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FORM THREE EXAMS

FOR THE ANSWERS

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NAME: …… ADM. NO. ……

SIGNATURE …….. DATE ……

313/2

CHRISTIAN RELIGIOUS EDUCATION

FORM THREE, PAPER TWO

TIME: 2 ½ HOUR

END OF TERM THREE YEAR 2021

INSTRUCTION TO CANDIDATES.

- This paper consist of **six** questions
- Answer any **Five** questions.
- Each question carries 20 marks
- Candidates should answer the questions in English.

For examiner's use only

QUESTIONS						CANDIDATE'S TOTAL SCORE
CANDIDATE'S SCORE						

1. (a) Outline Micah's prophecies about the Messiah (Micah 5: 1-5) (7 mks)

   b) With reference to Luke 1:13 – 17, outline the message of angel Gabriel about John to Zechariah. (7 mks)

   c) Give six lessons Christians learn from the incident when Jesus was dedicated. (6 mks)

2. a) Describe the baptism of Jesus in river Jordan by John the Baptist in Luke 3:21-22. (5 mks)

   b) Outline four teachings of John the Baptist. (8 mks)

   c) Why are Christians finding it difficult to apply the teachings of John the Baptist in their lives today? (7 mks)

3. (a) State **six** accusations that were made against Jesus during his trial (Luke 22: 66 - 23: 1 - 23). (6 mks)

   (b) Explain four reasons why Jesus appeared to His disciples after resurrection. (8 mks)

   (c) Why should Christians be discouraged from taking part is mob justice? (6 mks)

4. (a) Outline Jesus' teaching on watchfulness and Readiness? (Luke 12:35-48) (8 mks)

   (b) Narrate the parable of the widow and the unjust judge? (Luke 18:1-18) (6 mks)

   (c) Give six reasons why Christians should have faith in God? (6 mks)

5. (a) Give seven reasons why Jesus used the parable of the Lost son in his teaching (7 mks)

   (b) Outline the preparations that Jesus made for the last supper.(Luke 22: 7- 14) (7 mks)

   (c) State six reasons that made Judas Iscariot betray Jesus (6 mks)

6. (a) Identify the gifts of the Holy spirit according to saint Paul? (1 corinthians 12:7-11) (8 mks)

   (b) State how the life of Peter was transformed on the day of Pentacost? (6 mks)

   (c) Explain six ways in which the gifts of the Holy Spirit are abused in the church today? (6 mks)

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

SIGN.....DATE.....

FORM 3

313/1

$2_{1/2}$HRS

CHRISTIAN RELIGIOUS EDUCATION

PAPER 1

INSTRUCTIONS

Answer any five questions in the answer booklet provided

Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing

For Examiner's use only

QUESTIONS	1	2	3	4	5	6	TOTAL SCORE
SCORE							

1. a) Give **seven** reasons Why C.R.E is studied in secondary schools in Kenya (7marks)

b) Give SIX reasons why the Bible is referred to as the word of God (6mks)

c) Show the Importance of the Bible to Christians today (7 marks)

2. a) Describe the preparation that Moses asked Israelites to make in readiness for exodus (6mks)

b) What problems did Moses face as he led the Israelites during the exodus? (8mks)

c) State **six** leadership qualities that Christians can derive from Moses. (6mks)

3. (a) Give reasons why Samuel was against kingship system in Israel. (7mks)

(b) To what extent was David a model king in Israel. (8mks)

(c) Mention **five** forms of corruption that Prophet Elijah would condemn in our society today.(5mks)

4. (a) State four differences between prophets in Old Testament and prophets in African traditional society. (8mks)

(b) Give seven social injustices condemned by prophet Amos in Israel. (7mks)

(c)In which ways are the rich exploiting the poor in Kenya today (5mks)

5. (a) Give **seven** lessons that Christians learn from the call of Prophet Jeremiah. **(7mks)**

(b) Outline the instructions given to the Israelites on how to lead better life while in captivity in Babylon by Prophet Jeremiah (Jeremiah 29:1 - 10). **(7mks)**

(c) State **six** methods used by Christians to communicate God's messages today. **(6mks)**

6. (a) Identify the roles performed by ancestors in the Traditional African communities. **(8mks)**

(b) Explain the importance of initiation in Traditional African societies. **(7mks)**

(c) State **five** changes that have occurred in land ownership in Kenya today. .
(5mks)

NAME……..**ADM NO**. ……

SCHOOL……..……..**DATE**. ……

Candidate's signature……

101/2
ENGLISH
Paper 2
FORM 3
TIME: 2hrs 30mins

END OF YEAR EXAMINATION YEAR 2021

Write your name and admission number in the spaces provided above.
Sign and write the date of the examination in the spaces provided above.
Answer ALL the questions in this question paper.
All your answers must be written in the spaces provided in this question paper.

For Examiner's use only

Question	Maximum Score	Candidate's Score
1	**20**	
2	**25**	
3	**20**	
4	**15**	
Total Score	**80**	

A. COMPREHENSION (20MARKS)

Read the passage below and answer the questions that follow.

America has a long tradition of creativity. The expression Yankee **ingenuity** is an acknowledgement of this trait present Americans with a novel problem, especially technological and they are likely to come up with the solution sooner rather than later.

That is the positive side. The downside is that in policy matters, Americans sometimes come up with the solutions and then look for personal problems on which to test them. Washington D.C, perhaps more than any other city in the world, has many solutions seeking problems to lock onto.

If the solutions are successful, domestically or internationally, you can expect any amount of excitement and chest thumping, which is another **hallmark** of the American character. Modesty is frowned upon as something for sissies or failures. Countries and peoples are ready paradigm of winners and losers. Woe unto you if you are a 'loser'. You will endure all manner of taunts and putdowns.

To escape this fate, most Americans-including those who are demonstrably poor, call themselves middle class, which probably they are when compared to the poor in other places. But poverty is relative to immediate environment not to some distant places.

One of the more recent American inventions is spinning not as in making clothes (the American textile industry has long being outsourced, notably from China another low wage country),but rather as in using words and other symbols amplified by the media to paint a picture of anything and everything in alight favorable to the presenter's side.

This past week, the world witnessed, yet again, this peculiar American habit of hype and more hype, in this instance, designed to drive the point home that America's declared policy to force-feed democracy to recalcitrant societies has just scored a **humongous** victory. Following the Iraqi elections the turn out in particular, has been hailed as a stunning victory of American policy. Pitted against Iraqi Jihadists who are waging a relentless and ruthless insurgency, a scintilla of validation of America's Iraqi policy was all that was necessary to set off celebratory fireworks.

To those who recount narratives (the spinners), whose job it is to put a bright glass on things a clear picture of winners and losers are the Neanderthals; "thugs and assassins" in the words of the newly sworn in secretary of state Condeleeza Rice-the insurgents who threatened to wreak havoc on election day in Iraq but were thwarted.

The high turnout was read as a violation of many things that were most likely absent from the minds of those Iraqi voters who cast their ballots. Before it was even known whom they had voted for and why, the whole enterprise was turned into cause for chest thumping by some American politicians, prompting John Kerry the loser in the November presidential race, to warn against hyping the Iraqi election.

Who will listen to a loser? This is America! By the time Kerry spoke, the spinning was in full gear. It was another turning point, declared elated talking heads. Never mind that there have been numerous "turning pints" in Iraq's tortured post-invasion experience. The winners were emerging.

A few voices have urged caution but they are drowned out by the self-congratulation that has **engulfed** just about every major media outlet here.

It is reminiscent of the chatter that followed Saddam Hussein's capture. That was another turning point. The irony is that America has been through this before, in a different place, with almost the exact

same headlines. In the late 1967, many American newspapers published flowery and upbeat stories on the elections held in South Vietnam at the height of the war. The turnout was nearly 83% despite Vietcong terror. The election was declared a success and a turning point that would lead to stabilization of the country and eventual defeat of the insurgents. Of course, nothing of the sort happened.

History does not **invariably** repeat itself. Sometimes it does. Whatever one might think of it, history does always serve up many lessons. One of them is that a dose of modesty is always in order when confronted with vast historical forces or when seeking to rearrange complex societies their go hundreds, if not thousands, of years back.

What may look like victory as first sight may turn out to be another opening to a complex and trying situation that control produce winners or losers. It looks like this what is emerging in Iraq. The millions who headed to the polls on the instructions of their electrical leaders (remember Grand Ayatollah Sistani declared it a religious duty to vote? May or may not have had a clear idea of what society were hoping to create. Their leaders probably do.

Iraqis voted and they are justifiably proud of it. However, this should not be made to look like a first in the Islamic world, as it is being painted in the media. Not too long ago, an Islamic party had won a clear and convincing victory in a free and fair election in Algeria. It was never allowed to assume power. The international authorities desisted from calling the denial an affront to democratic practice. The man who cancelled the Algerian election results is feted in the very same quarter that now preach democracy.

Society's broken tyranny, war, fragmentation and other ills are not served by putdowns of important segments within them.

The approach may produce winners in the short term but for more losers in the end. Moreover, here we are talking of those who could lose everything, including their lives, on a mass scale. A little modesty may just be what is needed to get people across the divide talking. After all, in the end, we are all losers.

Questions

a) What is the negative side of America's long tradition of creativity? (2marks)

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b) "Woe unto you if you are a loser." What does the author mean by this statement? (2marks)

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c) Identify and explain an instance of irony in this passage.(3mks)

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d) What is the author's attitude towards the Americans? Give reasons for your answer. (2marks)

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e) '...and the losers are Neanderthals; …' explain how the Neanderthals became losers according to this passage. (2marks)

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f) What according to the passage is referred to as spinning? (2marks)

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g) Identify one American policy discussed in this passage. (2marks)

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h) Explain the meaning of the following words as used in the passage. (5marks)

i) Ingenuity……

ii) Hallmark……

iii) Engulfed……

iv) Humongous……

v) Invariably……

B. LITERARY TEXT BLOSSOMS OF THE SAVANNAH. (25MARKS)

Read the following extract and answer the questions that follow.

Poor girl, thought Resian. She imagined the person who wanted to marry the girl was probably a senior *moran* who commanded his junior morans to guard the home, to ensure his would-be-bride was not snatched by rivals from another village.

Minik explained that on finding the home guarded, the rescue team had to retreat. They went back to Nasila to look for their contact man who initially directed them to *Esoit.* He was very helpful and agreed to accompany them to the village where the girl was, and help them rescue her. They were about to give up the rescue mission after several attempts to distract the guards had failed. But the man from Nasila was able to lure the whole team of guards to a beer party at a nearby village, leaving the girl unguarded.

a) What had just happened before this excerpt? (4marks)

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b) Explain two character traits of 'the contact man' as brought out in the excerpt?(4marks)

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c) Who is 'the contact man' referred to in the excerpt? (2marks)

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d) Who is the poor girl and why was she guarded?(4marks)

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e) Identify and explain the irony in Resian's thoughts.(3marks)

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f) Briefly discuss any other feature of style and its relevance as used in the excerpt.(3marks)

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g) Identify and illustrate the theme from the extract. (2marks)

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h) They went back to Nasila to look for their contact man who initially directed them to *Esoit*. **(Use the present progressive tense.)** (1marks)

……

……i

i) What is Minik's role from the extract and elsewhere from the text? (4marks)

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C. POETRY (20 MARKS)

Read the poem below and answer the questions that follow:

Touch by Hugh Lewin

When I get out

I'm going to ask someone

to touch me

very gently please

and slowly,

touch me

I want

to learn again

how it feels.

I've not been touched

for seven years

for seven tears

I've been untouched

out of touch

and I've learnt

to know now

the meaning of

untouchable.

Untouchable –not quite
I can count the things
that have touched me
One:fists
At the beginning
Fierce mad fist
beating beating
till I remember
screaming
don't touch me
please don't touch me

Two: paws
The first four years of paws
every day
patting paws, searching
- arms up, shoes off
legs apart
prodding paws, systematic
heavy indifferent
probing away
all privacy.

I don't want fists and paws
I want
to want to be touched
again
and to touch
I want to feel

again

I want to say

when I get out

Here I am

please touch me.

(From *Poets to the people,* edited by Barry Feinberg)

a) Where do you think the persona is? Briefly explain your answer. (3marks)

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b) What do you think the persona means by "touch"? (3marks)

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c) Using two illustrations, describe the persona's experience during the seven years.(4marks)

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d) What is the significance of the word "paws"? (2marks)

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e) Which device does the poet use to reinforce the message in the poem? (2marks)

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f) Explain the meaning of the following words as they are used in the poem (2marks)

i. Prodding……..

ii. Indifferent……

g) What does the poem reveal about the needs of the inmate? (4marks)

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D. GRAMMAR (15 MARKS)

a) Rewrite the following sentences according to the instructions given after each. Do not change the meaning.(4marks)

i. As soon as Jude entered, James left. (Begin: No sooner…)

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……..

ii. The little rascals ran round the ragged slope. (End: …rascals)

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……

iii. Why did the prefects do such a thing! (Rewrite in passive)

……
……

iv. The man was arrested. His cattle destroyed the maize in the school farm. (Rewrite as one sentence.)

……
……

b) Rewrite the sentences below replacing the word in bold with a phrasal verb formed from the word given in bracket. (3marks)

i. They **terminated** the engagement. (break)

……

ii. Parents are advised to **rear** their children well. (bring)

……..

iii. After breaking into the shop, the burglars **stole** the loot. (made)

……..

c) Fill in the blanks spaces with the correct preposition. (3mks)

i. Owing ……..……...…a huge deficit, the government was forced to borrow.

ii. Wairimu was acquitted ……..….Cohen's murder.

iii. Susan prefers ball games to athletics as she has never excelled ……..athletics.

d) Underline adjectival clauses in the following sentences.(3Marks)

i. I met the woman who lives next to Mariah.

……

ii. The house which was demolished last year has been rebuilt by well-wishers.

……

iii. These are the books that the government supplied to public schools.

……

e) Fill in the blank space with a suitable article. (2marks)

i. He planted …….eucalyptus tree behind ……..….grandmother's house.

ii. ……..….umbrella can protect us from ……..sun rays.

THIS IS THE LAST PRINTED PAGE.

101/3 - ENGLISH - Paper 3

(Imaginative Compositions and Essays Based on Set Texts)

2 ½ hours

Name …… Index Number ……..

Candidate's Signature ……... Date ……...

Instructions to Candidates

(a) Write your name and index number in the spaces provided above.
(b) Sign and write the date of the examination in the spaces provided above.
*(c) Answer **three** questions in this question paper.*
(d) In question 1, choose either a or b.
(e) Question 2 is compulsory
(f) In question 3, answer a or b or c.
(g) All your answers must be written in the provided answer booklet.
(h) This paper consists of 2 printed pages.
(i) Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.
(j) Candidates must answer the questions in English.

For Examiner's Use Only

Questions	Maximum Score	Candidate's Score
1	20	
2	20	
3	20	
	Total	

Creative composition and text based essays

1 a. Write a composition ending with the following statement

……..a final look at her made me realize that choices have consequences (20 mks)

Or

b. Write a story to illustrate the proverb Hurry hurry has no blessings (20mks)

Compulsory set text

2a) " Money is the source of all evil". Support this statement with illustrations from the play the doll's house by Henkrik Ibsen (20mks).

Or

b)"Change is inevitable in any society". Validate this statement with the illustrations from the n novel, Blossoms of the Savannah (By Henry Ole Kulet)

312/2

GEOGRAPHY

Paper 2

Time: 2¾ hours

Form Three Term Three 2021

Kenya Certificate of Secondary Education

312/2

Paper 2

GEOGRAPHY

INSTRUCTIONS TO STUDENTS

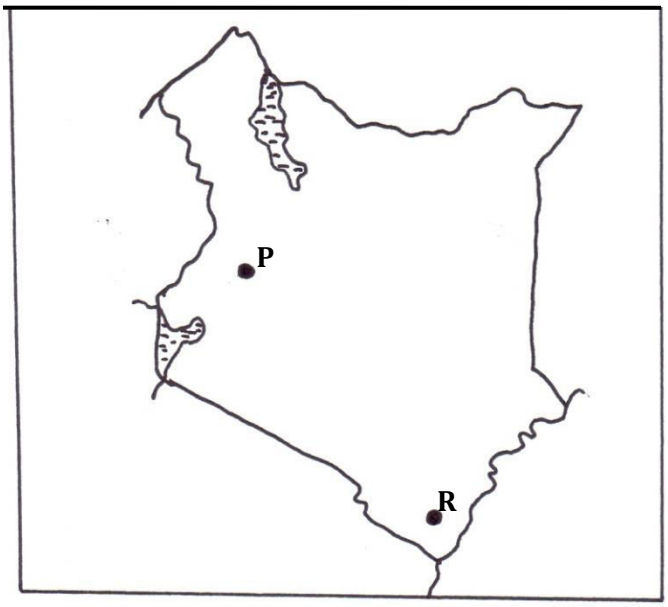
- ***This paper has two sections A and B***
- ***Answer ALL the questions in section A. In section B answer questions 6 and any other TWO questions.***

*Answer **all** the questions in this section.*

1. (a) Name *two* indigenous hardwood tree species in Kenya(2mks)

   (b) State *three* factors that favor the growth of softwood forests in Kenya.(3mks)

2. Use the map of Kenya below to answer question (a).



(a) Name the minerals mined in the areas marked P and R.(2 marks)

b) State*three* benefits of Gold mining to the economy of South Africa. (3 marks)

3. a) Apart from floods, name two other environmental hazards associated with climatic conditions. (2mks)

   b) Outline three problems caused by floods. (3mks)

4 a)Identify three environmental conditions which favor commercial beef farming in Kenya(3marks)

b)Give two exotic breeds of cattle reared in commercial ranches in the Kenyan highlands(2marks)

5a)Define the term photogragh(2mark)

b)state two types of aeriel photograph(2marks)

SECTION B

Answer question 6 and two other questions from this section.

6. The table below shows the production of maize in tonnes between 2015 and 2017 in four divisions ofBaringo County

Division	2015	2016	2017
Bartabwa	3005	3500	4000
Barwesa	6087	6198	7786
Kabartonjo	6753	6547	6698
Kipsaraman	4078	5465	5567

a. i)Calculate the percentage increase of the total maize production in the four divisions between 2016 -2017 (3mks)

ii) What is the difference in kilograms between the highest production and the lowest in three years? (2mks)

b.i) Using a radius of 5cm draw a pie-chart to represent production of 2017.(6mks)

ii) Give three advantages of using a pie-chart in representing information.(3mks)

c) State three climatic conditions favoring the growing of maize.3mks)

d) Explain four problems facing small-scale maize farmers in Kenya. (8mks)

7. a. i) What is forestry? (2mks)

ii) Explain three factors that favour the growth of natural forests on the slopes of Mt. Kenya. (6mks)

b) Name three exotic species of trees planted in Kenya.(3mks)

c) State four ways in which the clearing of the forests has affected the natural environment in Kenya.(4mks)

d) Discuss three challenges experienced in the exploitation of tropical hardwood forests in Kenya. (6mks)

e) Give the differences in the exploitation of softwood forests in Kenya and Canada under the following sub-headings

i) Period of harvesting.(2mks)

ii) Distribution of softwood.(2mks)

8 (a) State three physical conditions that favor tea farming in Kenya. (3mks)

(b) Describe the cultivation of tea (6marks)

(c) Explain five problems facing tea farming in Kenya. (10mks)

(d) Your class visited a sugar factory for a field study on sugar processing.

(i) Outline four stages of tea processing that the class may have observed.(4mks)

(ii)Name two outlets through which KTDA markets tea.(2mks)

9.a. i)What is mining(2marks)

ii)State three effects of opencast mining on the environment(3marks)

b) Describe how deep shaft mining is carried out (4marks)

c) Explain four factors that affect the formation of soda ash(8marks)

d)Explain four problems facing the mining industry in Kenya(8marks)

10. a. i) Differentiate between subsistence farming and commercial farming. (2 mks)

(ii) State four characteristics of plantation farming in Kenya. (4mks)

(b) i) Name one cash crop grown in the Kenyan highlands. (1mks)

ii) State four ways through which Kenya has benefited from farming. (4mks)

iii) state three characteristics of shifting cultivation. (3mks)

iv) state three disadvantages of shifting cultivation (3mks)

c) Explain four factors that influence agriculture.(8mks)

NAME…….ADM……

DATE……..CLASS:……

HISTORY AND GOVERNMENT
FORM 3
TIME: 2 ½ HRS

END OF TERM 3 YEAR 2021

INSTRUCTIONS

a. **Write your name, admission number and current date in the space provided.**
b. **This paper consists of three sections A, B and C**
c. **Answer ALL questions in section A , THREE questions in section B and TWO in section C**
d. **This paper consists of 2 printed pages with nineteen questions, make sure no question is missing**
e. **All answers should be written in English**

SECTION A:*Answer all questions.* (25 MARKS)

1. Give **two** methods used by archaeologists to determine the age of fossils. (2mks)

2. Give **one** reason why early people moved from forests to settle in grasslands. (1mk)

3. Give the **main** reason why early agriculture developed in Egypt. (1mk)

4. Name **two** main methods of trade. (2mks)

5. Identify **one** invention that revolutionized food preservation during the 19th century. (1mk)

6. Who are credited with the first use of iron? (1mk

7. Give two reasons that led to the decline of Meroe as an early urban centre. (2mks)

8. State **two** uses of electricity as a source of energy (2marks)

9. State **two** advantages of steel over iron. (2marks)

10. State the role of 'golden stool' in the Asante Kingdom during the 19th century. (1mk)

11. Name the African countries that were not colonized. (2mks)

12 Identify the name of the leaderof the Maji-Maji rebellion(1905-1907). (1marks)

13. Identify Europeans interested in Matabeleland during the reign of Lobengula. (2marks)

14. Who was the first Senegalese deputy to the French chamber of deputies? (1mk)

15. State **two** objectives of African National Congress in South Africa. (2mks)

16. Outline how the independence of India and Pakistan contribute to nationalism in Africa.(1marks)

17. State the **main** reason for the rise of African nationalism in South Africa (1marks)

SECTION B:*Answer any three questions* (45 MARKS)

18. (a) State **three** ways in which the development of early agriculture contributed to the establishment of government. (3mks)

(b)Explain **six** effects of the Agrarian revolution in Britain. (12mks)

19 (a) State **five** factors that led to the development of trade. (5mks (a)

(b) Explain **five** challenges faced by the Trans-Saharan traders. (10mks)

20. (a) Identify **three** ways in which water was used as an early source of energy.(3mks)

b)Explain **six** social effects of the industrial revolution in Europe during the 18th century. (12 marks)

21 a) Outline five agreements between Lewanika and Corydon in 1900. (5marks)

(b) State five reasons why Lewanika of the lozi kingdom collaborated with the Europeans. (10 marks).

