screw gauge, measure the diameter of the wire of the resistor X

Diameter = ...mm (½ mark)

Diameter = ...m (½ mark)

b) Set up the circuit as shown below.



i. Record the voltmeter reading when the switch is open.

E = ...V (1 mark)

ii. Close the switch and record the ammeter and voltmeter readings V and I.

V = ...V (½ mark)

I = ...A (½ mark)

g) Determine the periodic time $T = \frac{t_{av}}{20}$

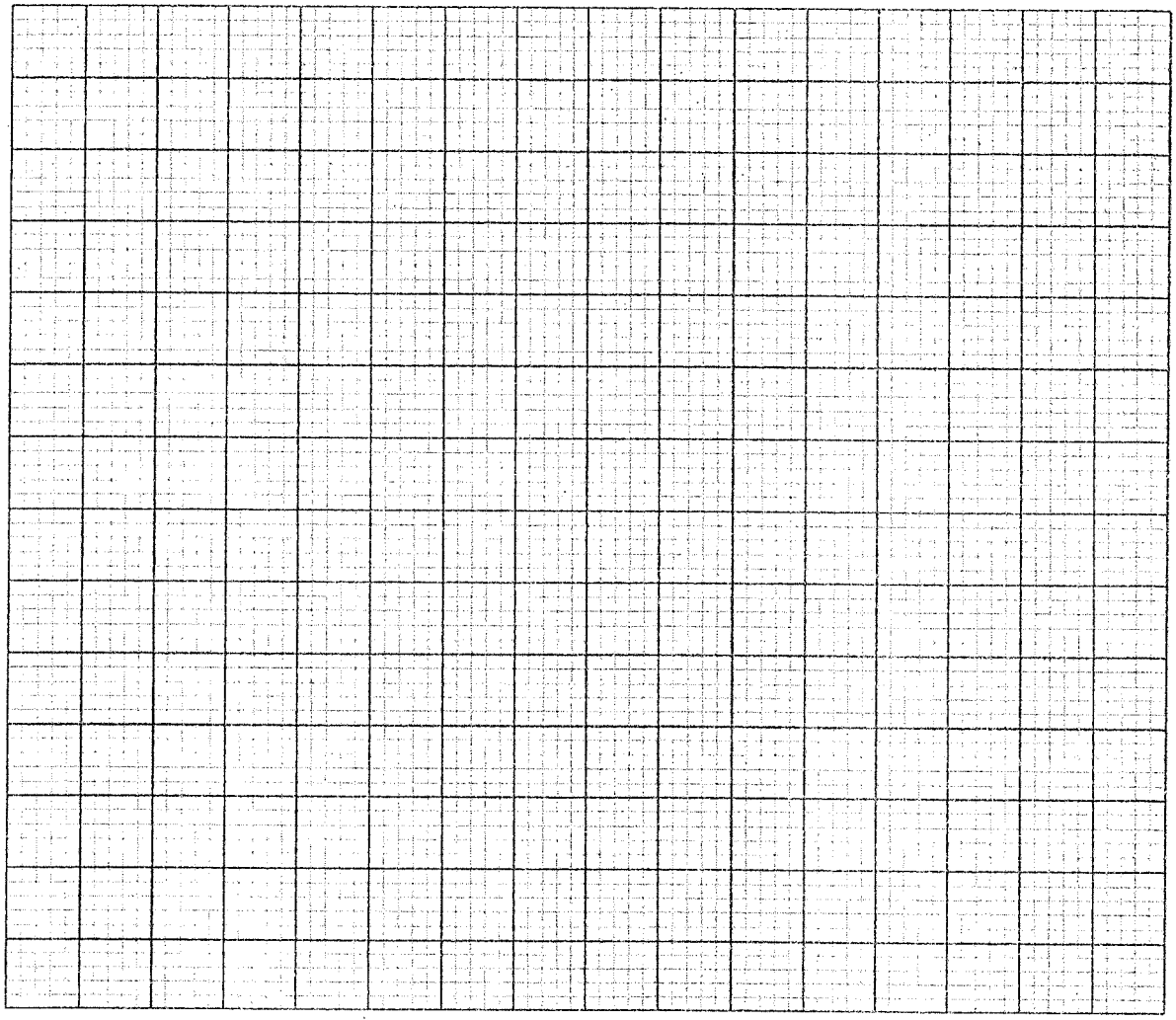
T = ... s (1 mark)

h) Repeat the experiment for different lengths of the pendulum and record the results in the table below.

(5 marks

Length L of the pendulum (m)	0.15	0.25	0.35	0.45	0.55	0.65
Time for 20 oscillations. (s)						
Periodic time T (s)						
T^2 (s^2)						

i) Plot a graph of T^2 (s^2) against L(m). (5 marks)



j) Find the slope S of the graph. (3 marks

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c) Account for the difference between E and V. (1 mark)

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PART B

You are provided with the following:

- A glass block.
- Soft board.
- Five optical pins.
- Four thumb pins.
- Plain white paper.
- Vernier callipers (can be shared)

Proceed as follows:

a). Using the Vernier callipers provided, measure the length l, width w and thickness t of the rectangular glass block.

Length, **l** = ...cm (1 mark)

Width, **w** = ...cm (1 mark)

Thickness, **t** = ...cm (1 mark)

Determine the volume V of the rectangular glass block in SI units given that **V = lwt** (2 marks)

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b). Place the plain paper on the soft board. Fix it with the thumb pins. Place the glass block on the paper and draw its outline.

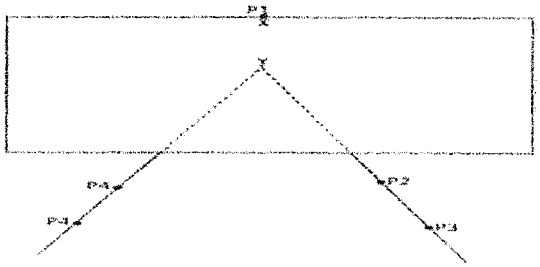
c). Remove the glass block. Mark point X on one of the longest sides of the outline about midway. Push a pin P_1 on this point. (P_1 is at point X).

d). Replace the glass block to sit perfectly on its outline.

e). By viewing from the opposite side, push two other pins P_2 and P_3 on the right side of X so that they appear to be in line with the image of P_1 as seen through the block.

f). Repeat step e) with P_4 and P_5 on the left side of X.

g) .Remove the glass block and draw a line joining P_2 and P_3 then another line joining P_4 and P_5. Extend the lines P_2P_3 and P_4P_5 to intersect at Y as shown in the diagram below.



h) Measure distance XY.

XY = ...cm (½ mark)

XY = ...m (½ mark)

i) Calculate the value of η given that $\eta = \frac{w}{w-xy}$ (2 marks)

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NB: Attach the plain paper together with the scripts. (1 mark)

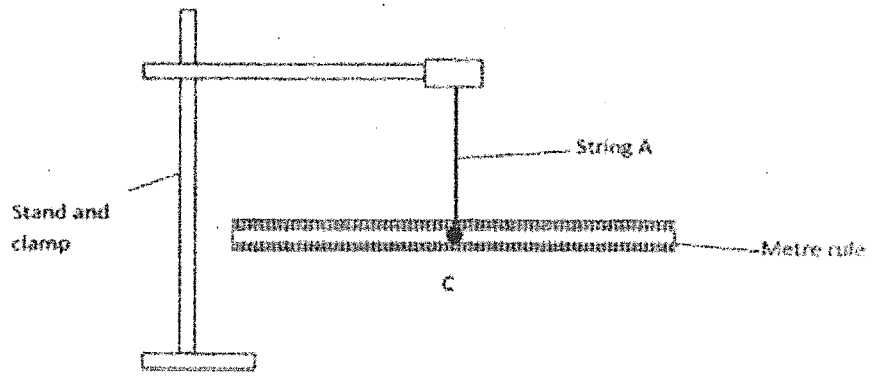
PART C.

You are provided with the following:

- A thin thread.
- A 50g mass.
- A metre rule.
- Complete stand.

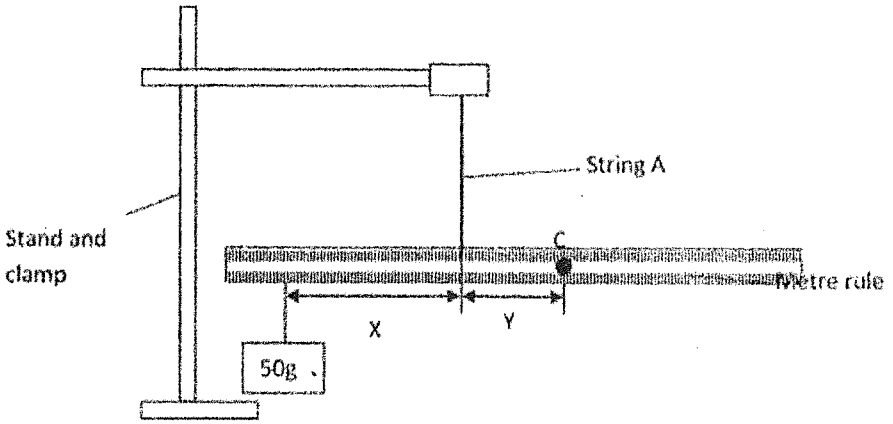
Proceed as follows;

a) Using the stand and the clamp and thread, suspend the metre rule as shown and establish the position of its centre of gravity C as shown.



Position of C.O.G ..... (1 mark)

b) Using a thread, suspend the 50g mass at the 5cm mark and adjust the position of the string until the metre rule balances as shown.



c) Record the values of x and y in the table below.

d) Repeat b and c above for the 50g mass at 10cm mark and record the corresponding values of x and y in the table. (2 marks)

Position of 50g mass	5cm mark	10cm mark
X cm		
Y cm		

e). Given that $P = \frac{100x}{y}$, determine the value of P_1 at 5cm and P_2 at 10cm.

P (at 5cm mark) = ... (1 mark)

P (at 10cm mark) = ... (1 mark)

Average P = (2marks)

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NAME.....INDEXNO.....ADM NO.....

SCHOOL.....SIGN.....DATE.....

ACK MASENO WEST JOINT EXAMINATION

KENYA CERTIFICATE OF SECONDARY EDUCATION

232/2 - PHYSICS - Paper 2

MARCH 2025 – 2 HOURS

FORM FOUR

Instructions to candidates

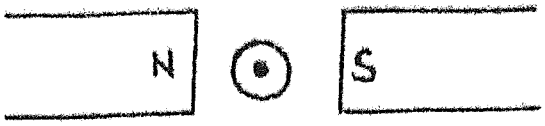
(i) This paper consists of two sections *A* and *B*.
(ii) Answer **all** the questions in the two sections in the spaces provided after each question
(iii) All working **must** be clearly shown.
(iv) Electronic calculators and Mathematical tables may be used.
(v) All numerical answers **should be expressed** in the **decimal** notations.
(vi) ***This paper consists of 13 printed pages.***
(vii) ***Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.***
(viii) ***Candidates should answer the questions in English.***

FOR EXAMINERS' USE ONLY

SECTION	QUESTION	MAXIMUM SCORE	CANDIDATE'S SCORE
SECTION A	1-15	25	
SECTION B	16	14	
	17	12	
	18	13	
	19	09	
	20	07	
	TOTAL	80	

SECTION A (25MARKS)

1. The diagram below shows a cross – section of a conductor carrying current and held between 2 poles of a magnet.



Using an arrow, indicate the direction in which the conductor will move when it is released (1mk)

2. a) Briefly explain what is meant by critical angle (1mk)