SECTION C *Answer any two questions* (30marks)

22a). State **five** economic activities of the Bagandaduring the pre-colonial period. (5marks)

b) Explain the political organization of the Asante during the pre-colonial period.(10 marks)

23(a) Give three duties of the African chiefs in Southern Rhodesia during the

colonial period (3mks)-

(b) Explain six effects of Direct rule in Zimbabwe during the colonial era. (12mks)

24a) State **five** reasons for slow decolonization in Mozambique.(5mks).(5mks)

b) Explain**five** problems faced by the nationalists of Mozambique under Portuguese colonialism. (10marks)

NAME……ADM NO……

CLASS……DATE……

311/1

HISTORY AND GOVERNMENT

FORM 3 PAPER 1

$2^1/_2$ hours

END TERM EXAMINATION

Instructions to Candidates

1. *This paper consists of **three** sections; **A, B** and **C***
2. *Answer all questions in Section **A, three** questions from Section **B** and **two** questions from section **C**.*
3. *Answers to all the questions must be written in the answer booklet provided.*
4. *All questions should be answered in English*
5. *This paper contains 3 printed pages*
6. ***Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.***

SECTION A (25 Marks)

Answer all questions in this section

1. What is a manuscript? (1mark)
2. Name **one** prehistoric site in Kenya where religious practices of the new Stone Age man have been discovered. (1mark
3. Name **two** communities in Kenya that belong to the Eastern Cushites. (2marks)
4. Give the **main** political importance of the age- system during the pre-colonial period. (1mark)
5. Name **two** written documents that provide information about the East African Coast before the 7th Century. (2marks)
6. State **one** way in which the presidency promotes unity in Kenya. (1mark)
7. Identify **two** aspects of a democracy. (2 marks)
8. Give **one** way of promoting the rights of people with disabilities. (1 mark)
9. Give **two** causes of the Agiriama resistance in pre-colonial period. (2 marks)
10. Name **one** educational commission in colonial Kenya. (1 mark)
11. Give **two** characteristics of independent churches and schools in colonial Kenya (2 marks)
12. Give **one** aim of Kenya African Union (KAU) in colonial Kenya. (1 mark)
13. State **two** roles of trade unions in the struggle for independence in Kenya. (2 marks)
14. Give the **main** objective of the Second Lancaster House Conference of 1962.(1 mark)
15. Give **two** types of elections in Kenya. (2marks)
16. Identify the highest court in Kenya. (2 marks)
17. Name the document where acts of parliament are published. (1 mark)

SECTION B (45Marks)

Answer any three questions in this section

18. (a) Name **three** communities that belong to the highland Bantu. (3marks)

(b) Describe the political organization of the Nandi during the pre-colonial period. (12 mks)

19. (a) Give **three** reasons why Britain championed the abolition of slave trade. (3marks)

(b) Explain **six** factors that promoted the development of International trade in East Africa during the 19th Century. (12 marks)

20. (a) Give **five** factors that promoted urbanization in colonial Kenya. (5 marks)

(b) Explain **five** positive effects of urbanization during colonial period in Kenya

(10 marks)

21. (a) Give **three** factors that facilitated the activities of Mau Mau in Kenya. (3 marks)

(b) Explain **six** roles played by women in the Mau Mau movement. (12 marks)

SECTION C (30 marks)

Answer any two questions in this section.

22. (a) Name three composition of Kenya Defence Force (3marks)

(b) Give **six** reasons why parliament is supreme. (12marks)

23. (a) Give **three** political rights of every citizen. (3 marks)

(b) Describe **six** features of Kenya Independence Constitution.(1962) (12 marks)

24. (a) Give t**hree** importance of national integration. (3 marks)

(b) Describe **six** values of Good Citizenship in Kenya. (12 marks)

JINA……...…NAMBARI……..……

SHULE……..

SAHIHI……

TAREHE…….

KIDATO CHA TATU

102/3

KISWAHILI

KARATASI YA 3

FASIHI

MUHULA WA TATU 2021

MUDA: Saa 2 ½

MAAGIZO

a) Jibu maswali **manne** pekee.

b) Swali la **kwanza** ni la **LAZIMA**.

c) Chagua maswali mengine **matatu** kutoka sehemu **nne** zilizobaki yaani; Ushairi, Riwaya,Hadithi fupi na Tamthilia.

d) Usijibu maswali **mawili** kutoka sehemu moja.

e) Kila swali lina **alama 20**

f) Majibu yote yaandike kwa lugha ya **Kiswahili.**

SEHEMU YA A: FASIHI SIMULIZI

1.

a) Taja mifano minane ya vipera vya utanzu wa semi katika fasihi simulizi. (alama4)

b) Fafanua sifa zozote tatu za mawaidha katika fasihi simulizi (alama3)

c) Eleza umuhimu tatu wa ngomezi. (alama3)

d) Eleza istilahi hizi za fasihi simulizi. (alama3

i) Maghani

ii) Mapisi

iii) Misimu/simo

e) Fafanua sifa zozote tatu ambazo mtambaji wa hadithi anastahili kuwa nazo. (alama3)

f) Taja methali zozote mbili zilizo na dhana ya tashibihi. (alama2)

g) Eleza sifa zozote mbili za nyimbo. (alama2)

SEHEMU YA B: USHAIRI

2. Soma shairi lifuatalo kisha ujibu maswali yanayofuata

Mkata ni mkatika,harithi hatoridhiwa
Sina ninalolishika,wala ninalochukuwa
Mlimwengu kanipoka, hata tone la muruwa!
Mrithi nini wanangu?

Sina ngo'mbe sina mbuzi,sina konde sina buwa
Sina hata makaazi,mupasayo kuyajuwa
Sina mazuri makuzi,jinsi nilivyoachwa
Mrithi nini wanangu?

Sina kazi sina bazi ila wingi wa shakawa
Sina chembe ya majazi mno ni kukamuliwa
Nakwa'cheni upagazi,ngumu kwenu ku'tuwa
Mrithi nini wanangu?

Sina sikuachi jina,mkata hatasifiwa
Hata nifanye la mana,mno mi kulaumiwa
Poleni wangu sana,sana kwenu cha kutowa
Mrithi nini wanangu?

Sina leo sina jana,sina kesho kutwaliwa
Sina zizi sina shina,wala tawi kuchipuwa
Sina wanangu mi sina,sana la kuacha kuraduwa
Mrithi nini wanangu?

Sina utu sina haki,mila yangu meuliwa
Nyuma yangu ili dhiki,na mbele imakaliwa
N'na wana na milik,hadi nitakapofukiwa
Mrithi nini wanangu?

Sina ila kesho kwenu,wenyewe kulongowa
Muwane kwa nyinyi mbinu,mwende pasi kupumuwa
Leo siyo kesho yenu,kama mutajikamuwa
Mrithi nini wananngu?

MASWALI

a) Taja mambo yoyote mawili ambayo mtunzi angewarithisha wanawe. (alama2)

b) Eleza sababu ya mtunzi kutoweza kuwarithisha wanawe. (alama3)

c) Andika ubeti wa nne kwa lugha nathari. (alama4)

d) Dondoa mifano miwili miwili ya: (alama2)

   i. Inkisari

   ii. Tabdila

e) Chambua shairi hili kwa upande wa:

   i. Dhamira (alama2)

   ii. Muundo (alama4)

f) Eleza maana ya vifungu vifuatavyo kama vilivyotumiwa katika shairi. (alama3)

i. Mlimwengu kanipoka

ii. Sina konde sina buwa.

iii. Wingi wa shakawa.

SEHEMU YA C: RIWAYA

A.K Matei: Chozi la Heri

3**.** Malezi ya watoto katika riwaya ya Chozi la Heri ndicho kitovu cha ufanisi na matatizo yote yanayowapiku watoto. Jadili (alama 20)

4. "…, Di, ni mimi… niko hai. Auntie Sauna alishikwa na polisi. ''

a) Liweke dondoo hili katika muktadha wake (alama 4)

b) Fafanua sifa za msemaji. (alama 6)
c) Eleza tamathali moja ya lugha iliyotumika katika dondoo hii. (alama2)
d) Sauna alishikwa na polisi? Elezea kikamilifu (alama 8)

SEHEMU YA: D HADITHI FUPI
A.Chokocho na D.Kayanda:
Tumbo Lisiloshiba na Hadithi Nyinginezo

5. "Penzi lenu na nani? . . . . Mgomba changaraweni haupandwi ukamea. Potelea mbali mkate wee!"

a) Eleza muktadha wa dondoo hii. (alama 4)

b) Taja na ufafanue mbinu mbili za lugha zilizotumiwa katika dondoo hili. (alama 4)
c) Onyesha vile maudhui ya utabaka yanavyojitokeza katika hadithi nzima. (alama 6)

d) Eleza sifa sita za mzugumzaji kwenye dondoo. (alama 6)

6. Kwa kurejelea hadithi zozote tano katika diwani ya, 'Tumbo lisiloshiba na hadithi nyingine.' Jadili maudhui ya nafasi ya wazazi katika malezi. (alama 20

SEHEMU YA E: TAMTHILIA
P.Kea: Kigogo
7. Tamthilia ya "Kigogo" ni kioo cha uhalisia wa maisha ya jamii nyingi za Kiafrika. Thibitisha.

KIDATO CHA TATU
KISWAHILI
INSHA
MUDA: SAA 1¾

Jina……..Nambari ya usajili ……..…Darasa……..

Sahihi ya Mtahiniwa……Tarehe…….

MAAGIZO:

a) Andika insha mbili.
b) Insha ya kwanza ni lazima.
c) Chagua insha nyingine moja kutoka kwa tatu zilizobaki.
d) Kila insha isipungue maneno 400.
e) Kila insha ina alama 20.

KWA MATUMIZI YA MTAHINI PEKEE

SWALI	1	2	3	4	JUMLA
ALAMA					

1. Umepata habari kwamba binamu wako anayeishi Ujerumani ameanza kutumia mihadarati. Mwandikie barua ukimweleza kuhusu athari hasi za tabia hiyo.
2. Ufisadi umekuwa tatizo sugu nchini. Jadili vyanzo vyake na upendekeze suluhu kwa uovu huo.
3. Pang'okapo jino pana pengo.
4. Tunga kisa kitakachoanza kwa maneno yafuatayo; Buum! Mlipuko huo ulitapakaza vifuzi kote.Wingu jeusi la moshi lilitanda.....

121/1 - MATHEMATICS ALT A - PAPER 1

TIME: 2½ HOURS

NAME: ……..…….. DATE……....

SCHOOL:…… ADM NO: ……..…CLASS: ……

END TERM THREE EXAMINATION

Kenya Certificate of Secondary Education (KCSE)

INSTRUCTIONS TO CANDIDATES

a) Write name, admission number and class in the spaces provided above.
b) This paper contains **TWO** sections: **section I** and **section II**
c) Answer **ALL** the questions in **Section I** and only **five** questions from **section II.**
d) Show all the steps in your calculations, giving your answers at each stage in the spaces provided below each question.
e) Marks may be given for correct working even if the answer is wrong.
f) **Non-programmable** silent electronic calculators and KNEC mathematical tables may be used except where stated otherwise.
g) **This paper consists of 14 printed pages.**
h) **Candidates should check the question paper to ascertain that all pages are printed as indicated and that no questions are missing.**

FOR EXAMINER'S USE ONLY:

Section I

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	**TOTAL**

Section II

GRAND TOTAL

17	18	19	20	21	22	23	24	**TOTAL**

1.

SECTION I (50Marks) Answer ALL questions in this section

1. Evaluate without using tables or a calculator the value of $\frac{1.33\times0.51}{0.19\times0.0017}$ (3marks)

2. When a certain number is divided by 48, 72 or 100 the remainder is 3 in each case. Find the number. (3mks)

3. Find all the integral values of x which satisfy the inequalities ***(3mks)***

$$20 - x > 5 + 2x \geq x + 5$$

4. A Kenyan bank buys and sells foreign currency as shown below.

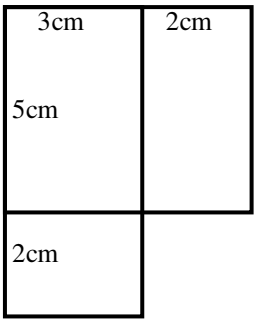
	Buying	Selling
	Kenya shillings	Kenya shillings
1 Euro	84.15	84.26
1 US Dollar	80.12	80.43

A tourist travelling from Britain arrives in Kenya with 5000 Euros. He converts all the Euros to Kenya

Shillings at the bank. While in Kenya he spends a total of KSh. 289,850 and then converts the remaining

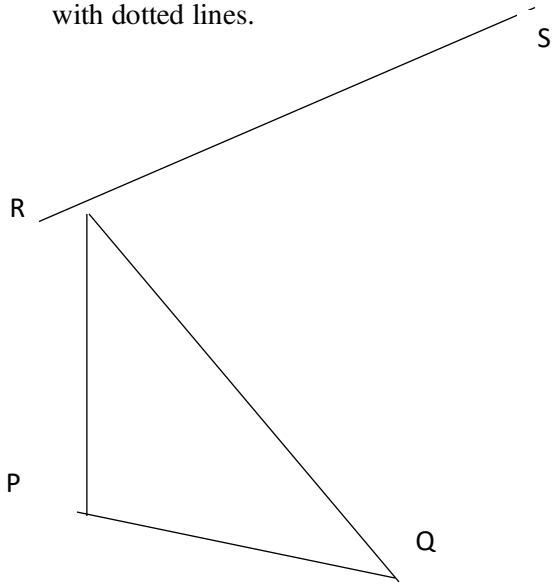
Kenya shillings to US dollars at the bank. Calculate (to nearest dollar) the amount he receives? (3mks)

5. Complete the figure below so as to make the net of a cuboid. Hence determine the surface area of the cuboid. (4 Marks)



6. Find the value of *x* given that $\begin{pmatrix} 2x-1 & 1 \\ x^2 & 1 \end{pmatrix}$ is a singular matrix (3 marks)

7. The figure below shows a solid wedge PQRSTU. Complete the solid showing all the hidden edges with dotted lines. (***3marks)***



8.During an annual general meeting at Patel Mixed Day, goats and chicken were slaughtered. The number of heads for both chicken and goats were 45. The total number of legs were 100. Determine the exact number of goats and chicken slaughtered. (3marks)

8. In a mixed school there are 900 students, out of these 600 are girls.
   (a) Find the ratio of boys to girls. (2marks)

   (b) What is the percentage of boys in this school? (1mark)

h

9. Find the value of t in the equation $\frac{t-1}{3} - \frac{4+t}{4} = 0$ (3marks)

10. Using tables, find the reciprocal of 0.432 and hence evaluate $\frac{\sqrt{0.1225}}{0.432}$ ***(3marks)***

11. Find the equation of the line perpendicular to $3x - 7y - 20 = 0$, and passes through the point (5, 2). (3 Marks)

12. The angle of elevation of the top of a building from a point P is 45^{o}. From another point T, 15 meters nearer the foot of the building, the angle of elevation of the top of the building is 52^{o}. Calculate the height of the building. ***(3marks)***

13. Given A = $\begin{pmatrix} 10 & 7 & 5 \\ 9 & 11 & 12 \end{pmatrix}$ and B= $\begin{pmatrix} 3 & 4 \\ 1 & 6 \\ 0 & 3 \end{pmatrix}$, find AB (4***mks)***

14. The travel timetable below shows the departure and arrival time for a bus plying between two towns M and R, 300 kilometres apart.

TOWN	ARRIVAL	DEPARTURE
M		0830h
N	1000h	1020h
P	1310h	1340h
Q	1510h	1520h
R	1600h	

Calculate the average speed for the whole journey. (3mks)

15. Evaluate the value of x in $81^{x+1} + 3^{4x} = 243$ (3marks)

SECTION B (50 Marks) Answer only FIVE questions from this section.

16. A group of choir members decided to raise 3600/= to buy a guitar. Each member was to contribute equal amount. In the preparation process five members transferred to another church which meant the remaining contributors had to pay more to achieve the target.

a) Show that the increase in the contribution per member was:
Sh. $\frac{18{,}000}{n(n-5)}$ if n is the initial number of members. (4 mks)

b) If the increase in the contribution per member was sh. 24, what was the original contribution before the other members left? (4 mks)

c) Calculate the percentage increase in the contribution after the others left. (2 mks)

17. The table below shows the age groups and number of people who are HIV/ AIDS positive in a certain Sub-county in Kenya.

Age group	10 – 19	20 – 29	30 – 39	40 – 49	50 – 59	60 – 69	70 – 79
No. of people	12	15	16	25	18	10	4

a) State the modal age group. (1mark)

b) Calculate the mean age of the people who are HIV/AIDS Positive. (3marks)

c) Calculate the median of the age group. (3marks)

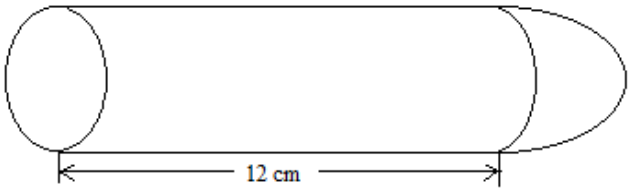
18. Using a pair of compass and ruler only construct.
    (a) Triangle PQR in which PQ =5cm, $\angle QPR = 30^0$ and $\angle PQR=105^0$. (3marks)

(b) A circle that passes through the vertices of the triangle PQR. Measure its radius. (3marks)

(c) The height of triangles PQR with PQ as the base. Measure the height. (2marks)

(d) Determine the area of the circle that has outsides the triangle correct to 2 decimal places (2marks)

19. The diagram below shows a solid made of a hemisphere and a cylinder. The radius of both the cylinder and the hemisphere is 3cm. The length of the cylinder is 12cm.



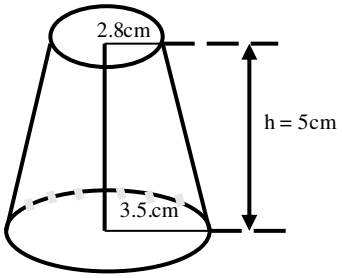
a) i) Calculate the volume of the solid. (3marks)

ii) The solid fits in a box in the shape of a cuboid 15 cm by 6cmby 6cm. Calculate the volume of the box not occupied by the solid correct to four significant figures. (2marks)

b) i) Calculate the total surface area of the solid correct to four significant figures. (3marks)

ii) The surface of the solid is to be painted. One millilitre of paint covers an area of $8cm^2$.The cost of paint is Ksh 900 per litre. Calculate the cost of the paint required. (2marks)

21. Find



(a) The surface area of the frustrum (5 Marks)

(c) The volume of frustrum shown. (5 Marks)

22. A pirate boat sails from port A on a bearing of 050° at a speed of 112km/h, for 2½ hours to port B. From port B it changes its course and travelled on a bearing of 170° at a speed of 75km/h for $2^{2}/_{3}$ hours toward part C. From C it travelled to port D. D is on a bearing of 130° and 160km from A.

a) Using a scale of 1cm to represent 40km, Draw a diagram showing the positions of the ports A, B, C and D. (4 marks)

b) Use your drawing to find.

i) The distance CD (1 mark)

ii) The bearing of C from D (1 mark)

c) A marine police patrol leaves port A to intercept the pirate boat at M as it moves from B to C in the shortest time possible.

i) How far from A will the two boats meet at M? (2 marks)

i) If the boats meets after 2 hours, what is the speed of the marine police patrol boat? (2 marks)

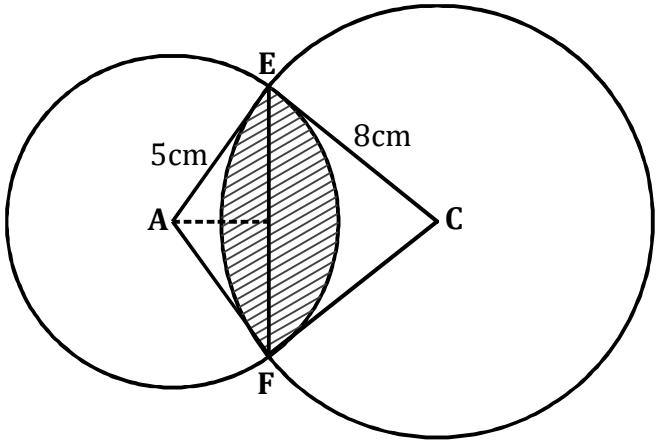
23. Helena left town A at 8:00 am and travelled towards town B at an average speed of 64 km/h. half an hour later, Joan left town B and travelled towards A at the same speed if the two towns are 384km apart:

a. At what time of the day did they meet? ***(5marks)***

b. How far from town B was their meeting point? ***(2marks)***

c. How far apart were they at 10:30am ***(3marks)***

24. The figure below shows two intersecting circles with centres A and C, of radius 5cm and 8cm respectively. The common chord EF = 6cm



Calculate

a) Angle EAF (2 marks)

b) Angle ECF (2 marks)

c) Calculate the common area between the two intersecting circles. (6 marks)

NAME: _____ **INDEX NO:** _____

SCHOOL: _____ **SIGNATURE:** _____

DATE: _____

FORM THREE
MATHEMATICS
PAPER 2
TIME: 2½ HOURS

INSTRUCTIONS TO CANDIDATES

a) Write your name and index number in the spaces provided above.
b) This paper consists of **TWO** sections. Section A and Section B.
c) Answer **ALL** the questions in section A and only **FIVE** questions from Section B.
d) All answers and working must be written on the question paper in the spaces provided below each question.
e) Show all the steps in your calculations, giving your answers at each stage in the spaces below each question.
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h) Candidates should check the question paper to ascertain that all the papers are printed as indicated and that no questions are missing.

FOR EXAMINER'S ONLY
SECTION A

Section 1

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Total

Section 11

17	18	19	20	21	22	23	24	Total

Grand total

1. Make x the subject of the formula. (3mks)

P= $\sqrt{\frac{x+2w}{4x+3R}}$

2. Simplify the following by rationalizing the denominator. (3mks)

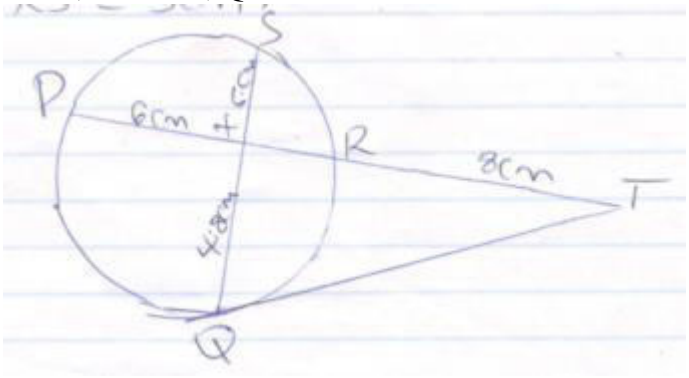
$$\frac{8}{4-2\sqrt{3}}$$

3. A quantity P is partly constant and partly varies inversely as square of t. p =6 when t=6 and p=18 when t=3. Find t when p=11. (3mks)

4. Solve for x in the equation; (3mks)

$\text{Log}_8(x+6) - \log_8(x-3) = \frac{2}{3}$

5. In the figure below QT is a tangent to a circle at Q. PXRT and QXS are straight lines. PX =6cm, RT=8cm, Qx=4.8cm and Xs= 5cm.



Find the length of;

a. XR (2mks)

b. QT (2mks)

6. Solve for x and y in the simultaneous equation below. (3mks)

xy + 6= 0

x - 2y= 7

7. Solve for x. (3mks)
$2x^2+x-36= 0$

8. Expand $(1+2x)^7$ up to the term in x^3, hence use the expansion to estimate the value of $(1.02)^7$ correct to four decimal places.
(3mks)

9. Find the value of y for which $\begin{bmatrix} 3 & 4 \\ y & 6 \end{bmatrix}$ is a singular matrix. (3mks)

10. a) Find the inverse of the matrix $\begin{bmatrix} 4 & 3 \\ 3 & 5 \end{bmatrix}$. (1mk)

b) Hence solve the simultaneous equation using the matrix method. (3mks)

$4x+3y=6$

$3x+5y=5$

11. An item that costs sh. 24, 000 cash can be bought on hire purchase. A customer pays sh.6, 000 as deposit and then makes 6 monthly installments of sh.3, 500 each. Calculate the monthly rate of compound interest, giving your answer to 1 d.p. (3mks)

12. Barasa shared sh.360, 000 among his children Simiyu, Wasike and Nekesa I the ratio 1:3:5 respectively. How much did each receive? (3mks)

13. In the arithmetic series 1+4+7+10+…find the sum of the first 100 terms. (3mks)

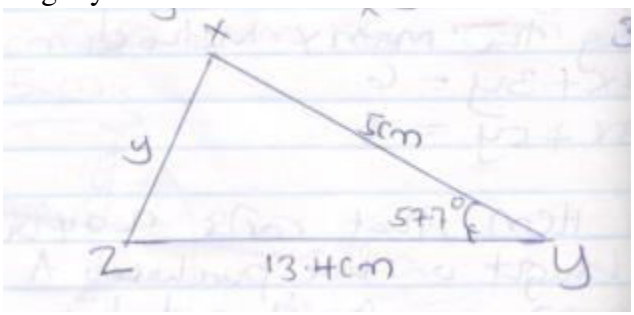
14. If $a=\begin{bmatrix}1\\2\\3\end{bmatrix}, b\begin{bmatrix}4\\-4\\5\end{bmatrix} and\ c=\begin{bmatrix}1\\0\\-5\end{bmatrix}. find\ 3a-2b+c.$ (3mks)

15. Make x the subject

(3mks)

$$P=\sqrt[3]{\frac{bx^2-ax}{x}}$$

16. The figure below shows a triangle xyz in which x=13.4cm, z=5cm and <xyz= 57.7^0. Find length y. (3mks)



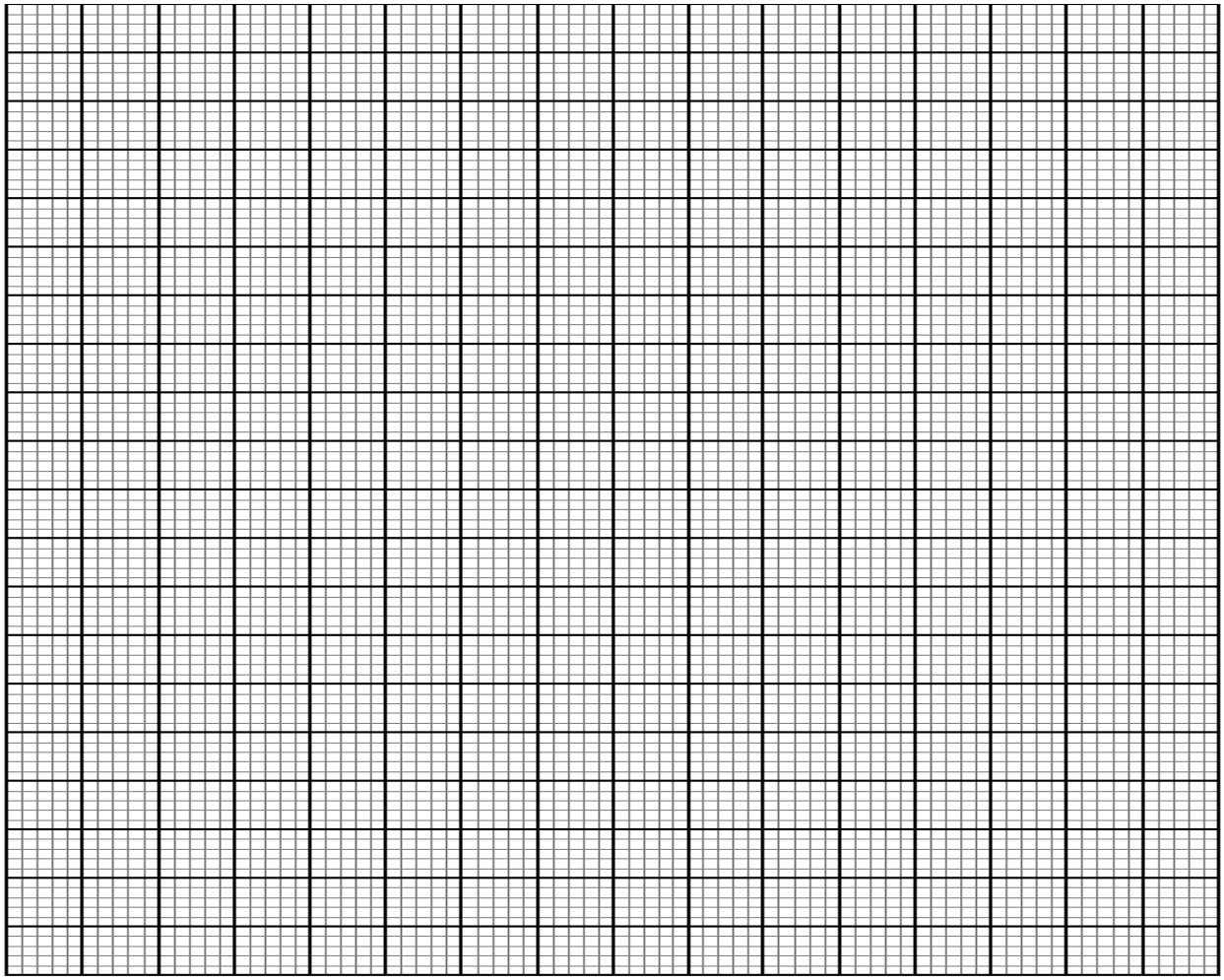
SECTION B: ANSWER 5 QUESTIONS ONLY IN THIS SECTION.

17. a) Complete the table below for the function $y=2x^2+3x-5$

x	**-4**	**-3**	**-2**	**-1**	**0**	**1**	**2**
$2x^2$					0		

3x	-12	18					
-5	-5			-3			6
y							

b) On the grid provided draw the graph of $y=2x^2+3x-5$ for $-4\leq x\leq 2$. (4mks)



c) Use your graph to state the roots of

i. $2x^2+3x-5=0$ (1mk)

ii. $2x^2+6x-2=0$ (3mks)

18. A trader bought 8 cows and 12 goats for a total of ksh.294, 000. If he had bought 1 more cow and 3 more goats he would have spend ksh.337, 500.

a. Form two equations to represent the above information. (2mks)

b. Use matrix method to determine the cost of a cow and that of a goat. (3mks)

c. The trader sold the animals he had bought making a profit of 40% per cow and 45% per goat.

i. Calculate the total amount of money he received. (3mks)

ii. Determine his profit in Kenyan shillings. (2mks)

20. The bearing of towns P and Q on a horizontal ground from a tower are 050 and 142 respectively. The angle of elevation of the top of the lower from town P is 34 . Given that P is 200m from the top of the tower and Q is 120m from the base of the tower

Determine a) The height of the tower (3mks)

b) The angle of elevation of the top of the lower from Q (3mks)

c) The distance between the two towns P and Q (4mks)

21.A group of young men decided to raise ksh.480, 000 to start a business. Before actual payment was made four members pulled out and each of the remaining had to pay an additional ksh.20,000 write an expression in terms of p for;

a. i. Original contribution of each member. (1mk)

ii. Contribution after withdrawal of four members. (1mk)

b. Form an equation in p and hence determine the number of initial members. (5mks)

c. Three men Kamau, James and Hassan shared shs.480, 000 such that Kamau: James is 3:2 and James:Hassan is 4:2. Find how much each got. (3mks)

19. The relationship between two variables S and T is given by the equation $S=KT^n$ where K and n are constant

T	2	3	4	5	6	7
S	12.8	28.8	51.2	80.8	115.2	156.8

(a) Write down the linear equation relating to S and T (1mk)

(b) Complete the table above for the linear equation relating to S and T(to one decimal place) (2mks)

(c) Draw a suitable straight line graph to represent the data (3mks)

(d) Use your graph to determine the value of K and n (2mks)

(e) Find the value of S when T =3.5

(2mks)

17. a) The current price of a vehicle is shs 500,000. If the vehicle depreciates at a rate of 15% p.a . Find the number of years it will take for its value to fall to shs 180,000. (4mks)
b) The cash price of a cooker is shs 9,000. A customer bought the cooker by paying 15 monthly installments of shs 950 each. Calculate:
a) the carrying charge (3mks)
b) the rate of interest (3mks)

20. The table below shows the income tax rates in a certain year.

Total income in k£ per annum	**Rate in shs per pound**
1 – 3,900	2
3,901 – 7,800	3
7,801 – 11,700	4
11,701 – 15,600	5
15,601 – 19,500	7
Over 19,500	7.5

Mrs Musau earned a basic salary of ksh 18,600 per month and allowances amounting to ksh.7, 800 per month. She claimed a personal relief of ksh 1,080 per month. Calculate;

a. Total taxable income in k£ p.a. (2mks)

b. i. The tax payable in ksh per month without relief. (4mks)

ii. The tax payable in ksh per month after relief. (2mks)

c. Mrs Musau's net monthly income. (2mks)

232/3
PHYSICS
PRACTICAL
PAPER 3
CONFIDENTIAL.

END TERM THREE EXAMINATIONS.

Kenya Certificate of Secondary Education (K.C.S.E.)

232/3
PHYSICS
Paper 3

INSTRUCTIONS TO SCHOOL

QUESTION ONE REQUIREMENTS

- Ammeter
- Voltmeter
- Nichrome wire mounted on a millimeter scale (gauge 28)
- Switch
- A new dry cell
- A micrometer screw gauge
- Connecting wires
- A jockey

QUESTION TWO REQUIREMENTS

- A spiral spring (spring diameter =15mm

  Length= 70mm, diameter of spring wire=1.8mm, number of turns=88)
- A complete stand
- 7 masses of 20g each
- A stopwatch
- 2 small pieces of wood for clamping
- A glass block
- 4 optical pins
- A soft board
- One plain paper

Name:……...…… **IndexNo**…….

232/3 **Candidate's Signature**……
PHYSICS
PRACTICAL **Date**…….……..……
PAPER 3
TIME: 2 $\frac{1}{2}$HRS

END TERM THREE EXAMINATIONS

232/3
PHYSICS
Paper 3

INSTRUCTIONS TO CANDIDATES

- **Write your name and index number in the spaces provided.**
- **Mathematical tables and non-programmable calculators may be used.**
- **This paper consists of section A and section B.**
- **Attempt all the questions in the spaces provided.**
- **ALL working MUST be clearly shown.**

For Examiners Use

QUESTIONS	MAXIMUM SCORE	CANDIDATE'S SCORE
1	18	
2	22	
TOTAL	40	

This paper consists of 6 printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.

1. **QUESTION 1**

You are provided with the following apparatus

- Ammeter
- A voltmeter
- A wire mounted on a millimeter scale
- A switch
- A new dry cell
- A micrometer screw gauge
- Connecting wires
- A jockey

Proceed as follows

a) Measure the diameter d of the mounted wire at three different points

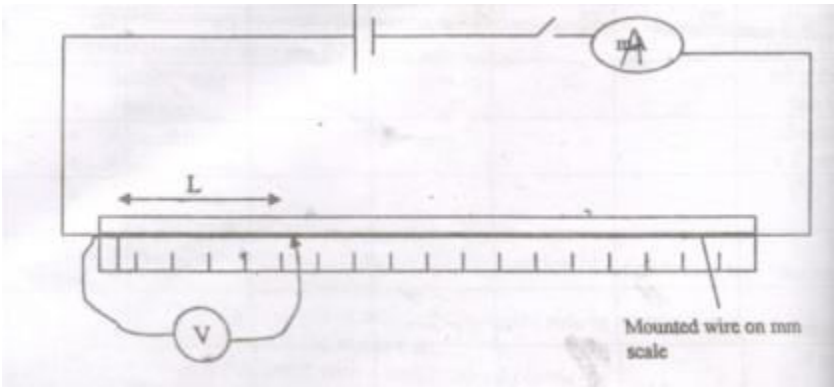
d_1= _____ mm

d_2=_____ mm (½mk)

d_3=_____ mm

Average d = _____ mm (½mk)

b) Set up the apparatus as shown in the circuit diagram.



Close the switch and tap the mounted wire with jockey as shown in the circuit. Ensure that both meters show positive deflection, open the switch.

c) Tap the wire at L= 20cm, close the switch, read and record in the table the ammeter and voltmeter reading.

d) Repeat the procedure in (c) for other values of L shown in the table and complete the table.

L(m)	V(Volts)	I(A)	R=V/I
0.2			
0.3			
0.4			
0.5			
0.6			
0.7			
0.8			

(6mks)

e) Plot a graph of R against L (m). (5mks)

f) Determine the slope of the graph. (3mks)

g) Given that R= p$\frac{L}{A}$ where A is the cross-sectional area of the wire and p is a constant for the material of the wire, determine the value of the constant p. (3mks)

2. **QUESTION 2**

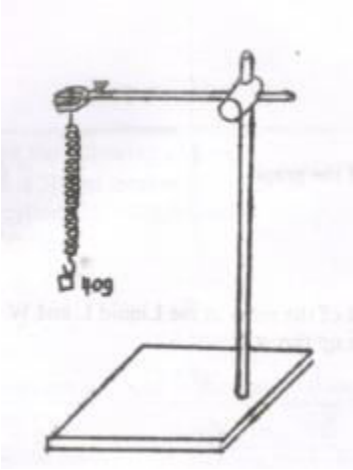
Part 1

You are provided with the following;

- A spiral spring
- A complete stand
- 7 masses of 20g each
- A stop watch
- 2 small pieces of wood for clamping

Proceed as follows

a) Clamp the spiral spring so as to hang from the clamp as shown in the figure below



b) Hang a 40g mass from the spring and displace the mass slightly downwards so that it executes vertical oscillations as shown.

c) Measure and record in the table the time for 10 oscillations.

d) Determine the periodic time T in the table.

e) Repeat the experiment for other values of mass m shown in the table. Complete the table below.

Mass (m)g	**40**	**60**	**80**	**100**	**120**	**140**
Mass m (kg)						
Time for 10 osc(s)						
Period T(s)						
T^2 (s^2)						

(6mks)

f) Plot a graph of T^2 (s^2) against mass m(kg). (5mks)

g) Determine the slope of the graph. (2mks)

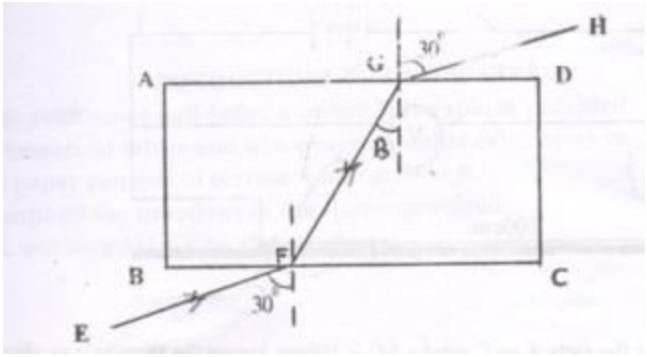
h) Given that the equation of the graph is $T^2=\frac{4\pi^2 m}{K}$
Determine the value of K. (3mks)

Part II

You are provided with a glass block, 4 optical pins, a soft board, one plain paper.

a) Place the rectangular glass block on a sheet of paper fixed on the soft board with one of its longest face uppermost. Mark the outline ABCD as shown in the figure. Remove the glass block and draw a line EF to represent a ray of light making an angle of incidence $i=30^0$ with the longest side BC of the block.

b) Stand pins p1and p2 on this line as far as possible. Replace the block and mark the emergent ray by looking into the side AD of the block and placing pins p3 and p4 in line with images of p1 and p2 as seen through the glass block. Remove the block and the pins and draw ray EFGH as shown in the figure below.



a) Draw the normal at G as shown.

b) Measure angle B (1mk)

B = ……

c) Given that k=$\frac{sin\ 30^0}{\sin B}$

Calculate the value of k. (2mks)

d) The main paper used should be handed over together with this paper (correct use made of the plain paper) (1mk)

FORM THREE

END OF TERM 3 EXAMINATION 2021

PHYSICS PAPER 1

DURATION: 2 HOURS

INSTRUCTIONS TO THE CANDIDATE

(a) Write your name and the admission number in the spaces provide above
(b) Answer all questions

For Examiner's use only

SECTION	**QUESTION**	**MAXIMUM SCORE**	**CADIDATE SCORE**
A	**1-11**	**28**	
B	**12-20**	**52**	

PHYSICS QUESTIONS

SECTION 1

1. Figure (a) below shows a velocity-time graph of motion an object

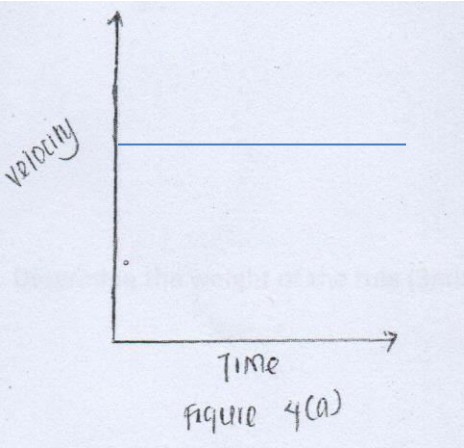


Figure 4(a)

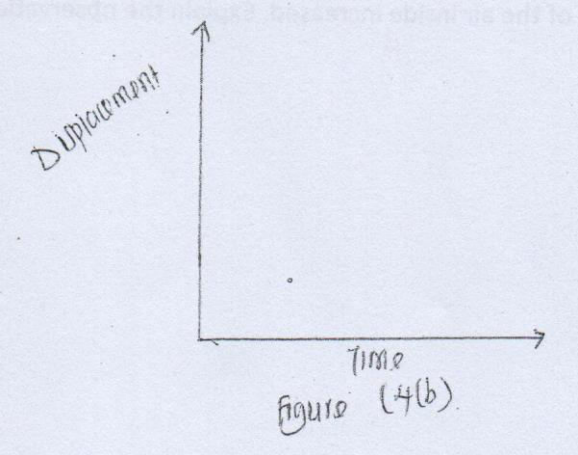
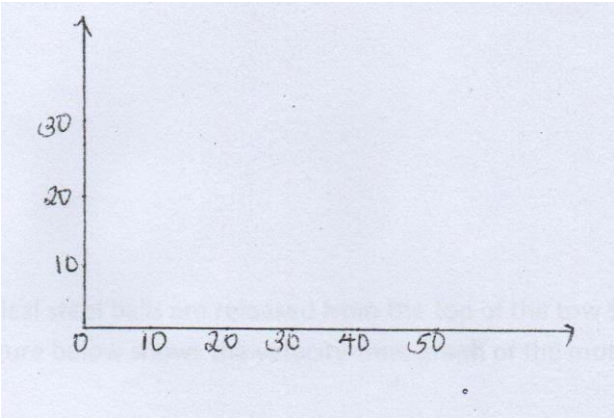


Figure (4(b)

Sketch on the axis the provided In figure (b) the displacement-time graph of the motion (2mks)

2. A car starts from rest accelerates uniformly for 5seconds to reach 30m/s. It continues at this speed for the next 20 seconds and then decelerates uniformly to come to stop in 10 seconds. On the axis provided, draw the graph of the velocity against time for the motion of the car (.4mk)



3. Water in a tin-can was boiled for some time. The tin-can was then sealed and cooled. After some time it collapsed. Explain this observation.2mks

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4. When a bicycle pump was sealed at the nozzle and the handle slowly pushed towards the nozzle the pressure of the air inside increased. Explain the observation. 2mks

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5. An immersion heater rated 90W is immersed in a liquid of mass 2kg.When the heater is switched-on for 15 minutes the temperature of the liquid rises from 20^{o}c to 30^{o}c. Determine the specific heat capacity of the liquid (assume no heat loses). 3mks

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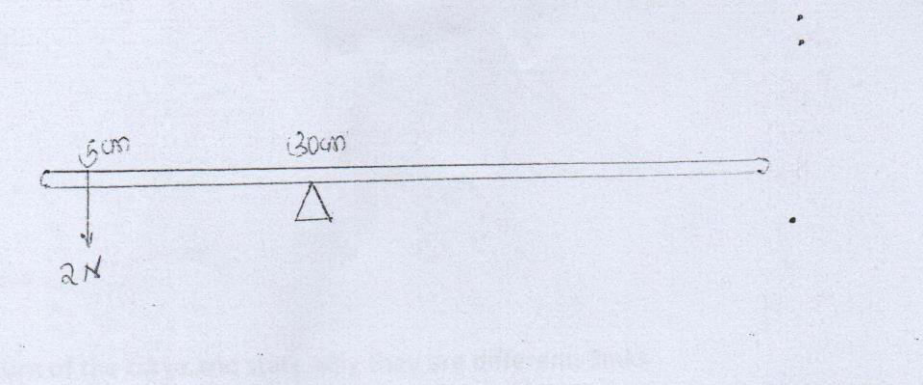
6. The figure below show a uniform meter rule pivoted at 30cm mark. It is balanced by weight of 2N suspended at the 5cm mark.