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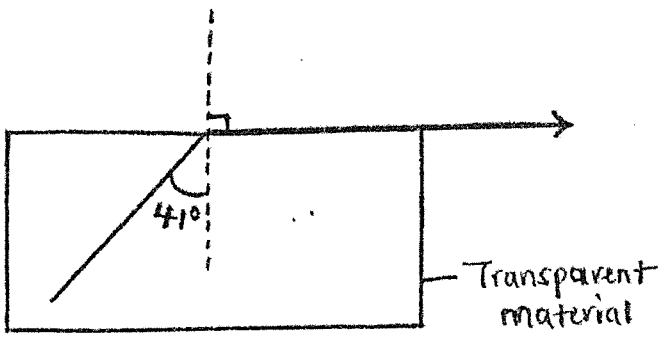
b) The figure drawn shows a path of ray of light through a transparent material placed in air



Determine the refractive index of the transparent material. (3mks)

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3. Secondary cells are often preferred to primary cells in most electrical gadgets. Justify this statement (1mk)

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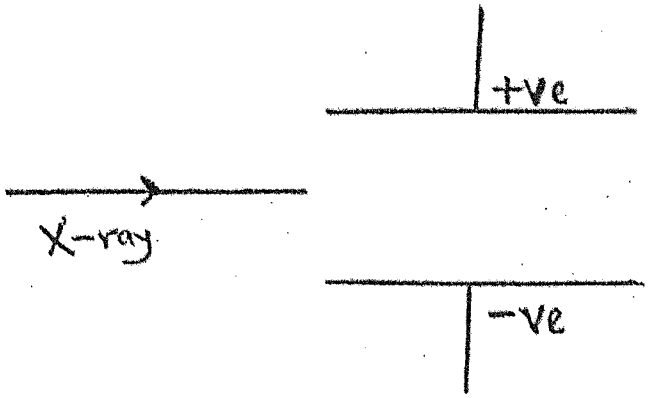
4. Drawn is an x – ray radiation made to pass through two electrodes as shown.



Complete the path of the radiation and explain why it is so. (2mks)

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5. An electric heater with a resistance of 100Ω is connected to a 240V main supply. Determine the heat energy dissipated in 2 minutes. (3mks)

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6. State any one use of a gold leaf electroscope.(1mk)

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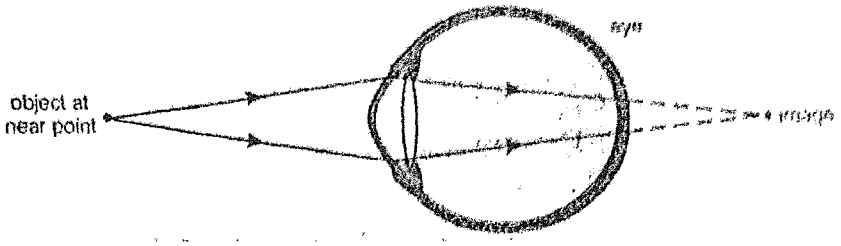
7. The figure drawn shows lights rays entering a human eye.



a) Identify the defect drawn (1mk)

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b) State any possible cause of the defect (1mk)

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8. Apart from bulbs operating independently, state one other advantage of connecting bulbs in parallel in domestic wiring (1mk)

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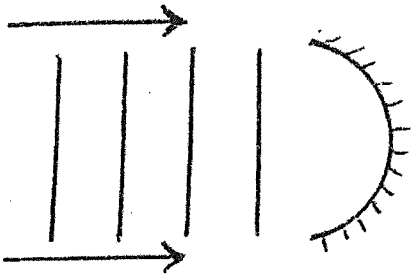
9. The figure below shows straight wave fronts approaching a concave reflector.



a) Complete the diagram using dotted lines to show waves formed after reflection (1mk)

b) Name the other wave characteristic apart from frequency which remains constant after reflection (1mk)

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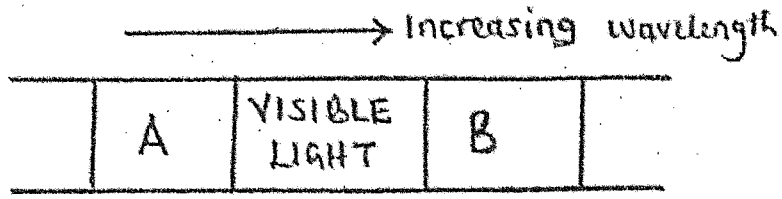
10. Sketch a circuit of 3 capacitors and a cell from a set of 1.0 uF, 2.0 uF and 3.0 uF such that the net capacitance in the circuit is 1.5uF(2mks).

11. The table drawn shows an arrangement of electromagnetic radiations in order of increasing wavelength.



Identify the radiations A and B(2mks)

A=

B=

12. Briefly describe one main structural difference between an AC generator and a d.c generator.(1mk)

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13. Name one property of cathode rays which shows that they have a particulate nature. (1mk)

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14. Fleming's left hand rule is often used to predict the direction of motion of a conductor. Name the physical quantity predicted by the Dynamo Rule. (1mk)

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15. Briefly explain any property of magnetic field lines. (1mk)

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SECTION B (55 MARKS)

16. a) Differentiate between step – down and step– up transformer. (1mk)

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b)Commercial transformers do not operate at 100% efficiency. Name two forms of energy losses in a transformer that justifies the statement.(2mks)

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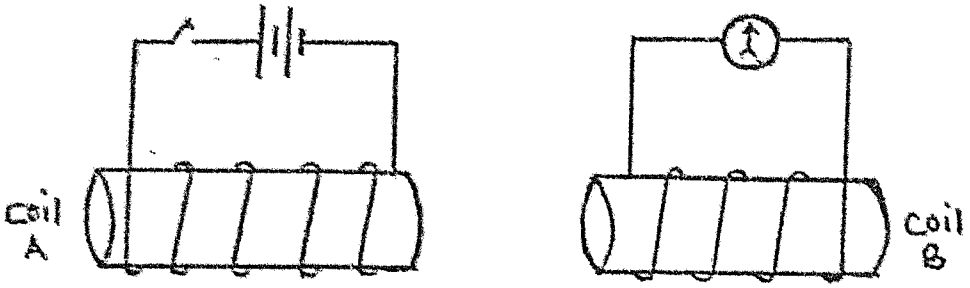
c)The diagrams drawn shows 2 coils adjacent to each other used in inducing an Emf through mutual induction