Determine the weight of the rule (2mks)

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7. Small quantities of hydrogen and helium at the same temperature are released simultaneously at one end of a laboratory. State with reason which gas is more likely to be detected earlier on the other end. 2mks

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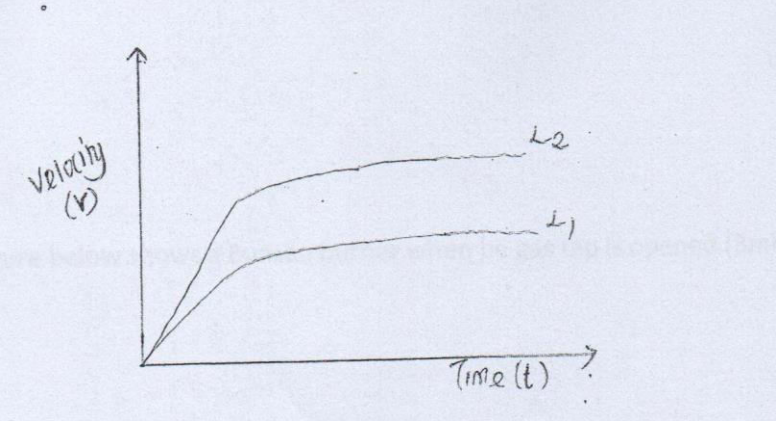
8. Two identical spherical steel balls are released from the top of two tall jars containing liquid L_1 and L_2 respectively. The figure below shows the velocity-time graph of the motion of the balls.



Explain the nature of the curve and state why they are different. 3mks

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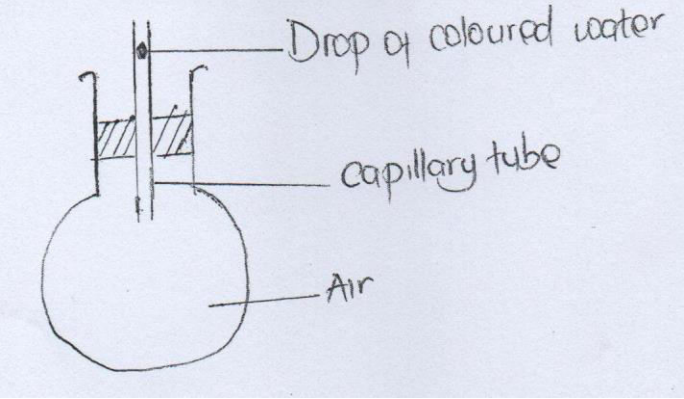
9.The figure below shows a round bottom flask fitted with a long capillary tube containing a drop of coloured water.



The flask is immersed in ice for some time. State the observation made (2mks)

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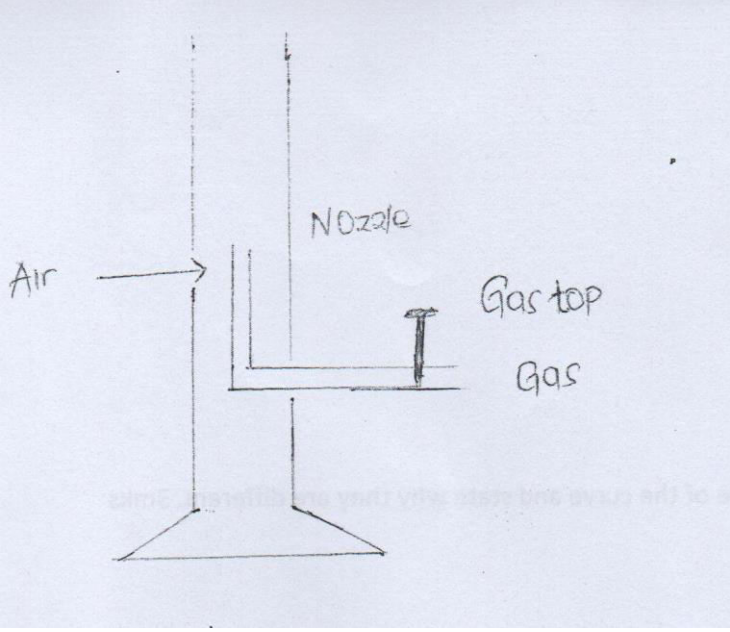
10. The figure below shows a Bunsen burner when he gas tap is opened .



Explain how air is drawn into the burner when the gas tap is opened.(3mks)

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11. A bag of sugar is found to have same weight on the planet earth as an identical bag of a dry saw dust on the planet Jupiter. Explain why the masses of the two bags must be different. 2mks

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SECTION 2

12 (a)A hole of area 2.0cm^2 at the bottom of the tank 2.0M deep is closed with a cork. Determine the force of the cork when the tank is filled with water.(density of water is 1000kg/m^3 and acceleration due to gravity is 10m/s^2) 4mks

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(b)The total weight of car with passengers is 25,000N.The area of contact of each of the four tyres is 0.025m^2 . Determine the minimum pressure (3mks)

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(c).A cyclist initially at rest moved down a hill without peddling .He applied brakes and continually stopped. State the energy changes as he cyclist moved down a hill. (1mk)

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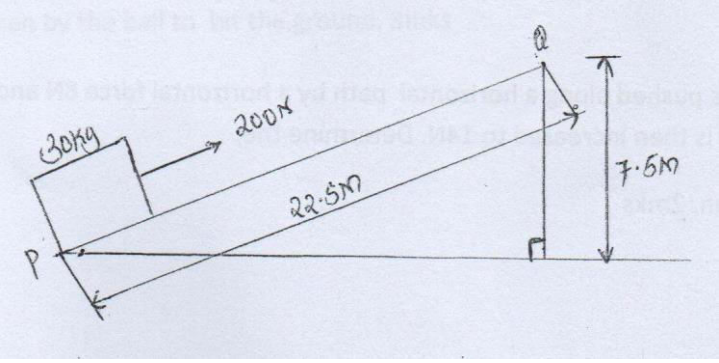
13 The figure below shows a mass of 30kgs being pulled from the point P with force of 200N Parallel to an inclined plane .The distance between P and Q is 22.5 M . In being moved from P to Q it is raised through a vertical height of 7.5 M



Determine the work done

(i) by force (2Mks)

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(ii) On the mass (2mks)

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(iii) To overcome friction (1mk)

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(iv) Determine the efficiency of the inclined plane .(2MKS)

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14. A cart of mass 30kgs is pushed along a horizontal path by a horizontal force 8N and moves with constant velocity. The force is then increased to 14N. Determine the;

(a)The resistance to the motion of the cart. 2mks

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(b) The acceleration of the cart. 2mks

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14 (C) A horizontal force of 2N is applied on a wooden block mass of 2Kgs placed on horizontal surface .It causes the block to accelerate to $5ms^{-2.}$ .Determine the frictional force between the block and the surface. (3mks)

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15. A ball is thrown horizontally from the top of vertical tower and strike the ground at A point 50 m from bottom of the tower. Given that the height OF the tower is 45m determine

(i) The time taken by the ball to hit the ground. 3mks

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(ii)the initial horizontal velocity of the ball. 3mks

(iii) Vertical velocity of the ball just before striking the ground (take acceleration due to gravity, g, as $10ms^{-2.}$

(3MKS)

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16. A long horizontal capillary tube of uniform, bore sealed at one end containS dry air trapped by a drop of mercury. The length of the air column is 142mm at 17^{o}c. Determine the length of air column at 25^{o}C. (3mks)

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(b) The pressure of air inside a car tyre increases if the car stands out in the sun for some time on a hot day. Explain the pressure increase in terms of the kinetic theory of the gas

(3mks)

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17. An immersion heater rated 2.5KW is immersed into a plastic jug containing 2kg of water and switched on for 4 minute . Determine.

(i) The quantity of heat gained by water 3mks

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(ii) The temperature change of water. (3mks)

(Take specific heat capacity of water as 4.2×10^3 $Jkg^{-1}xk^{-1}$

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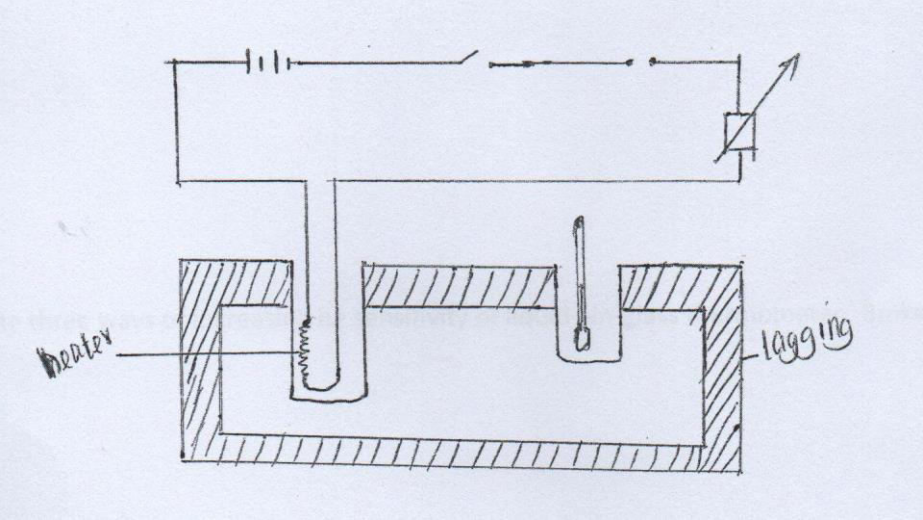
18. The figure bellow shows an incomplete set up that can be used in an experiment to determine specific heat capacity of a solid of mass M and temperature Θ_1 by electrical method.



(i) Complete the diagram by inserting the missing component of the experiment. 2mks

(ii) Other than temperature state three measurements that should be taken (3mks)

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(iii)The final temperature was recorded Θ_2, write an expression that can be used to determine the specific heat capacity of the solid. 2mks

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(B) State three ways of increasing he sensitivity of liquid –in-glass thermometer. 3mks

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NAME:…… ……ADM. NO:……

CLASS:……DATE:……

FORM 3
232 / 2
PHYSICS
PAPER 2
2 HOURS

END TERM THREE EXAMINATIONS

INSTRUCTIONS TO CANDIDATES

- *Write your name and index number in the spaces provided above.*
- *Sign and write the date of examination in the spaces provided above*
- *This paper consists of Two sections A and B*
- *Answer ALL the questions in sections A and B in the spaces provided.*
- *All working MUST be clearly shown*
- *Mathematical tables and Electronic calculators **may** be used.*

For Examiners Use Only

Section	Question	Maximum Score	Candidates' Score
A	1 – 15	25	
B	16-21	55	
	TOTAL	80	

SECTION A (25MKS)

1. State one disadvantage of using a pin hole camera to take photographs (1mk)

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2. Name two advantages which a lead accumulator has over a dry cell (2mks)

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3. A girl observes her face in a concave mirror of a focal length 90cm. If the mirror is 70cm away, state two characteristics of the image observed. (2mks)

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4. What property of light is illustrated by formation of shadows? (1mk)

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5. Other than local action state another defect of a simple cell and explain how it reduces the current produced. (2mks)

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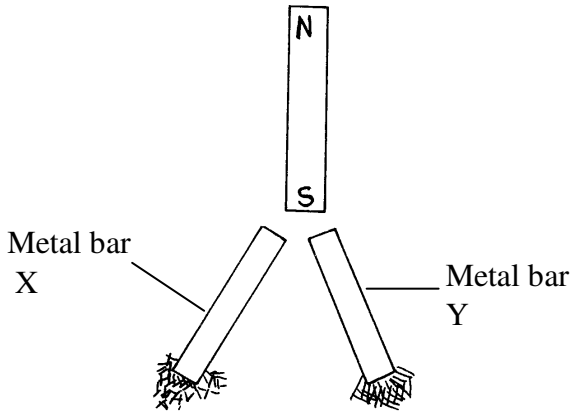
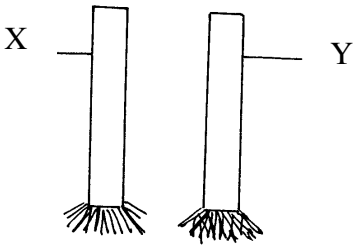
6. The figure below shows a simple experiment using a permanent magnet and two metal bars X and Y.



During attraction



After attraction

State, with reason, which bar is a soft magnetic material. (2mks)

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7.A plain sheet of paper and a plane mirror both reflect light yet only the plane mirror forms images.

Explain why the paper cannot form images (2mks)

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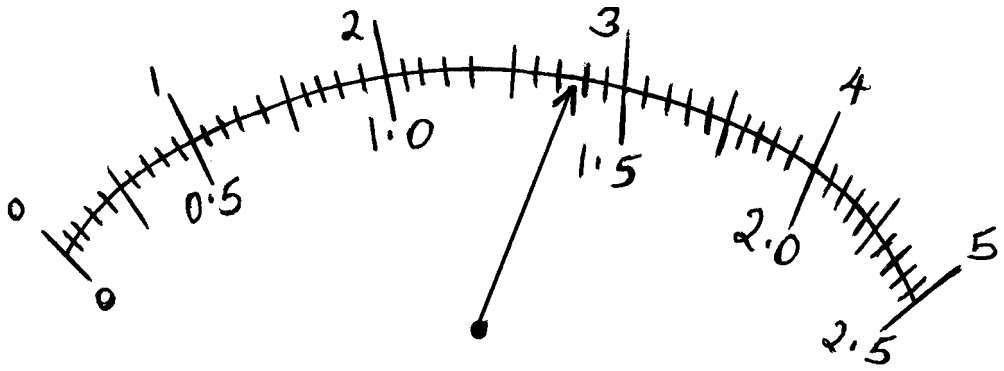
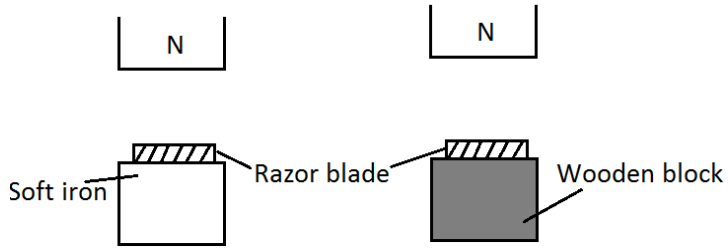
8.The Figure below shows an ammeter used to measure current through the conductor. The student used the lower scale.



State the reading from the meter.

…… (1mk)

10. Two similar razor blades are placed one on a wooden block and the other on a soft iron block as shown in the figure below



It was observed that the razor blade on the wooden block was attracted to the magnet while the other on the soft iron block was not. Explain. (2 marks)

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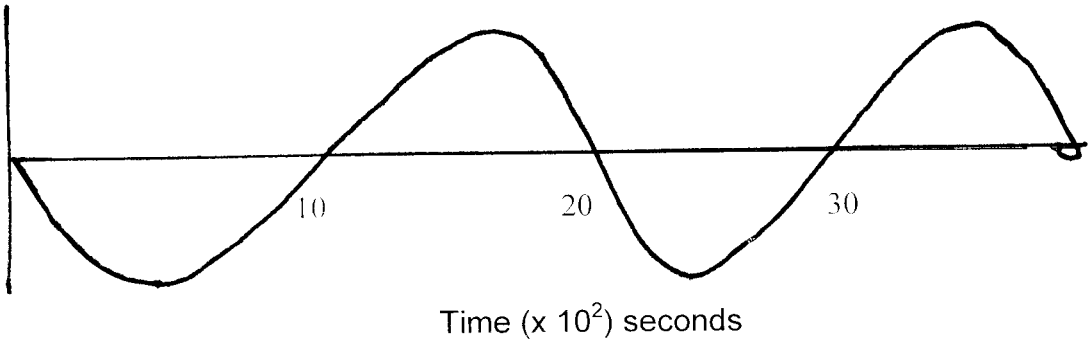
11. The figure below shows a displacement - time graph for a wave. Determine its frequency. (3mks)



12 explain two reasons why in domestic electrical wiring bulbs are connected in parallel (2mks)

13 explain two defects of a simple cell (2mks)

14 differentiate between hammering in magnetization and demagnetization (2mks)

15 describe how an electric bell works

SECTION B (55 Marks)

Answer all questions in this section in the spaces provided

16.(a) (i) State Ohm's law (1mk)

(b) A piece of red-hot charcoal is brought close to the cap of a negatively charged electroscope, . Explain what is observed. (3mks)

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(c) A cell of e.m.f E and internal resistance r is used to pass a current through various resistors R, Ohms and the values of current recorded in the table below.

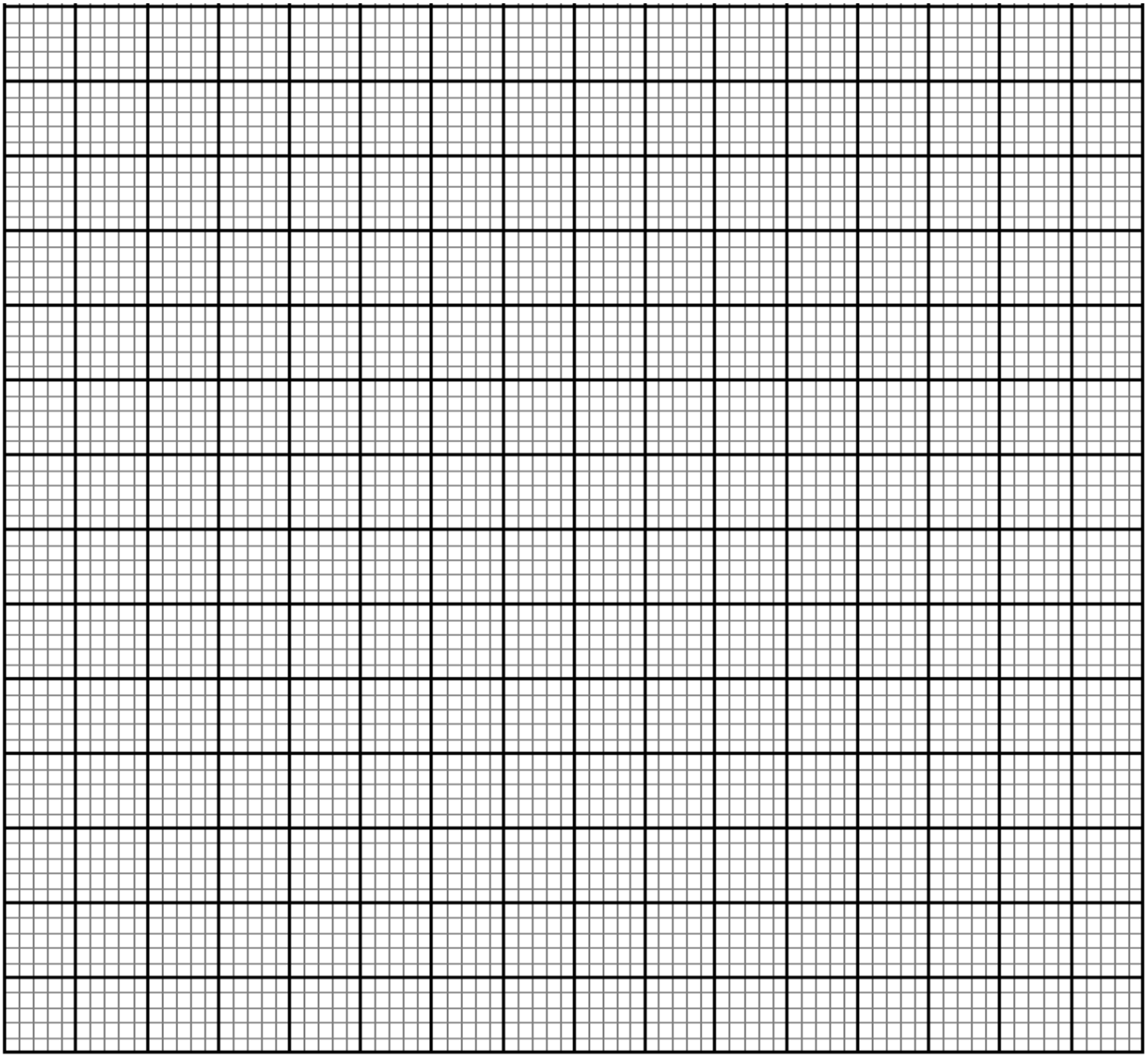
R(Ohms)	1.6	2.1	2.5	3.6	5	8
i(A)	1	0.8	0.7	0.5	0.37	0.24
$1/_i(A^{-1})$						

(i) On the table record values of 1/i (1mk)

(ii) Plot a graph of 1/i versus R and use it to determine E (8mks)

17 (a) state and explain what happens when one removes a nylon cloth off the body (2mks)

(b) describe an experiment to investigate the law of charges (4mks)



(c) state basic law of charges (1mk)

(d) explain why repulsion is the surest test for electrostatic charging (2mks)

(e) a metal rubbed with a piece of cloth doesnot acquire charge (3mks)

(i) explain the phenomena

(ii) what precaution need to be taken so that the rod acquires charge

(f) explain 3 dangers of electrostatics (3mks)

18.(a) (i) **State three** properties of electric field lines. (3mks)

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(ii) describe with explanations an experiment to show how the shape of a core affects the strength of an electromagnet (5mks)

19.a) Define the following terms as used in curved mirrors.

i) Principal focus (F). (1mk)

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ii) Focal length (f) (1mk)

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b) By use of a ray diagram, show how a concave mirror may be used by dentist when extracting teeth. (3mks)

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c) You are provided with the following apparatus a white screen, metre rule and concave mirror, using the apparatus, describe an approximate method of determining the focal length of the mirror. (3mks)

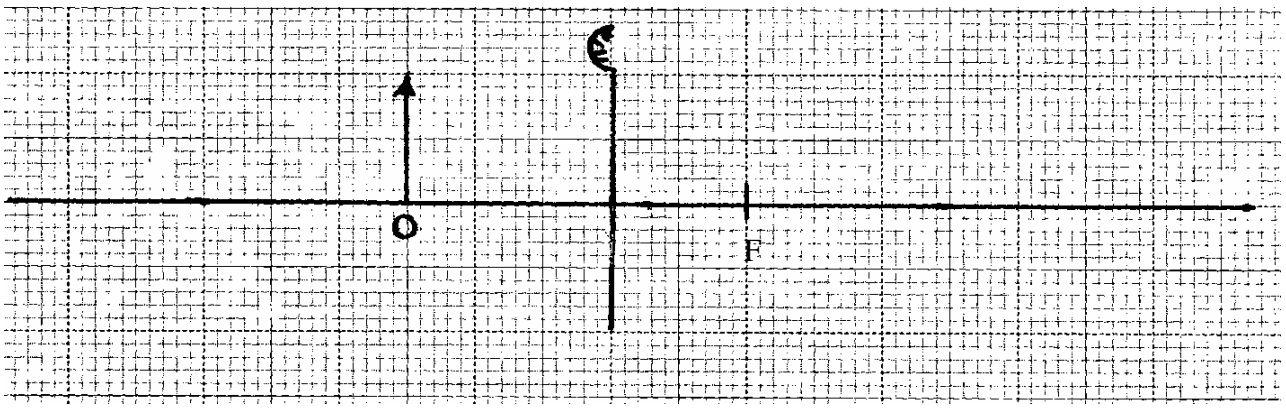
d) Show that the linear magnification M of a convex mirror is given by

$$M = \frac{V}{f} + 1$$

Where V is the image distance and *f* the focal length of the mirror. (3mks)

e) The figure below represents an object, O, placed in front of a curved mirror.