Show on coil B the direction of current when the switch is closed. Also state the direction of deflection on galvanometer (2mks)

d)A transformer that is 80% efficient has 4000 turns in the primary coil and 500 turns in the secondary coil. It is used to supply power to a 15Ω motor from a 240V mains.

i. Calculate the voltage in the secondary coil. (3mks)

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ii. Work out the power rating of the motor(3mks)

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iii. Determine the current in the primary coil (3mks)

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17. a)Apart from physical factors state any other factor which affects Ohm's law.(1mk)

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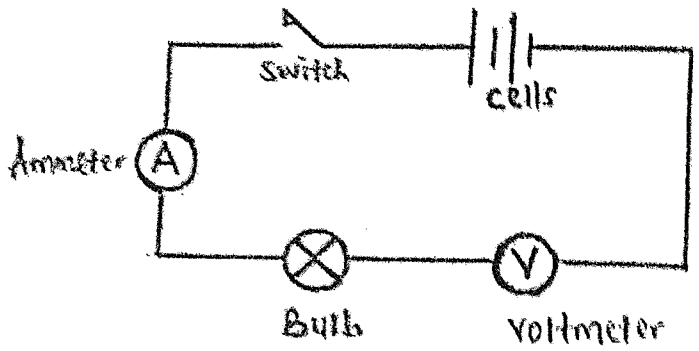
b)The circuit below was drawn by a group of students during a class experiment to investigate current – voltage characteristics of a torch bulb



Identify any 2 mistakes made by the students in drawing the circuit.(2mks)

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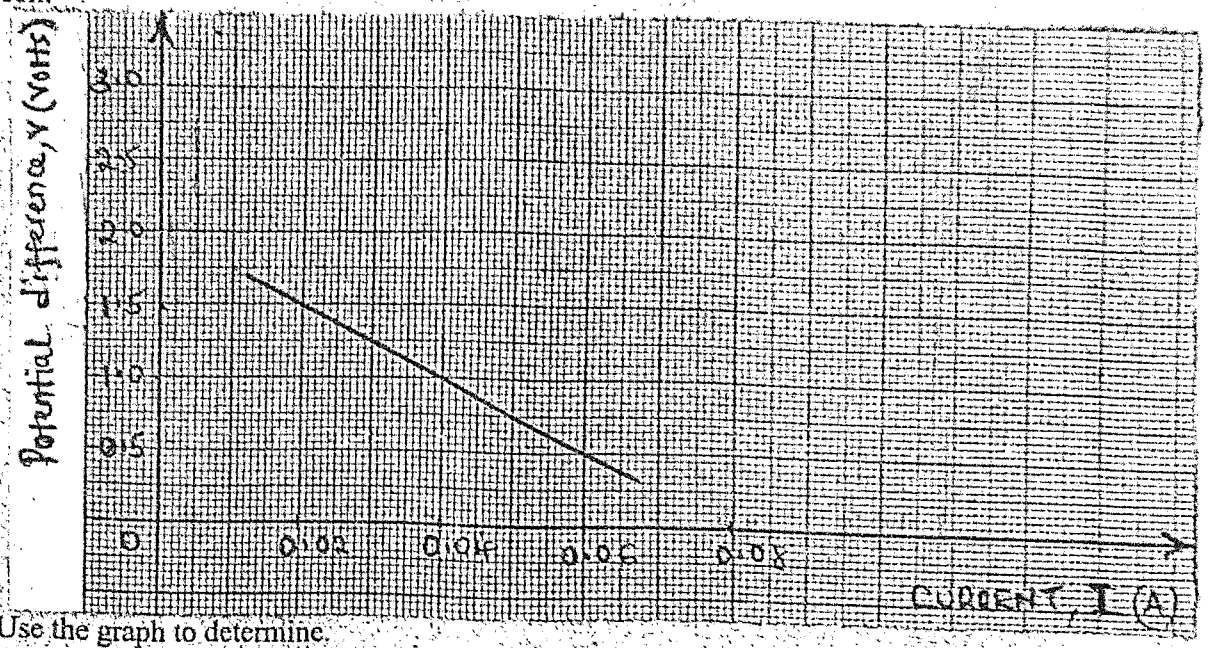
c)The graph drawn shows a variation of potential difference, V with current I for a certain cell.



Use the graph to determine.

i) The internal resistance of the cell. (4mks)

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ii) The e.m.f of the cell.(2mks)

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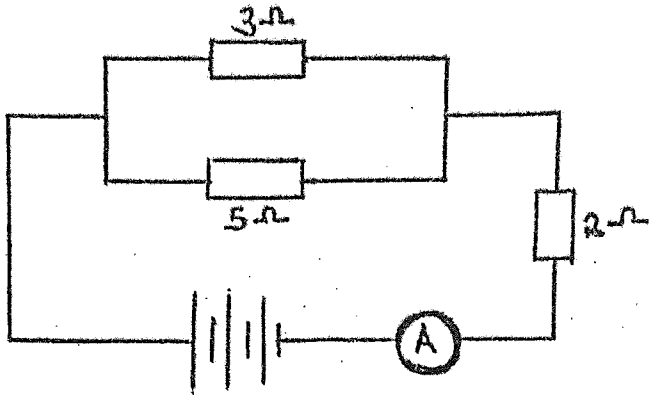
d)The diagram below shows a set of resistors connected to a 4.5V source and an ammeter.