(i) By drawing suitable rays, complete the diagram to show the position of the image. (3marks)



(i) State the characteristics of the image in (i) above (2mks)

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20 (a)Differentiate between motor rule and Maxwell right hand grip rule (2mks)

(b)Define a solenoid (1mk)

(c)Describe how magnets should be stored (2mks)

NAME: ……..…… ADM NO: ……. CLASS: ……..

443/1
AGRICULTURE
PAPER 1
FORM 3
END OF TERM 2 EXAM
TIME: 2 HOURS

INSTRUCTIONS:
This paper consists of 3 sections; A, B and C. Answer all questions in section A and B and any two in section C.

SECTION A 30MKS

1. Name three branches of horticulture. (1 ½ mks)

2. State four advantages of organic farming. (2mks)

3. What is the importance of decomposers in agriculture. (1 mk)

4. State three basic economic concepts. (1 ½ mks)

5. (a) What is concession company? (½ mk)

   (b) Give two examples of individual land tenure system. (1 mk)

6. (a) Differentiate between solifluction and landslide. (2 mks)

(b) Name four types of landslide. (2 mks)

7. Give three control measures of Blossom-end rot disease. (1 ½ mks)

8. How are crop pests classified according to the mode of feeding. (2 mks)

9. State any three effects of diseases to crops. (1 ½ mks)

10. a. State six effects of weeds in a pasture crop. (3 mks)

b. Define a weed. (½ mk)

11. List two ways of classifying herbicides based on mode of action. (1 mk)

12. State four factors considered when grading tomatoes for fresh market. (2 mks)

13. Give possible causes of swelling on roots of legumes. (1 mk)

14. What is a companion crop? (1 mk)

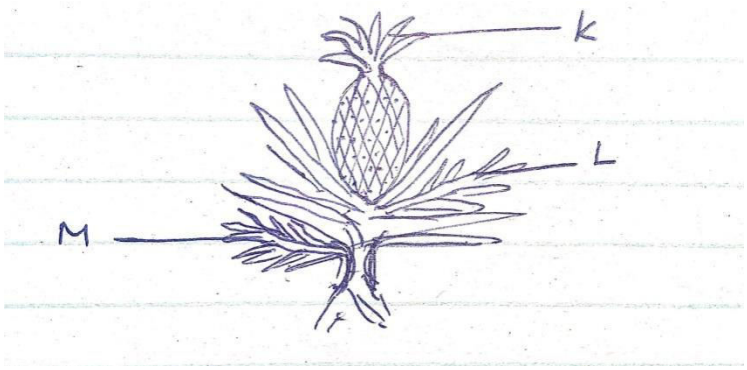
15. List two main methods of pruning. (2 mks)

16. State two functions of polythene sheet when used as mulch material. (1 mk)

17. Give any four factors that influence seed rates. (2 mks)

SECTION B: (20 MARKS)

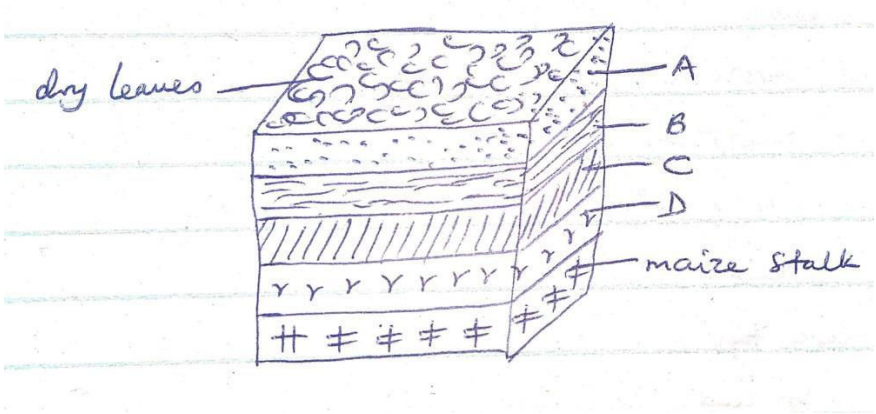
18. The diagram below illustrates a crop. Study it and answer the questions that follow.



(a) Identify the parts labeled K, L and M. (3 mks)

(b) Apart from the parts mentioned above, list down five other vegetative materials used for crop propagation. (2 mks)

19. Study the diagram below and answer the questions that follow.



(i) What are the dimensions of the figure shown above? (1 mk)

(ii) Name the parts labeled A, B , C and D. (2 mks)

(iii) State the importance of level A in this set up. (1 mk)

(iv) State two factors considered when selecting a site for a compost pit. (2 mks)

20. A farmer with one hectare of land requires 40kg of N in his farm. He applied CAN which costs Ksh 35 per kilogram. CAN contain 20kg N.

(a) Calculate the amount of CAN the farmer requires. (2 mks)

(b) How much will a farmer with one and a half hectares spend to apply in his farm? (3 mks)

(c) List five characteristics of nitrogenous fertilizers. (2 ½ mks)

(d) State the two methods employed during soil sampling. (1 mk)

(e) Define soil sampling. (½ mk)

SECTION C: (40 MARKS)

21. (a) Discuss the importance of crop rotation to a farmer. (12 mks)

(b) Discuss the factors that determine harvesting of a crop. (8 mks)

22. (a) Discuss the process of water treatment using a chemical treatment system. (12 mks)

(b) State and explain various methods used during land clearing. (8 mks)

23. (a) Explain various harmful effects of weeds. (10 mks)

(b) State ten cultural methods employed in pest control. (10 mks)

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Name:…….Class:……..Adm No:…….
565/2

BUSINESS STUDIES.–
PAPER 2
FORM 3
END TERM EXAM - 2021
TIME: 2 ½ HOURS

Instructions.
Answer any five questions.

1. a. Explain five features of sole proprietorship form of business. (10mks)
   b. Explain five demerits that maybe associated with water transport. (10mks)

2. a. State and explain five measures that maybe taken by the Kenyan government to reduce the level of unemployment. (10mks)
   b. Explain five circumstances which would make an office manager to replace an existing machine with a modern one. (10mks)

3. a. Give and explain five reasons why an increase in per capita income may not lead to a rise in standard of living. (10mks)
   b. Explain five reasons for the popularity of hypermarkets in Kenya. (10mks)

4. a. There are numbers of circumstances under which business enterprises may choose to merge. Explain five of them. (10mks)
   b. The government of Kenya has decided to sell her poorly performing businesses to private investors. Explain five reasons for this kind of move. (10mks)

5. a. With the aid of a diagram show the effect of an increase in the supply of a commodity, while demand remains constant. (10mks)
   b. Explain five ways in which commercial attaches promotes a country's trade with other countries. (10mks)

6. a. Explain five problems linked to rapid population growth. (10mks)
   b. The following balances were extracted from the books of Umoja Traders on 1st October 2020 (10mks)

details	shs.
Capital	80,000
Furniture	56,000
Debtors	25,000
Creditors	20,000
Cash	8,000
Bank	11,000

The following transactions took place in the course of the month.

i. Took shs. 3000 from bank for family use.
ii. Paid a creditor shs. 4500 in cash.
iii. Purchased land worth shs. 82,000 paying by cheque.
iv. Acquired a ten year bank loan shs. 165,000 which was credited to the business bank account.
v. Converted a family table worth shs. 5,500 to business use.
vi. Received shs. 7,300 in cash from debtors.

Required:

Prepare Umoja traders balance sheet at the end of October 2020.

Confidential

Each candidate requires;

- ✓ About 100cm_3 of Solution A containing 21.2g per litre of anhydrous sodium carbonate ($Na_2CO_{3(s)}$.
- ✓ About 150 cm_3 of 0.3M Nitric (V) acid solution B
- ✓ About 100cm^3 of 0.2M sodium hydroxide solution C.
- ✓ 50cm^3 burette
- ✓ 25cm^3 pipette
- ✓ A clamp, boss and stand
- ✓ Methyl range indicator
- ✓ 3 conical flasks
- ✓ White tile.

Name: …… Adm No. ……

Class: ……. Date: ….....

233/3

CHEMISTRY

PAPER 3

FORM III

END TERM 2 EXAMS

Time: 2 hours

233/3

CHEMISTRY

FORM III

INSTRUCTIONS TO THE CANDIDATES:-

- Write your **name** and admission **number** on the spaces provided.
- Answer ***all*** the questions in the spaces provided.
- Mathematical tables and electronic used calculators may be
- All working **MUST** be clearly shown where necessary.

Question	**Maximum score**	**Candidate's score**
1	20	

1. You are provided with:

   - Solution A – containing 21.2g per litre of anhydrous sodium carbonate ($Na_2CO_{3(s)}$)
   - Solution B – Nitric (V) acid solution
   - Solution C – metal hydroxide $M(OH)_x$

Procedure 1

i) Fill the burette with solution B

ii) Using a pipette, transfer 25cm^3 of solution A into a clean conical flask and add 1-2 drops of methyl orange indicator.

iii) Titrate with solution B from burette.

iv) Repeat the titration to obtain accurate results and record the data in the table below.

(4 marks)

Titre	I	II	III
Final burette reading (cm^3)			
Initial burette reading (cm^3)			
Volume of solution B used (cm^3)			

a) Find the average volume of solution B used. (1 mark)

b) Given that the equation for the reaction is

$Na_2CO_{3(aq)} + HNO_{3(aq)} \quad NaNO_{3(aq)} + H_2O_{(l)} + CO_{2(g)}$

Calculate;

(i) The number of moles of sodium carbonate in 25 cm^3 of solution A (3 marks)

(ii) The number of moles of the acid in the titre volume obtained. (1 mark)

c) Hence find the molarity of nitric (V) acid solution B. (1 mark)

Procedure II

i) Pipette 25cm^3 of solution C into a clean conical flask.

ii) Add 1-2 drops of methyl orange indicator.

iii) Titrate with solution b.

iv) Repeat the titration to obtain accurate results and fill the table below.

(4 marks)

Table II

Titre	I	II	III
Final burette reading (cm^3)			
Initial burette reading (cm^3)			
Volume of solution B used (cm^3)			

a) Find the average titre volume of solution B used. (1 mark)

b) Calculate;

i) The number of moles of solution B used in the reacting volume. (1 mark)

ii) The number of moles of solution C in $25cm^3$ of the the solution. (1 mark)

c) Determine the equation for the reaction between the hydroxide $M(OH)_x$ and nitric (V) acid. (2marks)

d) What is the value of x in $M(OH)_x$? (1 mark)

Confidential

Each candidate requires;

- ✓ About 100cm_3 of Solution A containing 21.2g per litre of anhydrous sodium carbonate ($Na_2CO_{3(s)}$.
- ✓ About 150 cm_3 of 0.3M Nitric (V) acid solution B
- ✓ About 100cm^3 of 0.2M sodium hydroxide solution C.
- ✓ 50cm^3 burette
- ✓ 25cm^3 pipette
- ✓ A clamp, boss and stand
- ✓ Methyl range indicator
- ✓ 3 conical flasks
- ✓ White tile.

Question 12:

Expected average volume = 33.3 cm^3;

Calculations:

(i). Moles of sodium carbonate.

Morality = $^{21.2}/_{106}$ = 0.2 Molar;

Thus if 1000cm^3 = 0.2moles

Then 25cm^3 = $\frac{25 \times 0.2}{1000}$ = 0.005moles

(ii) Moles of acid.

Mole ratio: Base: Acid = 1:2 respectively;

Thus moles of Acid = 2 × 0.005 = 0.01moles

(iii). Molarity of the acid.

If 33.3cm^3 = 0.01 moles

Then 1000cm^3 = $\frac{1000 \times 0.01}{33.3}$ = 0.3 Molar;

Procedure II

Average titre = $16.7cm^3$

(a). Moles of B.

$1000cm^3 = 0.3$moles

$16.7cm^3 = \frac{16.7 \times 0.3}{1000} = 0.005$ Moles

(ii) Moles of C.

If $1000cm^3 = 0.1$moles;

Then $25cm^3 = \frac{25 \times 0.1}{1000} = 0.0025$moles

(iii) Equation:

Moles Acid: Base

0.005: 0.0025

Ratio $\frac{0.0050}{0.0025} : \frac{0.0025}{0.0025}$

2 : 1;

Thus ratio Acid: Base → 2: 1 respectively;

Thus reaction equation:

$2HNO_{3(aq)} + M(OH)_{x(aq)} \rightarrow M(NO_3)_{x(aq)} + H_2O(l)$

(ii) Moles of C.

If $1000cm^3 = 0.1$moles;

Then $25cm^3 = \frac{25 \times 0.1}{1000} = 0.0025$moles

(iii) Equation:

Moles Acid: Base

0.005: 0.0025

Ratio $\frac{0.0050}{0.0025} : \frac{0.0025}{0.0025}$

2 : 1;

Thus ratio Acid: Base → 2: 1 respectively;

Thus reaction equation:

$2HNO_{3(aq)} + M(OH)_{x(aq)} \rightarrow M(NO_3)_{x(aq)} + H_2O(l)$

(iv) Value of X:

Balancing for x in the equation above:

$2NHO_{3(aq)} + M(OH)_{2(aq)} \rightarrow M(NO_3)_{2(aq)} + 2H_2O_{(l)}$;

So x = 2;

Name: ……Adm. No……..

233/2

CHEMISTRY

PAPER II

THEORY

2 HOURS

Instructions to Candidates

a) Write your name and admission number in the spaces provided.
b) Answer all the questions in the spaces provided.
c) Mathematical tables and electronic calculators may be used.
d) All working must be clearly shown where necessary.
e) Students should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.

For Examiner's Use Only

Question	Maximum Score	Candidate's Score
1		
2		
3		
4		
5		
6		
7		

1. Study the data in the table below to answer the questions that follow. The letters do not represent actual symbols of the elements.

Elements	Atomic number	Melting point °C	Boiling point °C	Ionic radius
A	11	98	890	0.095
B	12	650	1140	0.065
C	13	660	2470	0.050
D	14	1410	2360	0.034
E	15	44.2 590	280	0.212
F	16	113 119	445	0.184
G	17	-101	-35	0.181
H	18	-189	-186	-

i) Write the electronic arrangement for the atoms represented by letters B and F. (2 Marks)

B F

ii) State the nature of oxides of the elements represented by B and F. (2 Marks)

Oxide of B

Oxide of F

iii) Why does the element represented by letters E have two values of melting point?(1 Mark)

iv) Explain the following observations in terms of structure and bonding.

a) There is increase in boiling point from A to C. (2 Marks)

b) Element D has a high melting point and boiling point. (2 Marks)

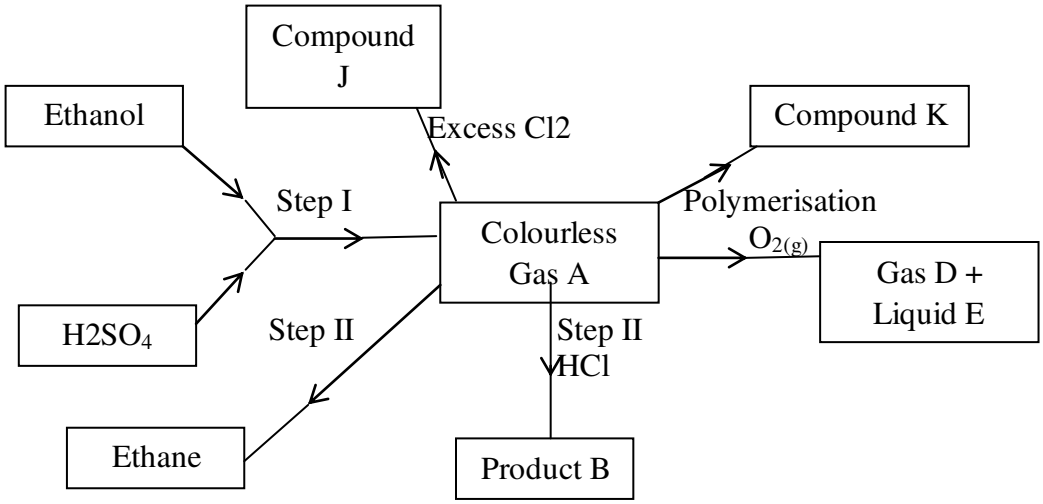
c) There is a decrease in boiling point from E to H. (2 Marks)

v) Explain the difference in ionic radius between elements represented by letters A and G.

(2 Marks)

vi) Write the formulae and the electronic arrangement of the two ions of E whose ionic radius are shown in the table. (2 Marks)

2. Study the chart below and answer the questions that follow.



i) State the reagents and conditions necessary in the following steps. (3 Marks)

Step	**Conditions**	**Reagents**
Step I		
Step II		

ii) Name: (2 Marks)

a) Colourless gas A

b) Compound B

c) Compound J

d) Compound K

iii) Write a chemical equation that lead to formation of gas D and liquid E. (1 Mark)

iv) Write the structural formula of compound B. (1 Mark)

v) State the importance of reaction taking place in Step II. (1 Mark)

B. The table below gives some information of some members of a homologous series of hydrocarbons.

	No. of Carbons	**Relative Molecular Mass**
A	1	16
B	2	30
C	3	44
D	4	58
E	5	72
F	6	86

i) What do you understand by the term homologous series? (1 Mark)

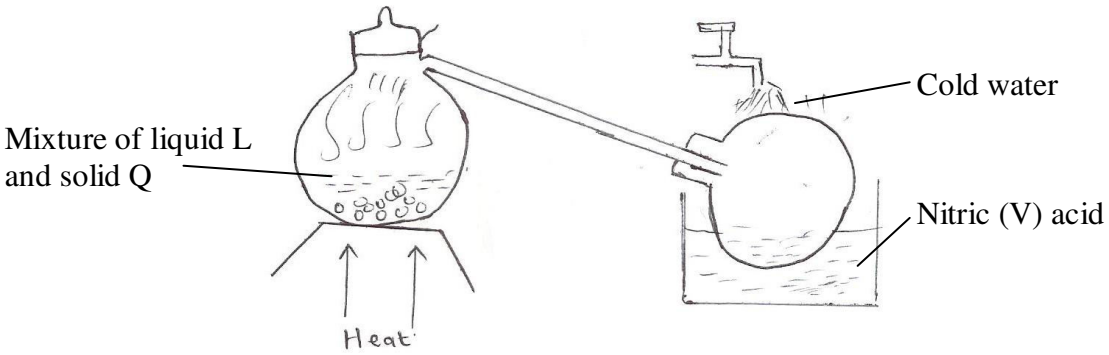
ii) To which group of hydrocarbon do they belong? (1 Mark)

iii) Give the condensed structural formula of the compound represented by letter E.

(1 Mark)

iv) Explain why the compound represented by letter F is liquid while that of letter B is a gas at room temperature.(1 Mark)

3. The diagram below shows the preparation of Nitric (V) acid.



i) Name the liquid L and solid Q used to prepare Nitric (V) acid. (2 Marks)

L

Q

ii) What is the colour of the Nitric (V) acid produced? Give reasons. (2 Marks)

iii) What is the purpose of cold water? (1 Mark)

iv) Explain why Nitric (V) acid is stored in dark bottles. (1 Mark)

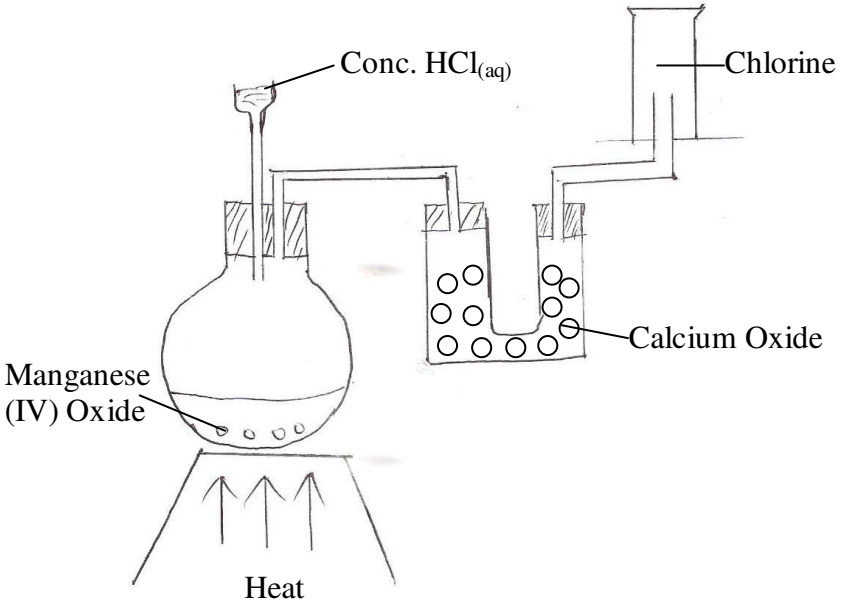
v) Red hot carbon reacts with concentrated Nitric (V) acid to give two gases. Name the two gases.

(2 Marks)

vi) Write the equation of reaction between Carbon and Concentrated Nitric (V) acid. (1 Mark)

vii) Give two uses of Nitric (V) acid. (2 Marks)

4. The diagram represents a set-up intended for the preparation and collection of dry chlorine gas. Study it and answer the questions that follows.



i) Identify two mistakes in the set-up and give a reason for each. (2 Marks)

ii) State the role of Manganese (IV) Oxide. (1 Mark)

b) Chlorine in the presence of water is a bleaching agent. Name the substance responsible for the bleaching action. (1 Mark)

c) Write down the equation for the reaction between dry chlorine and heated iron fillings.
(1 Mark)

d) Write an ionic equation for the reaction between Potassium Bromide solution and Chlorine.
(1 Mark)

e) i) Iron (II) Chloride reacts with Chlorine gas to form substance E. Identify substance E.
(1 Mark)

ii) During the reaction in C(i) above 6.30g of Iron (II) Chloride were converted to 8.06 of substance E. Calculate the volume of Chlorine used. (2 Marks)
(Cl = 35.5, Molar gas volume at room temperature = 24000cm^3, Fe = 56)

f) Draw and name the structure of the compound formed when excess chlorine gas is reacted with methane gas in presence of UV light. (2 Marks)

g) Give two industrial uses of chlorine. (2 Marks)

5. The reaction between Sulphur (IV) Oxide and Oxygen to form Sulphur (VI) Oxide in the contact process is exothermic.

$2SO_{2(g)} + O_{2(g)} \rightleftharpoons 2SO_{3(g)}$

A factory manufacturing Sulphuric acid by contact process produces 350Kg of Sulphur (VI) Oxide per day.

i) Give the optimum conditions for the above reaction. (3 Marks)

a) Catalyst

b) Temperature

c) Pressure

ii) All the Sulphur (VI) Oxide produced was absorbed in concentrated sulphuric acid to form Oleum.

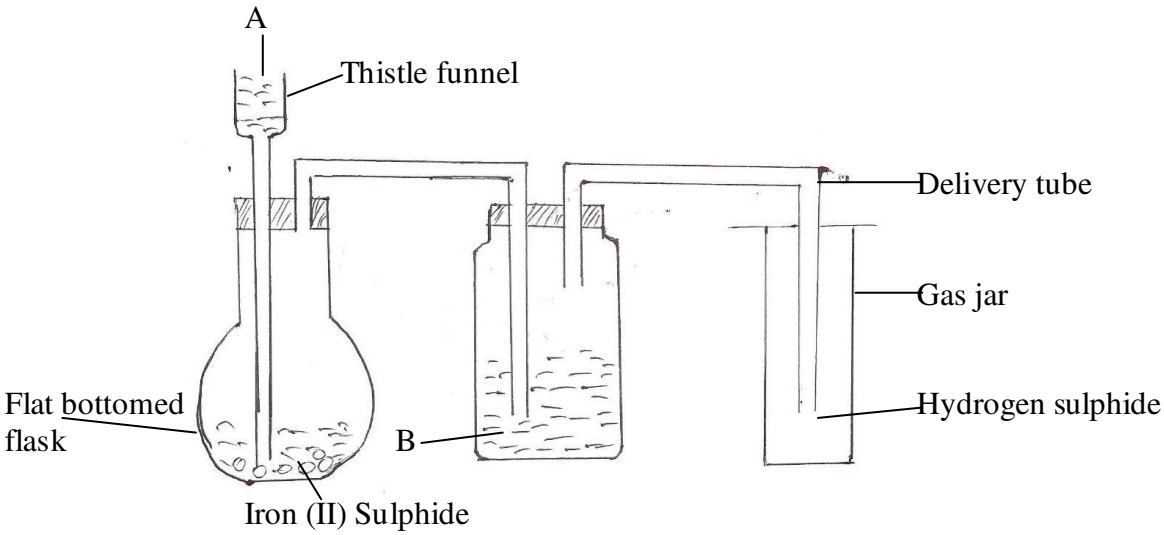
$H_2SO_{4(l)} + SO_{3(g)} \longrightarrow H_2S_2O_{7(l)}$

Calculate the mass of oleum that was produced per day.

(S=32, O=16.0, H=1.0) (3 Marks)

iii) Explain why Sulphur (VI) Oxide gas is not dissolved directly in water. (1 Mark)

b) The diagram below shows the laboratory preparation or hydrogen sulphide gas.



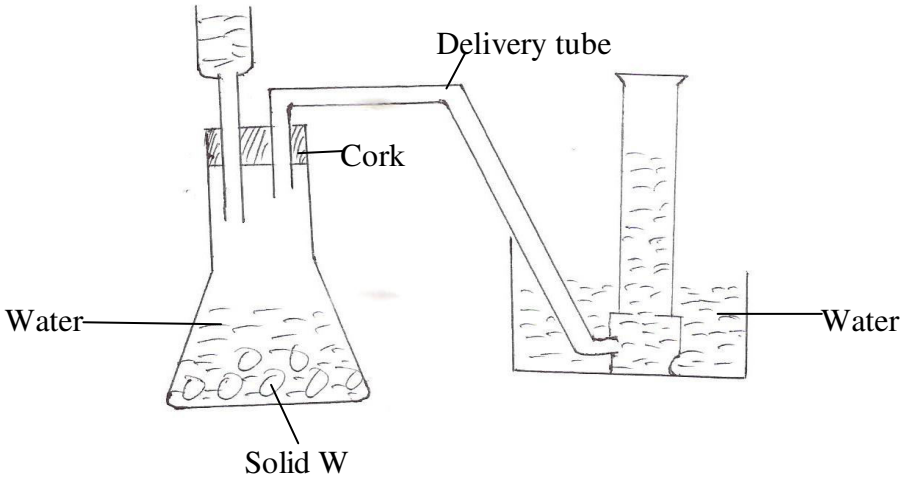
i) Identify substance A and B. (2 Marks)

ii) Write an equation for the reaction taking place in the flat bottomed flask. (1 Mark)

iii) Name a drying agent that can be used to dry hydrogen sulphide. (1 Mark)

iv) Explain why when Sulphur (IV) Oxide is mixed with hydrogen Sulphide in an aqueous environment, yellow deposit is formed. (2 Marks)

6. The diagram below shows a set up used by a student in an attempt to prepare and collect oxygen gas.



i) Identify one mistake in the set up. (1 Mark)

ii) Name solid W. (1 Mark)

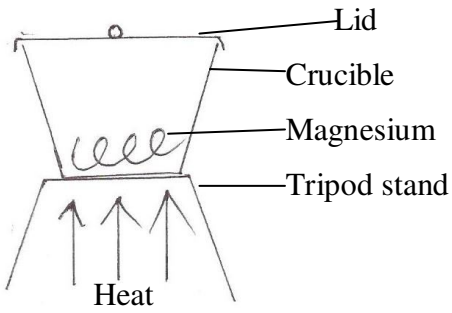
iii) Write a chemical equation of the reaction between solid W and water. (1 Mark)

b) A piece of Phosphorous was burnt in excess air. The product obtained was shaken with a small amount of hot water to make a solution.

i) Write an equation for the burning of Phosphorous in excess air. (1 Mark)

ii) The solution obtained in (b) above was found to have a pH of 2. Give reasons for this observation. (2 Marks)

c) The set-up below was used to investigate the change in mass when 0.96g of Magnesium ribbon burns in air.



The results obtained are shown below.

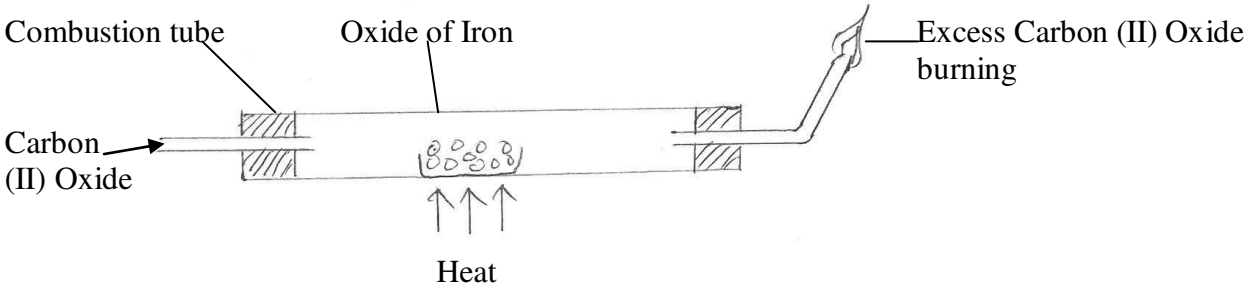
Mass of Crucible + Magnesium before burning = 26.18g

Mass of Crucible + Contents after burning = 26.82g

i) Calculate the mass of oxygen used up in the reaction. (1 Mark)

ii) Determine the emphirical formula of the compound formed from the information given above. (Mg = 24, O = 16). (2 Marks)

7. The diagram below shows an experiment in which Carbon (II) Oxide was reacted completely with a heated oxide of iron. Study the diagram and the data shown below it and answer the questions that follow.



Mass of Porcelain boat = 13.23g
Mass of Porcelain boat + Oxide of Iron = 16.71g
Mass of Porcelain boat + Residue = 15.75g

a) From the data above, calculate: -

i) Mass of the oxide of iron. (1 Mark)

ii) Mass of iron in the oxide. (1 Mark)

iii) Mass of oxygen that react with the iron to form the oxide. (1 Mark)

iv) Determine the empirical formula of the oxide. (2 Marks)

v) If the molecular mass of the oxide is 232, determine its molecular formula. (1 Mark)

vi) Write a chemical equation of the reaction that took place in the combustion tube. (1 Mark)

NAME: _____ADM No_____

SCHOOL: ……
CANDIDATE'S SIGN…….....…...….....……
BUSINESS STUDIES FORM THREE.
TERM THREE 2021
565/1
TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATES:

- *Write your name and index numbers in the spaces provided*
- *All answers should be written in the spaces provided in this booklet.*

For Examiner's Use Only

QUESTION	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
MARKS														

QUESTION	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**
MARKS											

`1. State whether each of the following activities would satisfy basic or secondary wants. (4 marks)

	Activities	Basic	Secondary
(a)	Buying clothes for the family.		
(b)	Transporting milk.		
(c)	Providing food for school children.		
(d)	Entertaining the President.		

2. Give FOUR reasons why the production in subsistence sector is usually low. (4 Marks)

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3. Equity bank in Nakuru wishes to change their office layout and adopt an open office layout. Advise them on the advantages of an open office layout. (4 Marks)

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4. Describe four roles of Nairobi stock exchange as a market a for securities. (4 Marks)

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5. Outline **four** reasons why a new business may fail. (4 marks)

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6. Outline any four measures an organization can take to improve the efficiency of labour in production. (4 Marks)

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7. Give four reasons for the existence of small firms in the economy despite the advantages experienced by large scale business (4 marks)

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8. Outline FOUR disadvantages of using television in advertising organization's products. (4 marks)

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9. Highlight four advantages of a bonded warehouse to the government. (4 marks)

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10. Outline four implications of a rapid growing population in a country. (4 marks)

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11. State **four** ways in which the utility of a commodity can be increased. (4 marks)

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12. Outline **four** external factors that may influence the operations of a business negatively.(4 Marks)

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13. Highlight **four** causes of unemployment in Kenya. (4 Marks)

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14. The following balances relate to the business of Roba Traders during the period ended 31st March 2014.

	Shs.
Cash at bank	680,000
Premises	500,000
Machinery	175,000
Creditors	190,000
Furniture	85,000
Motor van	200,000
Cash in hand	50,000
Capital	1,000,000
Sales	500,000

Extract the trial balance of Roba Traders as at 31st March 2014. (4mks)

15. Outline **four** factors that may give rise to monopoly power in an economy. (4mks

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16. Outline four requirements for one to start a limited liability company as one of the forms of business units. (4 mks)

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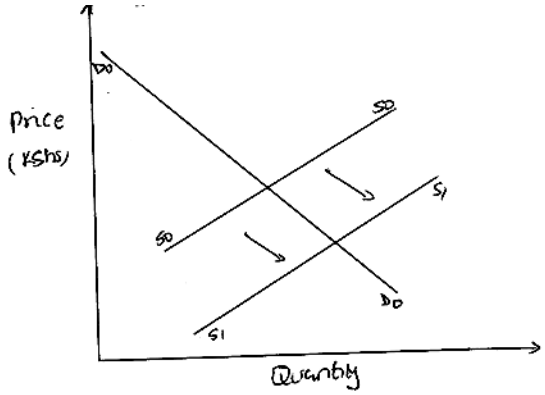
17. Below is a demand and supply curve.



Highlight the factors that may have led to the above behavior. (4 mks)

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18. Outline four factors that would lead to increase in national income of a country. 4mrks

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19 Define the following terms as used in insurance. (4 Marks)

(i).

Insured……

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(ii).

Risk……

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(iii)

Premium……

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(iv).Sum insured

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20. Enter each of the following transactions in the relevant ledger accounts. (4 Marks)

(a) Started business in June 15th 2014 with Ksh. 500,000 in bank.

(b) Bought a motor vehicle in June 16th 2014 for KSh. 250,000, payment made by a cheque.

21. State **FOUR** features of chain stores. (4 Marks)

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22. Identify the machine used to perform the following tasks. (4 Marks)

a) To count coins and notes	
b) To trim paper into required sizes and shapes	
c) To fold documents, place them in envelope and seal the envelope	
d) To print postage impression on envelopes	

23. Outline **four** ways which the government can use to influence the supply of maize in Kenya. (4 Marks)

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24. Give **FOUR** reasons why a consumer should satisfy basic wants before secondary wants. (4mks)

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25. State **four** factors that an entrepreneur would consider before investing in a business opportunity. (4mks)

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Name: ……..……

Admission number …….....

School: ……..

Candidate's sign…….....…..….....……

565/2

BUSINESS STUDIES
FORM THREE
PAPER 2
TIME: 2½ HOURS

END OF TERM THREE EXAMINATION 2021

INSTRUCTIONS TO CANDIDATES:

- *Write your name and index numbers in the spaces provided*
- *All answers should be written in the spaces provided in this booklet.*
- *Answer any five questions.*

For Examiner's Use Only

Qs	1		2		3		4		5		6		Total scores
Mks													

1.a) Explain five reasons why it is important for an entrepreneur to have a business plan. (10mks)

b) Explain five ways in which the stock exchange market facilitates the growth of the country's economy. (10mks)

1. a) Outline five problems that are likely to be encountered when measuring national income. (10mks)

   b) Explain five factors that a trader should consider before giving credit. (10mks)

2. a) Highlight five circumstances under which a manufacturer would opt to use salesmanship as a way of promoting his products. (10mks)

   b) Explain five sources of business ideas that a potential investor can use when making investment decision. (10mks)

3. a) Explain five ways in which the government can create an environment that is conducive for doing business. (10mks)

   b) The following balances were extracted from Witu books of accounts on January 2017;

Motor vehicles	250, 000
Furniture	8, 000
Stock	37, 000
Debtors	20, 000
Cash at bank	15, 000
Cash in hand	5, 500
ADC loan	100, 000
Creditors	12, 000
Capital	224, 000

The following transactions took place during the month.

January 1	deposited an additional shs.30, 000 from private sources into the business bank account.
January 5	issued a cheque for shs. 80, 000 to ADB bank which was honoured by the bank.
10	sold goods whose cost was shs.3, 500 at shs.7, 000 and received the proceeds by the cheque.
15	bought a new motor vehicle worth shs.50,000 having borrowed an additional loan from ADB bank.
17	took goods worth shs. 1, 200 to be used by his family.

20	sold one of the old motorvehicles whose book value was shs.27, 000 at shs. 22, 000 on credit.
25	received cash shs.15, 000 from a debtor.
29	paid a creditor by chequeshs.8, 500
30	bought more goods on credit worth shs. 3, 200

Prepare Witu's balance sheet as at 30th April 2017. (10mks)

4. a) explain any five causes of an increase in supply of a given commodity. (10mks)

   b) Describe the procedure followed in seeking compensation from the insurance company. (10mks)

5. a) Despite the economies of scale enjoyed by large firms, some firms continue to operate on small scale basis. Explain five reasons. (10mks)

   b) Explain five reasons why several competing firms would combine and form one firm. (10mks)

Name…… ……Adm.No:…….

233/2 Candidate's Signature ……..……

CHEMISTRY Date……..
PAPER 2
THEORY
TIME: 2 HOURS

FORM THREE
EXAMS TERM 3 – 2021

233/2
Chemistry
Paper 2
2 Hours

INSTRUCTIONS TO CANDIDATES

- Write your name and Admission number in spaces provided above.
- Sign and write the date of examination in the spaces provided above.
- Answer all the questions in the spaces provided above.
- KNEC Mathematical tables and Silent electronic calculators may be used.
- All working must be clearly shown where necessary.
- Candidates should answer the questions in English.

For Examiners Use Only

Question	**Maximum score**	**Candidate's score**
1	12	
2	13	
3	11	
4	11	
5	10	
6	12	
7	11	
Total score	**80**	

This paper consists of 12 printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.

1. A compound **D** of molar mass 42 was found to have the following composition by mass. Carbon = 85.7 %, and the rest hydrogen. (C=12, H=1)
   a) Find the molecular formula of the compound. (3mks)

   ……..

   ……..

   ……..

   ……..

   .

   b) Draw the structural formula of compound **D** (1mk)

   ……..

   ……..

   ……..

   ……..

   c) Name the homologous series to which compound **D** belongs. (1mk)

   ……..

   d) About $5cm^3$ of compound **D** was bubbled into a boiling tube containing hydrogen bromide. The mixture was shaken and then allowed to stand for about 2 hours. A new compound **K** was formed. Name and draw the structural formula of compound **K.** (2mks)

   ……..

   ……..

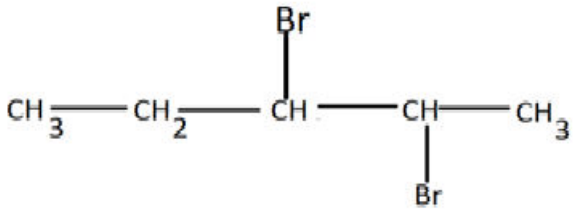
   ……..

   e) Give two functions of compounds to which compound **D** belongs. (2mks)

   ……..

   ……..

f) A compound X reacts with bromine to form another compound W whose structural formula is as follows: -



(i) Name compound X and W (1mk)

X

……

W

……

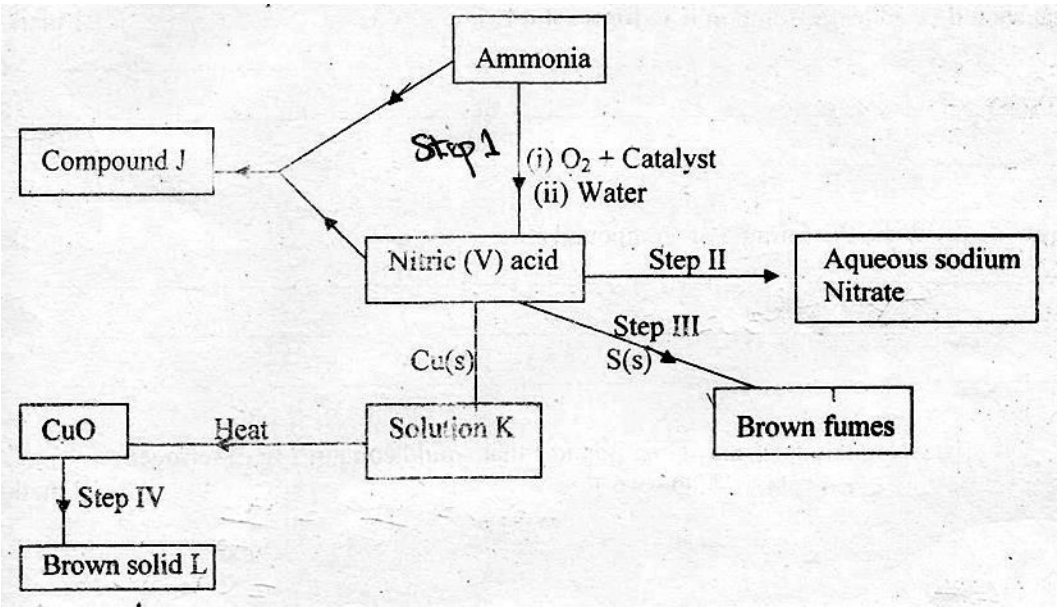
(ii) What observation is made in this reaction? (1mk)

……..

(iii) Write a balanced equation for the reaction between X and bromine (1mk)

……..

2. a) The scheme below shows various reactions starting with ammonia. Study it and answer the questions that follow.



(i) Name the raw materials used in the manufacture of ammonia. (2 mks)

……..

……..

(ii) Name a catalyst that is used in step I ? (1 mk)

..……..

(iii) Write an equation for the reaction that occurs between ammonia and nitric (V) acid (1 mk)

……..

(iv) Identify the process in step II (1 mk)

……..

(v) State the condition necessary for the reaction in step III to occur. (1 mk)

……..

(vi) Name solution K (1 mk)

……..

(vii) Write the formula of solid L. (1 mk)

……..

(viii) Calculate the mass of solid L that would be formed by using 12 dm^3 of hydrogen at room temperature in step IV (Molar gas volume at r.t.p. = 24 dm^3, R.A.M of L = 63.5)
(3mks)

……..

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……..

(b) (i) Identify the brown fumes in Step III. (1mk)

……..