Given that the internal resistance of each cell is 0.1Ω, determine the ammeter reading. (3mks)

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18. a) Differentiate between a transverse wave and a longitudinal wave. (1mk)

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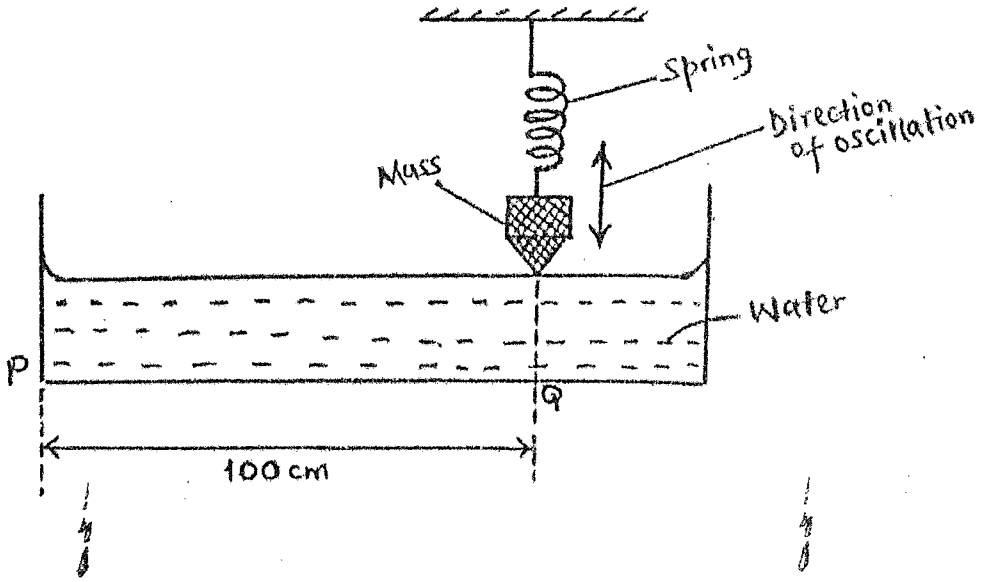
b)Some students set up a mass attached to a spring such that when it oscillates, it touches the surface of water in some wide shallow tank as shown.



During the oscillation of the mass, the students measured time for 10 oscillations and discovered that it took the mass 25seconds.

i) Determine the periodic time of the mass (2mks)

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ii) Calculate the frequency of the waves produced on the water surface.(2mks)

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iii) As the mass oscillated touching the water surface, students counted 5 ripples between the points Q to P. Determine the speed of the waves. (3mks)

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c) Determine the resultant amplitude for two waves out of phase if one wave has an amplitude of 1.0cm and the other 3cm (2mks)

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From the diagram

i) Work out the effective capacitance for the arrangement .(3mks)

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ii) Determine the charge stored on the 6uF capacitor. (3mks)

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20. a) State Snell's law (1mk)

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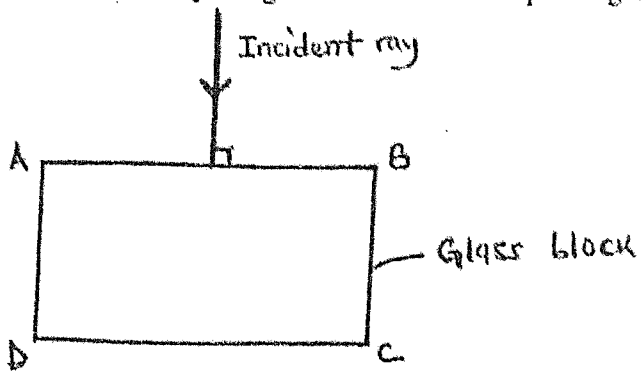
b)The diagram drawn shows a ray of light incident on a transparent glass block as shown



i) State whether or not the ray will undergo refraction. Justify your answer.(2mks)

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ii) Complete the ray diagram until it emerges on the face CD.

c) A ray of light is incident on a transparent material as shown.

d) A man standing between 2 tall walls claps his hands. He hears the first echo after 2.5 seconds and the second echo is heard 1.5 seconds later. If he is 660m from the farthest wall, determine the speed of sound in air. (3mks)

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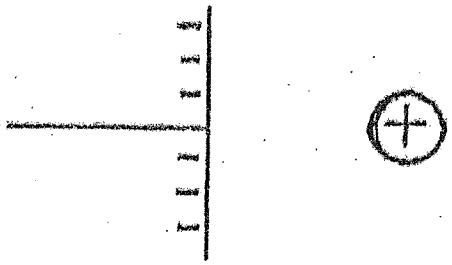
19. a) Drawn is a positive point charge put close to a negative plate



Sketch the resultant electric field pattern (1mk)

b)State 2 uses of capacitors (2mks)

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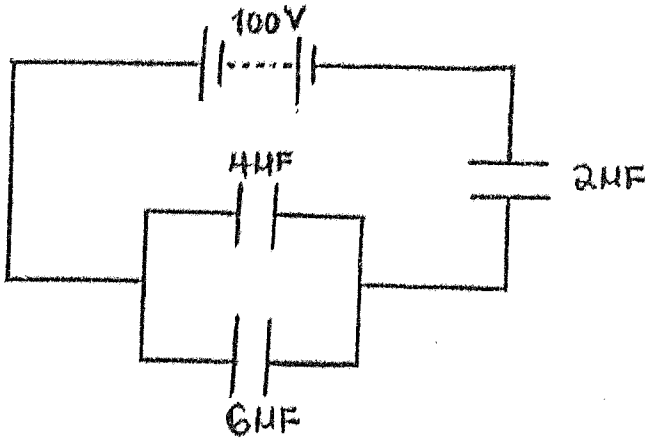
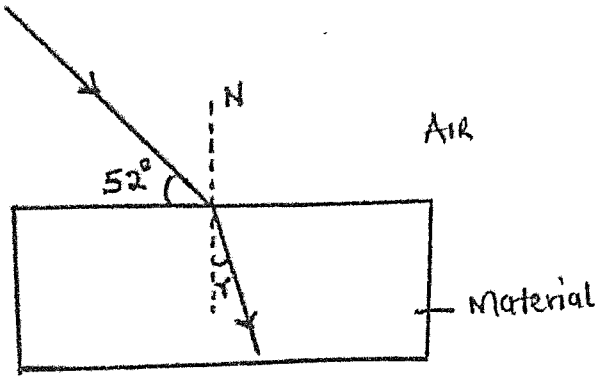
c)Study the diagram drawn and use it to answer the questions that follow.





If the refractive index of the material is 1.48, determine the angle of refraction, r (3mks)

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NAME.....INDEXNO.....ADM NO.....

SCHOOL.....SIGN.....DATE.....

ACK MASENO WEST JOINT EXAMINATION

KENYA CERTIFICATE OF SECONDARY EDUCATION

232/1 - PHYSICS - Paper 1

MARCH 2025 – 2 HOURS

FORM FOUR

Instructions to candidates

(i) This paper consists of two sections *A* and *B*.
(ii) Answer **all** the questions in the two sections in the spaces provided after each question
(iii) All working **must** be clearly shown.
(iv) Electronic calculators and Mathematical tables may be used.
(v) All numerical answers **should be expressed** in the **decimal** notations.
(vi) ***This paper consists of 13 printed pages.***
(vii) ***Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.***
(viii) ***Candidates should answer the questions in English.***

FOR EXAMINERS' USE ONLY

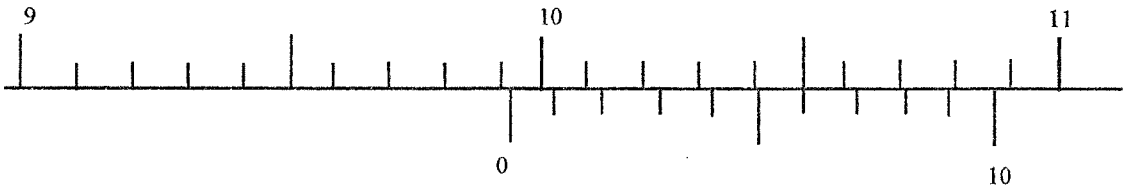
SECTION	QUESTION	MAXIMUM SCORE	CANDIDATE'S SCORE
SECTION A	1-13	25	
SECTION B	14	11	
	15	10	
	16	11	
	17	12	
	18	11	
	TOTAL	80	

SECTION A (25MKS)

Answer all questions in the spaces provided.

1. The figure I below shows the reading of a vernier calipers used to get the diameter of a cylindrical tin.

Fig 1.



If the vernier caliper had a negative error of 0.02cm, find the actual diameter of the tin. (2 marks)

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2. Sweating is an important activity of the body. Explain how it helps to regulate body temperature (2 marks)

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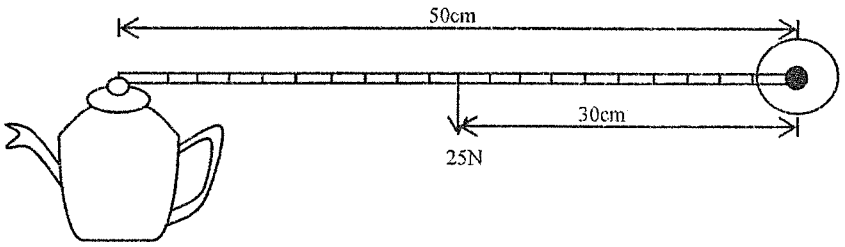
3. Water is heated in an air tight kittle whose lid has an area of $10cm^2$. The lid just opens when a force of 25N is applied at the position shown in figure 2.

Fig 2



Determine the pressure of steam in the kettle (3 marks)

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4. Fig 3 shows a hot water bath with metal rods inserted through one of its sides. Some wax is fixed at the end of each rod. Use this information to answer questions 4(a) and 4(b)

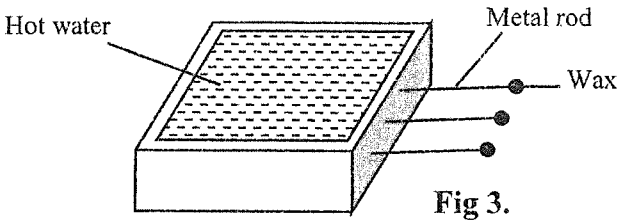

Fig 3.

(a) State the property of metals being tested using this set-up (1 mark)

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(b) besides the length of the rods that is kept constant, what else should be kept constant when comparing the property for different metal rods (1 mark

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5. The stability of an object can be increased by increasing the base area and lowering its centre of gravity. State one way of lowering its centre of gravity (1 mark

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6. A student wants to siphon water from a tank to container using a flexible pipe. State two conditions for the siphon to work. (2 marks)

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7. Water at 24^0C falls through a height 72m to the bottom of a dam. Determine the temperature of water at the bottom of the dam assuming all the stored energy is converted to heat. (Take specific heat capacity of water as 4200 kg^{-1} k^{-1}) (3 marks)

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8.Two stones of equal mass are hung as shown below one hangs from an inextensible thread while the other hangs from an inextensible thread tied to a light spring as shown below. When the two masses ar raised to the same height and suddenly dropped thread A breaks while B does not.