(ii) State the property of nitric(V) acid demonstrated by the reaction in Step III above. (1mk)

……..

3. A form three student was provided with the following reagents:

(i) Solid **L**; containing 5.0g per litre of a dibasic organic acid $\mathbf{H_2X.2H_2O}$.

(ii) Solution **M**; which is acidified **Potassium manganate(VII)**

He was required to standardize solution **M** using solution **L.**

A burette was filled with solution **M** and 25.0 cm^3 of solution **L** was pipetted into a conical flask. It was then heated to about 70^oC, the hot solution **L** was titrated with solution **M** while shaking the flask thoroughly until a permanent pink colour just appeared. The procedure was repeated two more times and the results entered in table 1 below.

Table 1

	1	2	3
Final burette reading (cm3)	24.4	34.8	44.7
Initial burette reading (cm3)	0.0	10.0	20.0
Volume of M used (cm3)			

(a) Complete the table. (3mks)

(b) Calculate the average volume of solution L used. (1mk)

……..

(c) Given that the concentration of the dibasic acid is 0.05M, determine the value of **X** in the formula $H_2X.2H_2O$ (H=1.0,O=16.0) (2mks)

……..

……..

……..

……..

(d) Calculate the number of moles of the dibasic acid $H_2X.2H_2O$ used. (1mk)

……..

……..

(e) Given the mole ratio manganate(VII)(MnO_4^-): acid H_2X is 2:5, calculate the number of moles of manganate(VII) (MnO_4^-) in the average titre. (2mks)

……..

……..

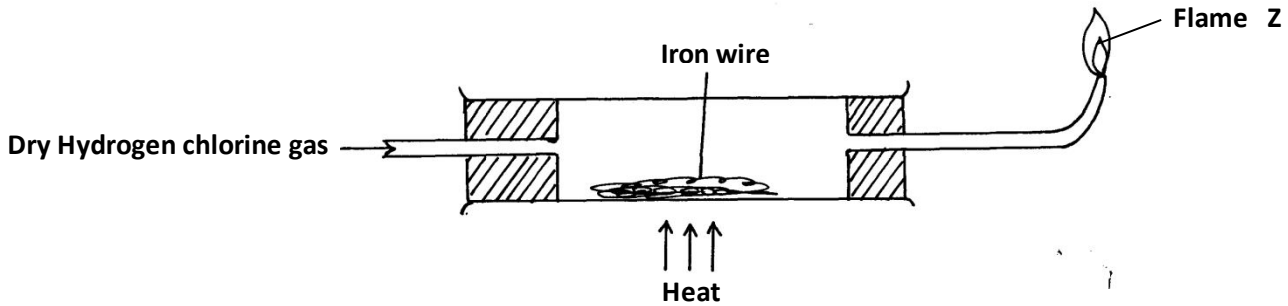
(f) Calculate the concentration of the manganate(VII), (MnO_4^-) in moles per litre. (2mks)

……..

……..

……..

4. Dry hydrogen chloride gas was passed through heated iron wire as shown in the diagram below



a) (i) How can the identity of the substance burning with flame Z be confirmed. (1mk)

……..

(ii) What is observed in combustion tube during the experiment? (1mk)

……..

(iii) Write the equation for the reaction taking place in the combustion tube. (1mk)

……

(iv) (iv) Chlorine gas was passed over the product obtained in the combustion tube to give another product Q

a) State **one** precaution that should be taken. Explain (2marks)

……..

……..

b) Identify product Q (1mark)

. ……..

c) The total mass of product Q formed was found to be 5.3g. Calculate the volume of chlorine gas used.(Cl = 35.5, Fe= 56, Molar gas volume at room temperature = 24000cm^3
(3marks)

……

……..

……..

……..

……

d) Chlorine bleaches by oxidation while Sulphur (IV)oxide does so by reduction. Explain.
(2 mks)

……..

……..

……..

5. a) What name is given to a compound that contains carbon and hydrogen only? (1mk)

……

b) Hexane is a compound containing carbon and hydrogen .

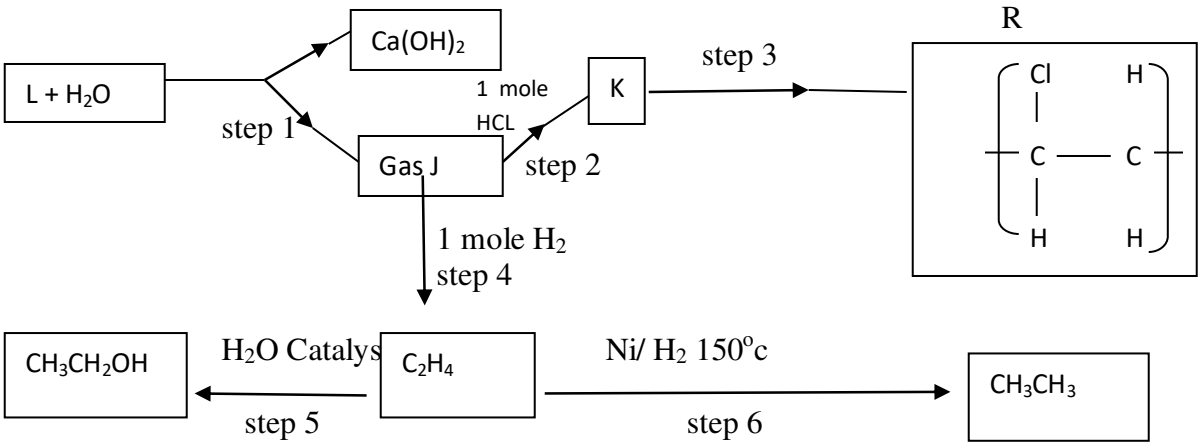
i) What method is used to obtain hexane from crude oil? (1 mk)

……

ii) State one use of hexane. (1 mk)

……

c) Study the flow chart below and answer the questions that follow.



i) Identify reagent L (1 mk)

……

ii) Name the catalyst used in step 5. (1 mk)

……..

iii) Draw the structural formula of J (1 mk)

……..

……..

……..

……..

iv) What name is given to the process that takes place in step 5? (1 mk)

……

v) State;

a) One use of product R (1 mk)

……..

……..

b) A commercial application of the process which takes in step 6. (1 mk)

…….

vi) 30cm^3 of ethene gas was exploded with 100cm^3 of oxygen gas.
Determine the volume of carbon(IV)oxide gas generated. (2mks)

……..

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……..

……..

……..

……..

6. Study the periodic grid below and answer the questions which follow. The letters do not represent actual symbols of the elements.

M				**Q**			**X**	
	T		**C**	**E**		**U**		**Z**
S		**N**					**Y**	

(i) To which category of elements does element **N** belong? (1mk)

……..

(ii) Compare the atomic radius of element **E** and **U**. Explain. (2mks)

……..

……..

……..

(iii)An ion A^{3-} has a configuration of 2.8. Place element A on the grid above. (1mk)

(iv) Which of the group 1 elements will require the greatest amount of energy to remove the outermost electron. Explain. (2mks)

……..

……..

……..

(v) Why is element **Z** used in light bulbs? (1mk)

……..

(vi) Write the formula of the phosphate of element **T**. (1mk)

……..

(vii) State the type of bond and structure found in the oxide of element **Q** (2 mks)

……..

(viii) Select from the grid:

The most electropositive element …….. (1mk)

The most electronegative element …….. (1mk)

7. In the preparation of magnesium carbonate, magnesium was burnt in air and the product collected. Dilute sulphuric acid was added and the mixture filtered and cooled. Sodium carbonate was added to the filtrate and the content filtered. The residue was washed and dried to give a white powder.

a) Give the chemical name of the product formed when magnesium burns in air (1mk)

……..

b) Write a chemical equation for the formation of product in (a) above. (1mk)

……..

c) Name filtrate collected after sodium carbonate was added (1mk)

……..

d) Write a chemical equation for the reaction between product in (a) and acid. (1mk)

……..

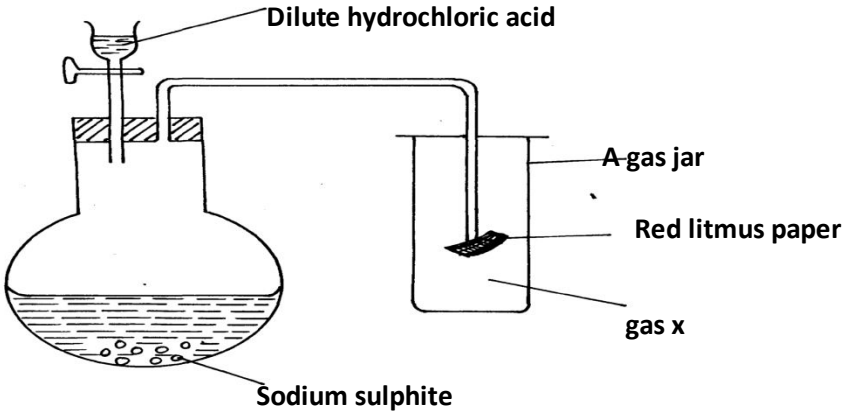
e) Write an ionic equation to show the formation of the white powder (1mk)

……..

f) Write an equation to show what happened when white powder is strongly heated. (1mk)

……..

g) Study the set-up below and answer the questions that follow:



i) Identify gas **X** (1mk)

……..

ii) Write an equation for the reaction that produces gas **x**. (1mk)

……..

iii) What is the effect of the gas **X** above on the red-litmus paper? (1mk

……..

iv) What observation is made when gas X is bubbled through lead(ii)nitrate solution. Explain. (2 marks)

……..

……..

THIS IS THE LAST PRINTED PAGE

Name: …… Adm No. ……
Class: …… Date: ….....
233/1
CHEMISTRY
PAPER 1
FORM III
END TERM 2 EXAMS
Time: 2 hours

233/1

CHEMISTRY

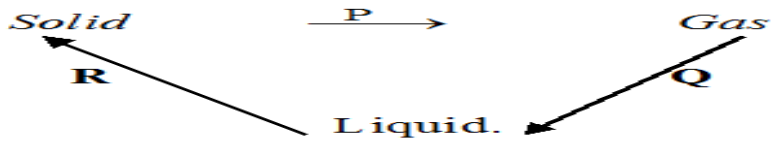
FORM III

INSTRUCTIONS TO THE CANDIDATES:-

- Write your **name** and admission **number** on the spaces provided.
- Answer ***all*** the questions in the spaces provided.
- Mathematical tables and electronic used calculators may be
- All working **MUST** be clearly shown where necessary.

Question	**Maximum score**	**Candidate's score**
1-30	80	

1. Matter exists in three states which can be related as shown in the diagram below.



Name processes: ***P***: …… (1mk)

R: …….. (1mk)

2. (a)Give **one** reason some of the laboratory apparatus are made of ceramics. **(1 mark)**

……

……..

(b) Name **two** apparatus that can be used to measure approximately 75 cm of dilute sulphuric (VI) acid. **(2 marks)**

……

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……

3. Draw the procedural set-ups that can be used to separate a mixture of sand and calcium chloride to obtain crystals of calcium chloride. **(3 marks)**

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4. State **two** applications of chromatography. **(2 marks)**

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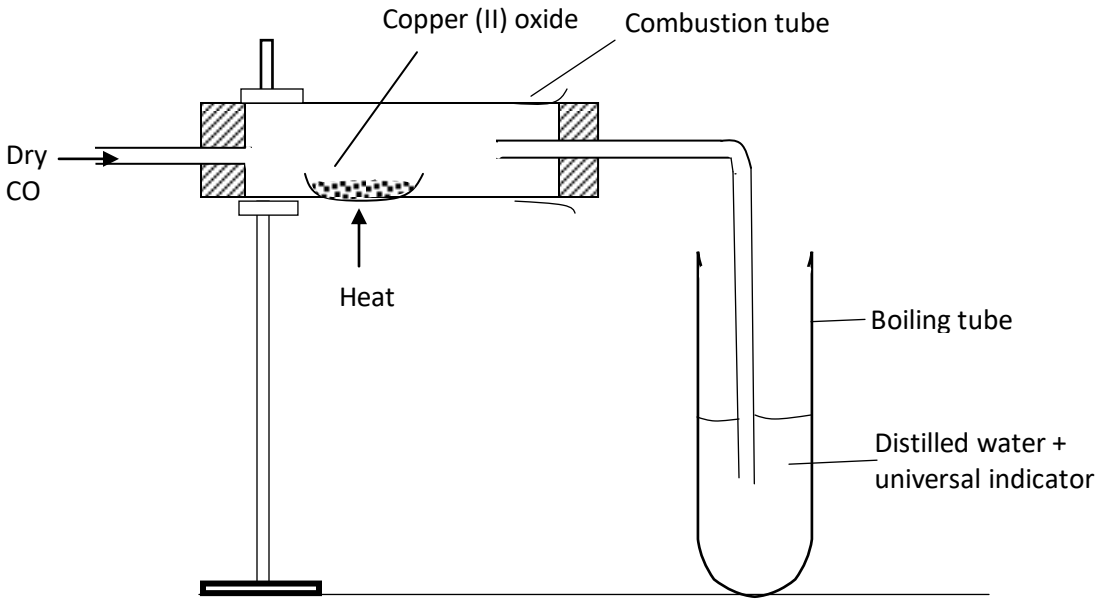
5.



The above set-up was used to determine the chemical properties of carbon (II) oxide.

(a) Write the chemical equation for the reaction taking place in the combustion tube.

(1 mark)

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……
……..

(b) State and explain the observation made in the boiling tube. **(2 marks)**

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……..

6. A student placed some hydrogen peroxide in a test tube then added a small amount of Solutions can be classified as acids, bases or neutral. The table below shows solutions and their pH values

Solution	**pH – values**
K	1.5
L	7.0
M	14.0

(a) Select any pair that would react to form a solution of pH 7 *(1 Mark)*

……

(b) Identify two solutions that would react with aluminium hydroxide. Explain *(2 Marks)*

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7. 9.12g of a gaseous compound contains 8g of silicon while the rest is hydrogen. Determine the empirical formula of the compound. (H = 1, Si = 28) *(3 Marks)*

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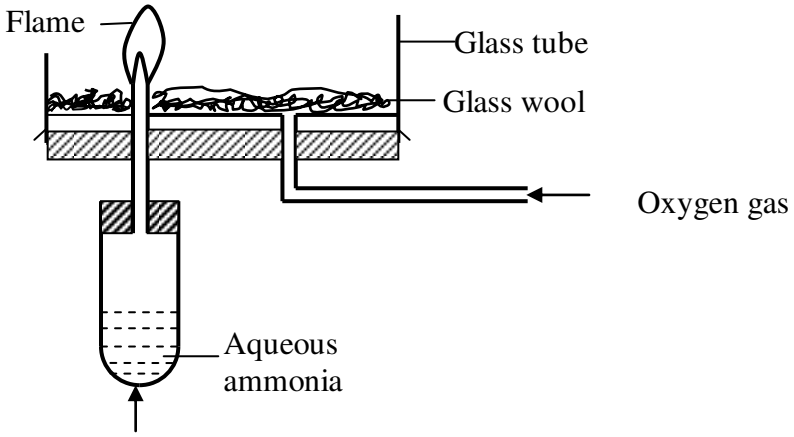
8. Study the set-up below and answer the questions that follow.



(a) Why is aqueous ammonia warmed gently? *(1 Mark)*

……
……

(b) What is the colour of the flame? *(1 Mark)*

……
…..

(c) Write the chemical equation for the reaction that takes place *(1Mark)*

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……..

9. (a) Chlorine can be prepared in the laboratory by using the following reagents and chemicals.
Concentrated sulphuric (VI) acid, water, manganese (IV) oxide, concentrated hydrochloric acid.

(i) State the role of concentrated sulphuric (VI) acid. **(1 mark)**

……
……

(ii) Write the equation for formation of chlorine. **(1 mark)**

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……

(iii) What is the role of manganese (IV) oxide? **(1 mark)**

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……..

10. (a) State Boyle's law. **(1 mark)**

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(b) A gas occupies 270cm^3 at a pressure of 660mmHg at 37^{0}C. What is the new volume if pressure is changed to 810 mmHg at 63^0 C? **(2 marks)**

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11. An organic compound contain s 24.24% carbon, 4.04% hydrogen and the rest chlorine. If its relative molecular mass is 99, what is its molecular formula? **(3 marks)**
(C = 12, H = 1, Cl = 35.5)

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12. A given mass of sodium nitrate was heated completely and 320 cm^3 of the gas was produced at s.t.p. Determine the mass of the sodium nitrate heated.
(Na = 23. N = 14, O = 16, molar gas volume = 22.4L) **(3 marks)**

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13. (a) Give **one** advantage of using methyl orange over phenolphthalein as an indicator. **(1 mark)**

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……

(b) Three drops of litmus solution was added to 20 cm^3 of 2M hydrochloric acid in a beaker followed by 20 cm^3 of 2M ammonium hydroxide. State and explain the observation made. **(2 marks)**

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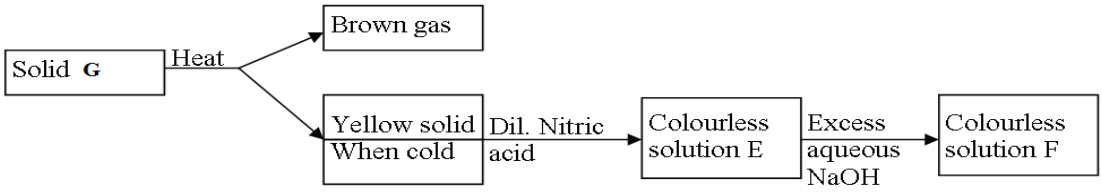
14. Study the flow chart below and answer the questions that follow.



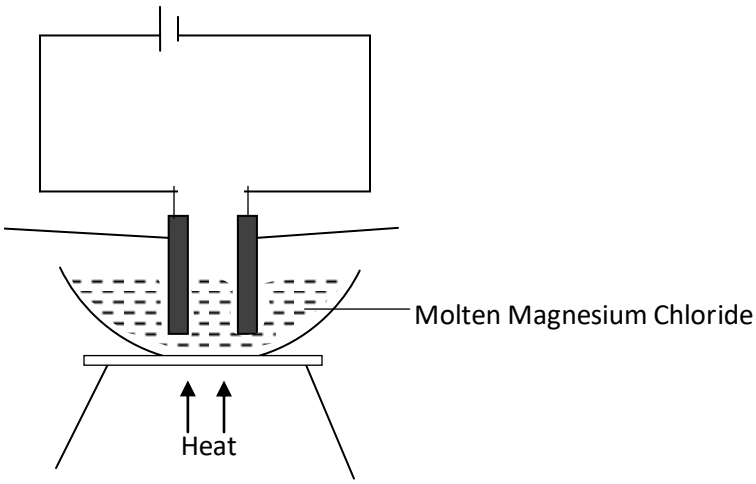
(a) ***Identify*** solid ***G***…… (1mk)

…….

(a) ***Write*** a balanced ***chemical equation*** between the yellow solid and dilute nitric acid. (1mk)

……
……
……..

15. Study the diagram below and answer the questions that follow.



(a) Define the term electrolysis. **(1 mark)**

……
……
……..

(b) On the diagram, label the Anode and Cathode. **(2 marks)**

(c) Write the equation at the anode. **(1 mark)**

……
……...

16. In order to find the proportion by volume of gases in air, a sample of air was passed through two wash bottles, the first containing sodium hydroxide solution and the second containing concentrated sulphuric (VI) acid. The remaining gas was then collected in a syringe.

(a) Why was the air passed through;

(i) sodium hydroxide solution? **(1 mark)**

……..

(ii) concentrated sulphuric (VI) acid? **(1 mark)**

……

(b) Name is the major gas collected in the syringe. **(1 mark)**

……..

17. During the manufacture of sodium carbonate in the industry.

(a) Give the name of the process to manufacture sodium carbonate. **(1 mark)**

……..

(b) Write the final equation to form sodium carbonate during the process. **(1 mark)**

……
……
……

(c) Give **one** use of sodium carbonate. **(1 mark)**

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……..

18. Describe how to prepare crystal of magnesium sulphate starting with magnesium powder.**(3mks)**

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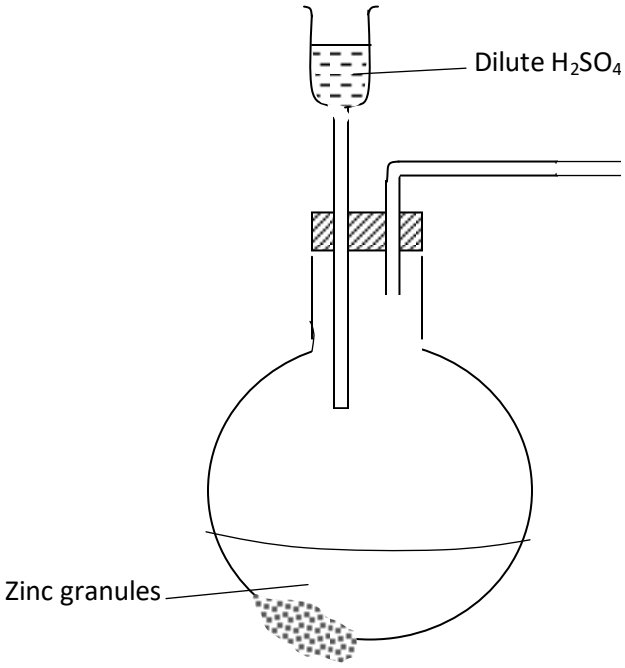
19. (a) Complete the diagram below to show how dry sample of hydrogen gas is prepared in the laboratory. **(2 marks)**



(b) Name the catalyst which could be used to increase the reaction rate of production of hydrogen gas in the set up drawn above. **(1 mark)**

20. An element consists of two isotopes with atomic masses 59 and 61 in the ratio of 3 : 2 respectively.

(a) What are isotopes? **(1 mark)**

……
……

(b) Calculate the relative atomic mass of the element. **(2 marks)**

……
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……..
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……..

21. An element: $^{24}_{12}R$

(a) To which chemical family does it belong? **(1 mark)**

……..

(b) Write the electron arrangement of the atom. **(1 mark)**

……

(c) Draw the structure of its ion. **(1 mark)**

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……..