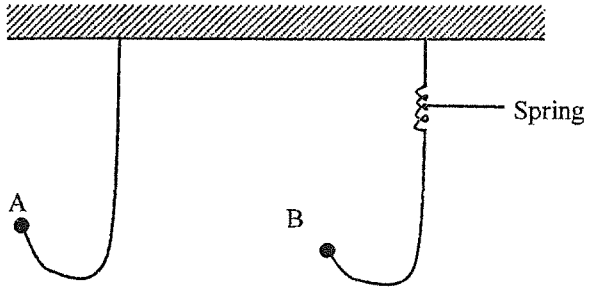

Fig 4

Explain (2 marks)

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9. Figure 5 shows dots which were made by a ticker timer on a tape attached to a trolley

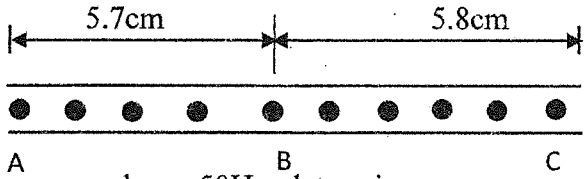

Fig 5

If the frequency used was 50Hz, determine;

(a) The velocities between AB and BC (2 marks)

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(b) The deceleration of the trolley (2 marks)

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10. A student observed that pollen grains were moving randomly on the surface of water. State what causes this motion. (1 mark)

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11. State how the number of turns per unit length affects the spring constant of a spring. (1 mark)

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12. A student holds a sheet of paper at one end so that it hangs in the position A shown in figure 6.

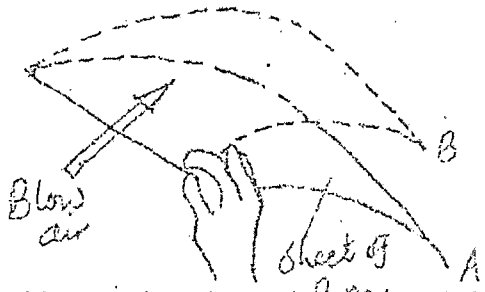

Fig 6

Explain why the paper rises to the position B when the student blows air in the direction shown by the arrow. (2 marks)

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13. State one assumption made when estimating the size of an oil molecule in the oil drop experiment (1 mark)

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SECTION B (55 MARKS)

Attempt all questions

14.(a) Explain the meaning of centripetal force (1 mark)

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(b) State the differences between angular velocity and linear velocity. (2 marks)

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(c) Figure 7 shows a toy car moving in a circular rail in a vertical plane. The mass of the toy car is 300g and the radius of the rail is 2m.

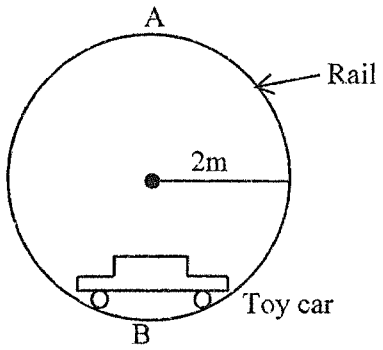

Fig 7

Determine

i) Minimum velocity at which the toy passes point A (3 marks)

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ii) If the toy was tied by a string at the centre of the rail path, following the same circular path whe whirled. State the position (A or B) the string experience maximum tension. Explain your answer.
(2 marks)

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(d) State three applications of uniform circular motion (3 marks)

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15. A student used the set up in the figure below to investigate the variation of the volume of trapped mass
of air with pressure at constant temperature.

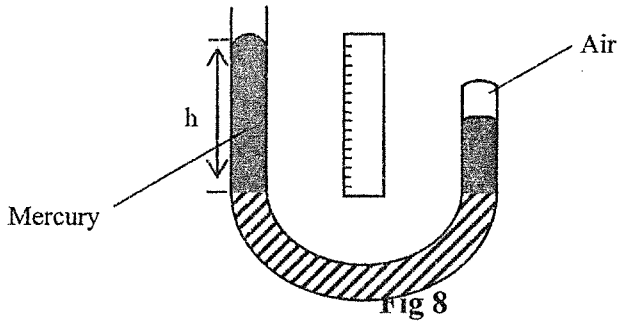

Fig 8

By raising the open end of the tube, the student measured the corresponding values of the length L, of air column and the excess pressure.

(a) In determining the volume,V of the air the student measured the length L of the air column.

i) What is the relationship between L and V (1 mar

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ii) State the assumption made. (1 mar

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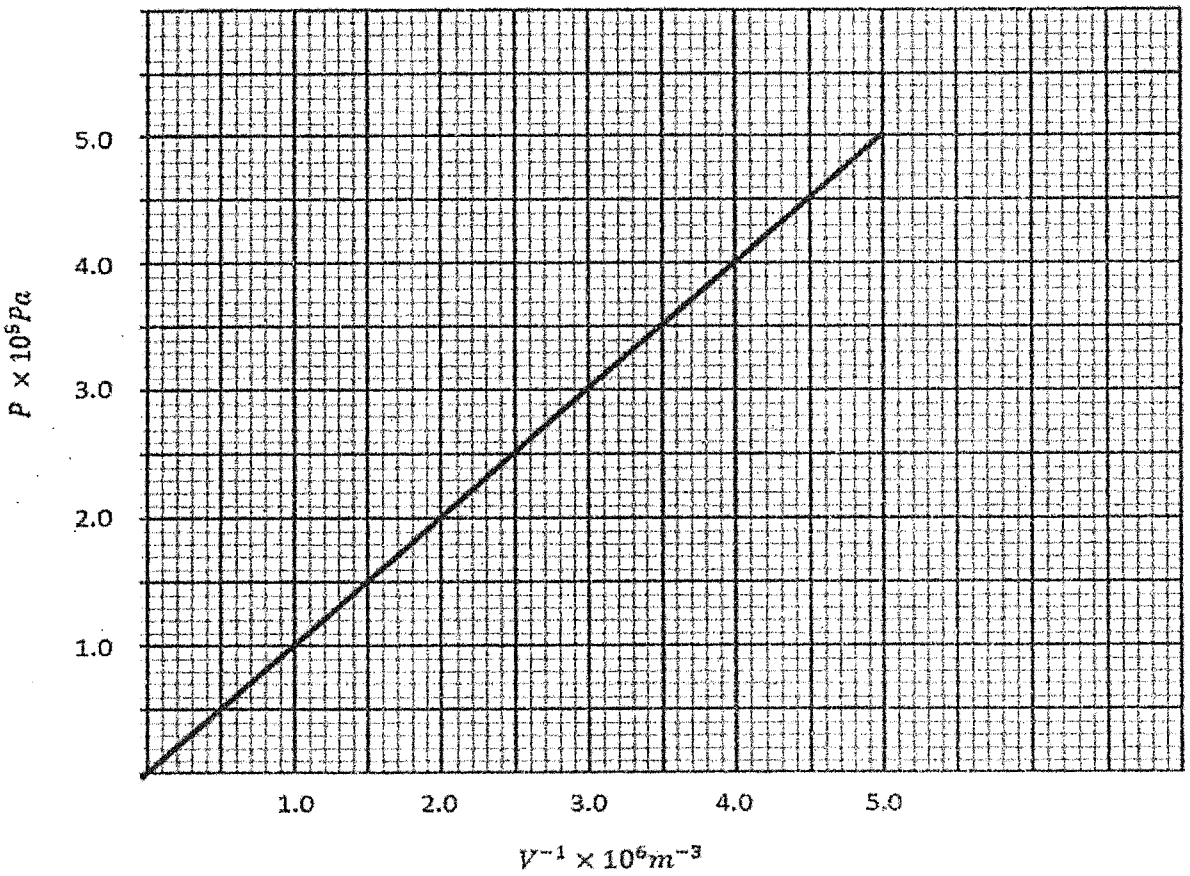
(b) The pressure acting on a gas in a container was changed steadily while the temperature of the gas was maintained constant. The volume V of the gas was measured for various values of pressure. The graph below shows the relation between P and $\frac{1}{V}$.



i).Suggest how temperature of the gas could be kept constant. (1 mark)

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ii.)Given that the relation between P and V of the gas is PV = K, use the graph to determine the value of K. (3 marks)

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iii. State the physical quantity d represented by K? (1 mark)

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(c) A gas occupies a volume of 400 litres at temperature 37^0C and normal atmospheric temperature. Determine the new volume of the gas if it is heated at constant pressure to a temperature of 67^0C. (3 marks)

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16. (a) State Newton's second law of motion. (1 mark

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(b) A body A of mass 4.0 kg and body B of mass 5.0 kg are moving with equal momentum. Write a reason the body that is moving at higher velocity. (2 marks)

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(c) A high jumper usually lands on thick soft mattress. Explain how the mattress helps in reducing th force of impact. (2 marks)

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(d) A bullet of mass 10.0g is fired at close range into a block of mass 4.99 kg suspended from a rigid support by a string. It becomes embedded in the blocks as illustrated in figure 14 below. The block rises to a height 2.50 cm before coming to rest.

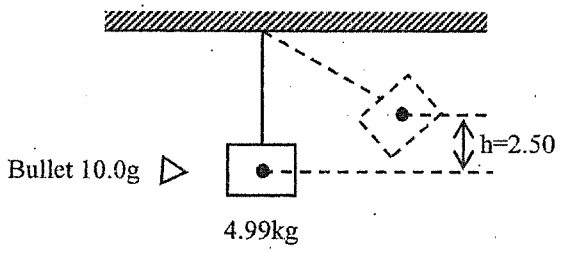

Fig 14

Assuming no energy losses;Determine

(i) the velocity of the system at lowest position. (3 marks)

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ii) The initial velocity of the bullet. (3 marks)

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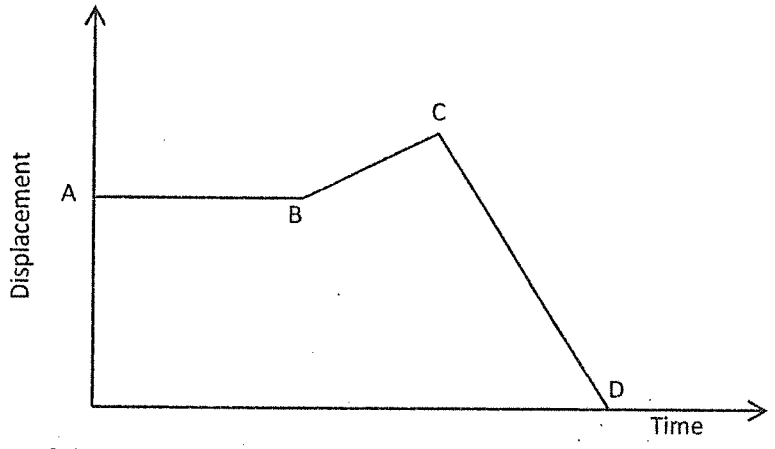
17. (a) The figure below shows the displacement time graph of the motion of a particle.

Fig 15



State the nature of the motion of the particle between.

i) A and B (1 mark)

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ii) B and C (1 mark)

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iii) C and D (1 mark)

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(b) A ball is thrown horizontally from the top of a vertical tower and strikes the ground at a point 50m from the bottom of the tower. Given that the height of the tower is 45m. determine the;

i) Time taken by the ball to hit the ground (3 marks)

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ii) Vertical velocity of the ball, just before striking the ground. [(Take acceleration due to gravity (g) as $10m/s^2$ (3 marks)

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(c) Explain how submarines are able to float and sink below the surface of water if required.

(3 marks)

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18. (a) Define velocity ratio of a machine (1 mark

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(b) A block and tackle system of V.R = 3 is used to lift a load of 1500N. An effort of 800N is used to move the load a distance of 12m.

(I) Sketch a possible arrangement of the pulleys showing how the rope is wound. (2 marks)

(II) Determine the efficiency of the system. (3 marks)

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(III) State two reasons why the efficiency of the system is not 100%. (2 marks)

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(c) A student observed a hydrometer used to measure the density of milk in the school dairy unit.
State:

(i) the role of lead shots stuck to the bottom of the instrument. (1 mark)

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(ii) the reason why the bulb is wide. (1 mark)

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(iii) the reason why the stem is narrow. (1 mark)

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