22. If $25cm^3$ of 0.1M H_2SO_4 solution neutralized a solution contain 1.06g of sodium carbonate in $250cm^3$ of solution, calculate the morality and volume of sodium carbonate solution. (Na = 23, O = 16, C = 12) *(3 Marks)*

……
……
……..
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……
……..

23. $50cm^3$ of oxygen gas diffused through a porous plug in 80 seconds. How long will it take $100cm^3$ of sulphur (IV) oxide to diffuse through the same plug? (S = 32, o = 16) *(3 Marks)*

……
……
……..
……
……
……..

24. (a) State the role of the following parts during fractional distillation of a mixture of water and ethanol

(i) Glass beads in the fractionating column *(1 Mark)*

……

……

……..

(ii) Fractionating column *(1 Mark)*

……

……

……..

(b) State any one application of fractional distillation *(1 Mark)*

……

……

……..

25. (a) State what is observed when sodium hydroxide pellets are left in air overnight.**(1 mark)**

……

……

……..

.

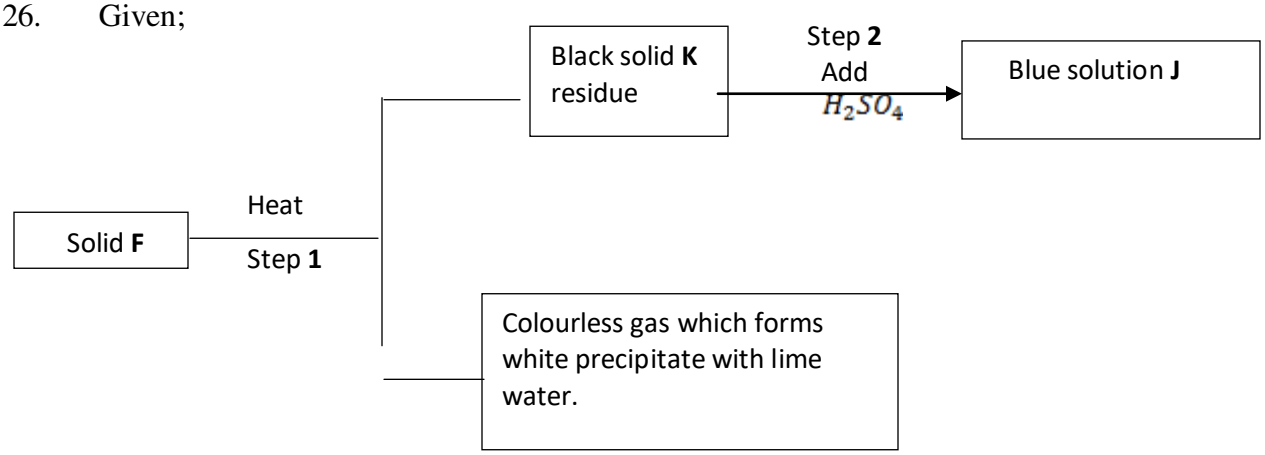
(b) What name is given the process shown by the salt in (a) above? **(1 mark)**

……

……

……..

26. Given;



(a) Identify;

Solid **F** - …….

(1 mark)

Solid **J** - ……

(1 mark)

(b) Write equation for step **1**. **(1 mark)**

……
……
……

27. Use dot (•) and cross (**X**) to show the bonding in Lithium oxide. **(2 mark)**

……
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……..

28. Excess magnesium ribbon was burnt in air to form a white solid mixture. Write two equations to show the formation of the white solid mixture. **(2 marks)**

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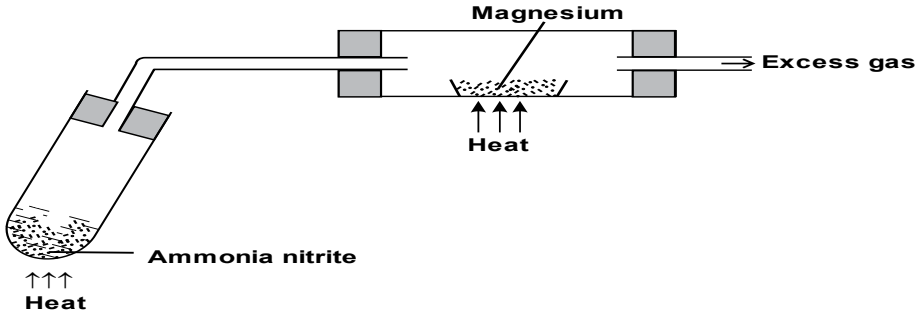
……
……..

29. The set-up below shows how gas A was prepared and reacted with heated magnesium



a) ***Give*** a reason why it is not advisable to heat magnesium before heating ammonium nitrite. (1mk)

……
……
……..

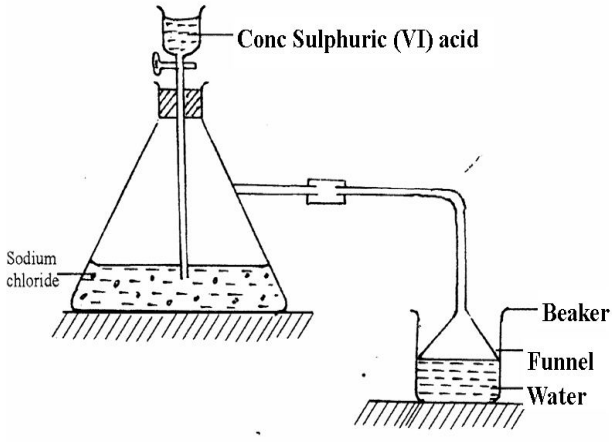
b) i) ***Identify*** gas A ..... (1mk)

……
……

ii) ***Write*** a chemical equation for the reaction between gas ***A*** and magnesium (1mk)

……
……
……..

30. Study the set-up below and answer questions that follow.



i) Name the gas that is produced when concentrated sulphuric (VI) acid reacts with the sodium chloride **(1 mark)**

……
……
……..

ii) Why is it necessary to use a funnel in the beaker? **(1 mark)**

……
……
……..

iii) How does the gas affect the P^H of the water in the beaker? **(1 mark)**

……
……
……..

Name: …… Adm No. ……

Class: ……. Date: ….....

233/2
CHEMISTRY
PAPER 2
FORM III
END TERM 2 EXAMS
Time: 2 hours

ANESTAR SCHOOLS JOINT EXAMINATIONS 2021

233/2

CHEMISTRY

FORM III

INSTRUCTIONS TO THE CANDIDATES:-

- Write your **name** and admission **number** on the spaces provided.
- Answer ***all*** the questions in the spaces provided.
- Mathematical tables and electronic used calculators may be
- All working **MUST** be clearly shown where necessary.

QUESTION	MAXIMUM SCORE	CANDIDATE'S SCORE
1-30	80	

1. The figure below represents a section of the periodic table. Study it and answer questions (a) to (h). Note that the letters do not represent the actual symbols of the elements.

A							D	
B			G	J		F	H	E
C							I	

(a) Consider elements D. H and I

i) Give the chemical family of these elements. (1 mk)

_____

ii) How do their ionic size compare. (1mk)

_____

iii) Compare and explain the reactivity of the three elements. (2mks)

_____

_____

b) Write the electronic configuration of;

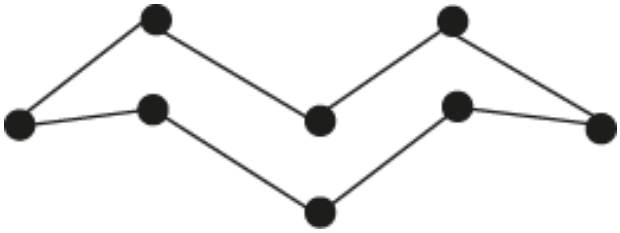
i) Element H (1mk)

_____

ii) The ion of element G. (1mk)

_____

c) A molecule of one of the elements is shown below. (2mks)



i) Identify this element from the section of the periodic table and give its actual symbol and name. (2mks)

_____

_____

ii) Explain why this element has a higher boiling point compared to that of oxygen. (2mks)

_____

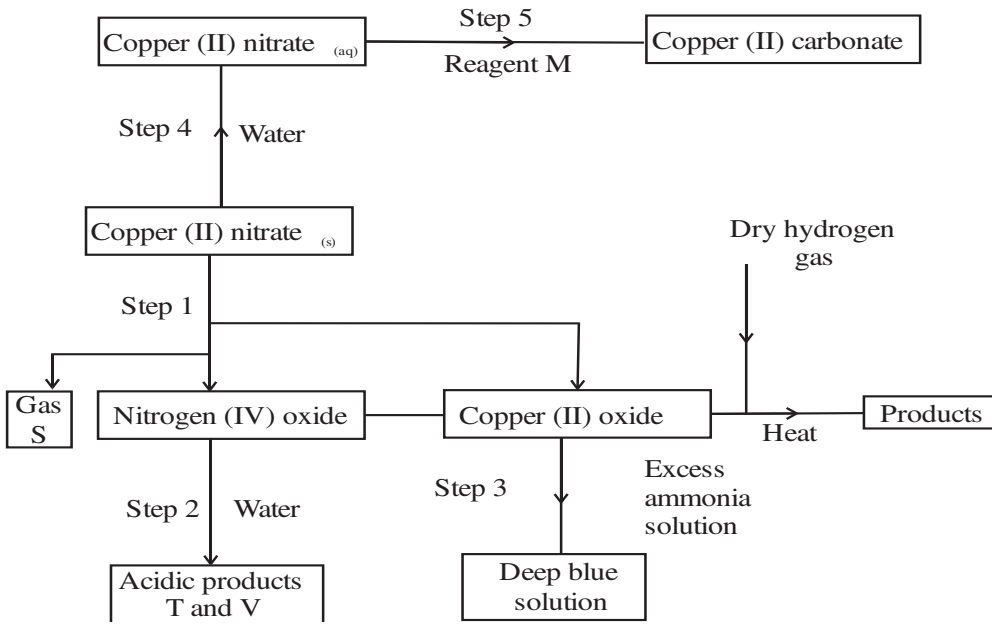
_____

iii) Write an equation to show the reaction between the element named above with oxygen. (1mk)

_____

iv) Predict the pH of the oxide of the above element when in water. Explain. (2mks)

2. The flow chart below shows some reactions starting with copper (II) nitrate. Study it and answer questions that follow.



i) State the condition necessary in step 1. (1mk)

_____

ii) Identify: (4mks)

Reagent M _____

Gas S _____

Acidic products T_____

V_____

iii) Write the formula of the complex ion formed in step 3. (1mk)

_____

iv) Write the equations for the reaction in (2 marks)

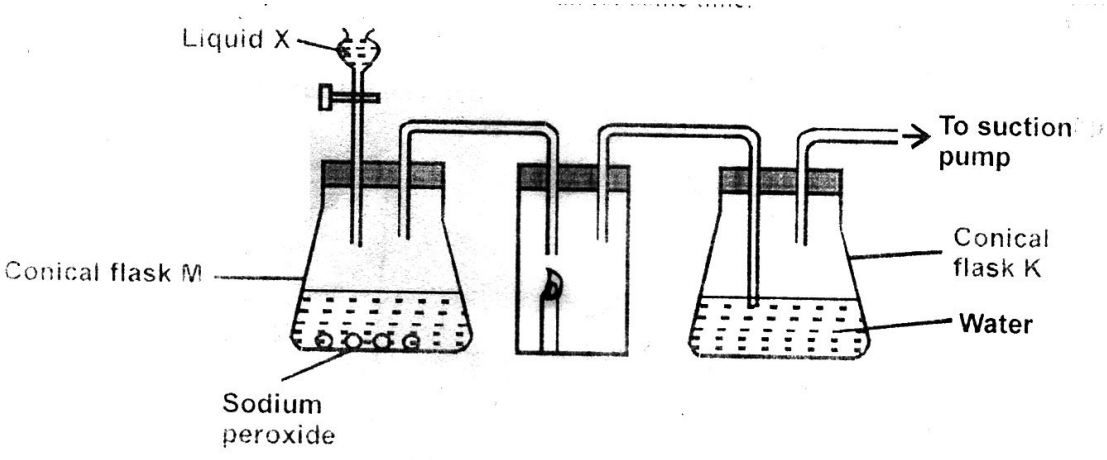
Step 1

_____

Step 2

_____

3. a) The diagram below shows a set up that was used to prepare oxygen gas and passing it over a burning candle. The experiment was allowed to run for some time.



i) Name liquid X (1mk)

_____

ii) Suggest the pH of the solution in conical flask K. Explain (2mks)

_____

_____

iii) Write an equation for the reaction taking place in the conical flask M. (1mk)

_____

b) State and explain the two observations made when hydrogen sulphide is bubbled into the solution containing iron (III) chloride. (2mks)

_____

_____

c) i) Describe a simple chemical test that can be used to distinguish between carbon (IV) oxide and carbon (II) oxide gases. (3mks)

_____

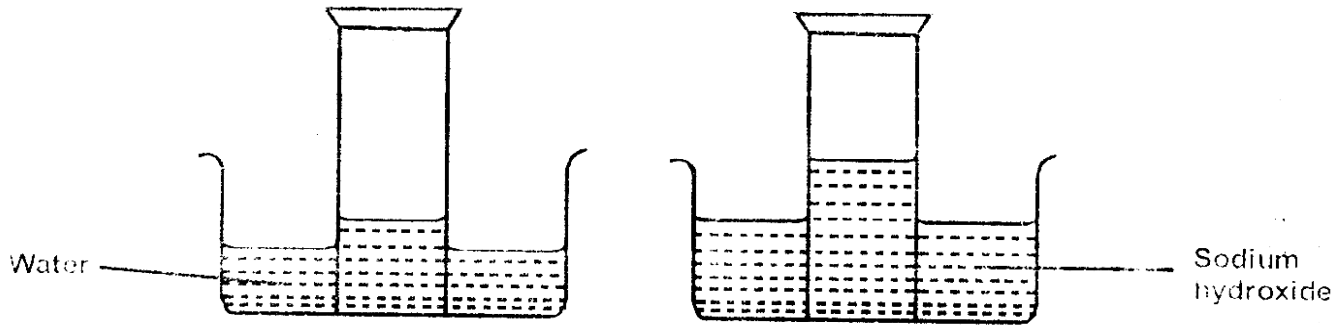
_____

_____

ii) Give one use of carbon (II) oxide. (1mk)

_____

d) A form two student inverted a gas jar full of carbon (IV) oxide over water and sodium hydroxide solution as shown below.



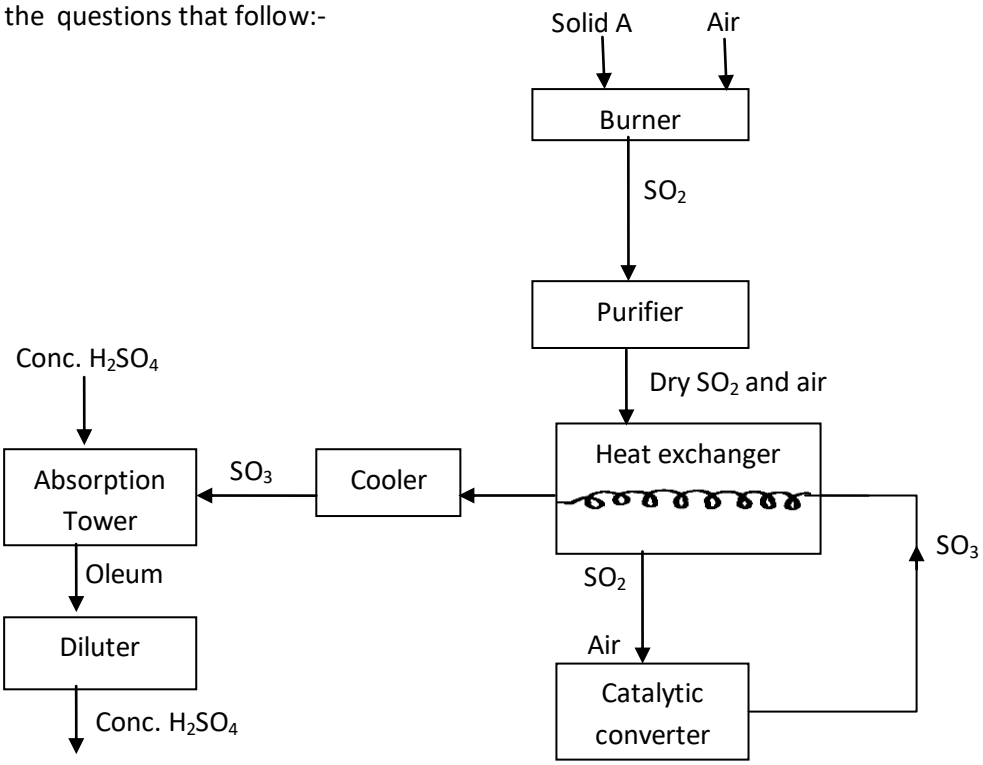
Explain the observations made. (2mks)

_____

_____

4. (a) Name the **two** crystalline forms of sulphur (1 Mark)

(b) The scheme below represents the steps followed in the contact process. Study it and answer the questions that follow:-



(i) Name **one** impurity removed by the purifier. (1 mark)

……

(ii) Why is it necessary to remove impurities? (1 mark)

……

……

(iii) Write down the equation of the reaction taking place in the converter (1 mark)

……

……

(iv) Name the **two** catalysts that can be used in the converter (2 marks)

……

……

(v) What is the function of heat exchanger? (1 mark)

……

……

(vi) Sulphuric (VI) Oxide is not dissolved directly into water? Explain (1 mark)

……

……

(vii) (I) Name the main pollutant in the contact process. (1 mark)

……

……

(II) How can the pollution in **(g) (I)** above be controlled? (1 mark)

……

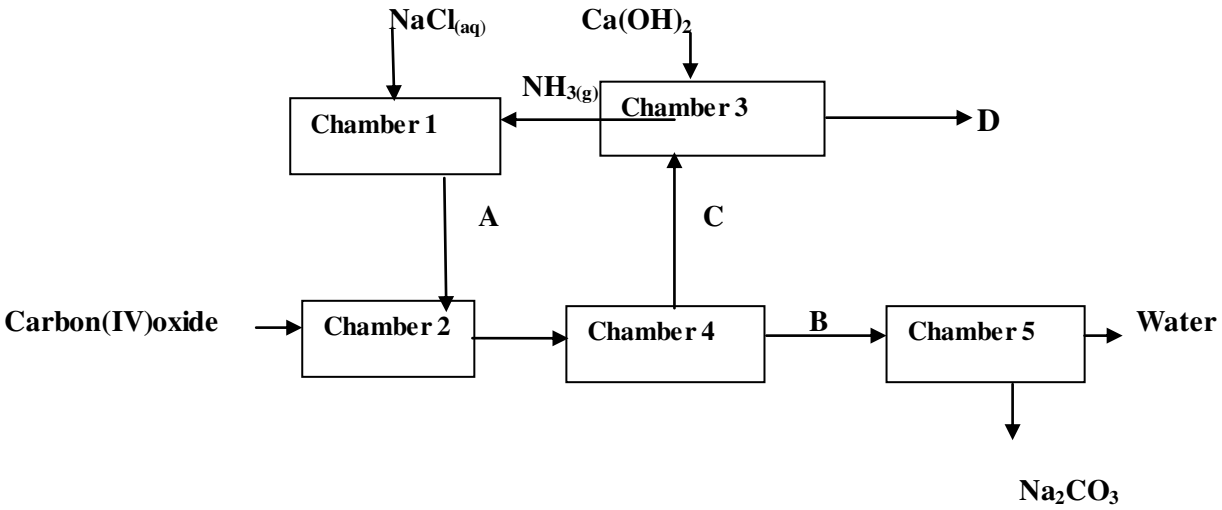
……

(vii) Give **one** use of sulphuric (VI) acid (1 mark)

……

……

5. The flow chart below shows industrial manufacture of sodium carbonate.
Study it and answer the questions that follow.



(a) Name substances **A**, **B**, **C** and **D**. (4mks)

A _____ **B** _____

C _____

D _____

(b) Write equation for the reactions taking place in chamber 3 and 5. (2mks)

Chamber 3

_____

Chamber 5

_____

(c) Name the physical process in chamber 4 and 5. (2mks)

Chamber 4

_____

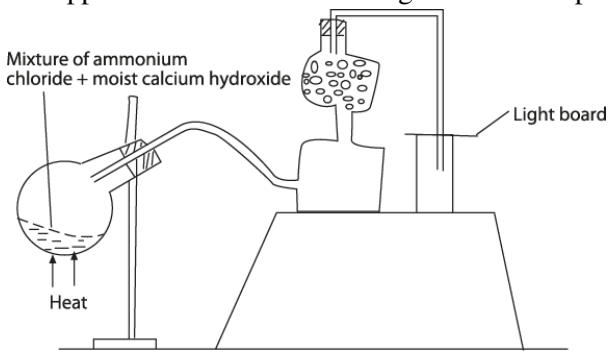
Chamber 5

_____

(d) Name **one** source of cheap carbon (IV) oxide for Solvay process. (1mk)

_____

6. a) A student set up the apparatus as shown in the diagram below to prepare and collect dry ammonia gas.



i) Identify **three** mistakes in the set up and give a reason why each is mistake. (3mks)

_____

_____

_____

ii) Name a suitable drying agent for ammonia. (1mk)

_____

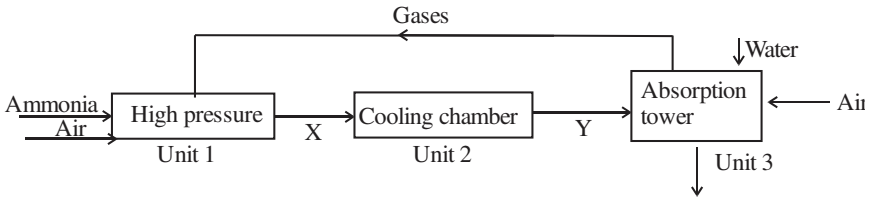
iii) Write an equation for the reaction that occurred when a mixture of ammonium chloride and calcium hydroxide was heated. (1mk)

_____

iv) Describe one chemical test for ammonia gas. (1mk)

_____

b) Ammonia gas is used to manufacture nitric (V) acid as shown below.



i) This process requires the use of a catalyst. In which unit is the catalyst used? (1mk)

_____

ii) Identify compound X and Y. (2mks)

_____

_____

iii) Ammonia reacts with nitric (v) acid to form ammonium nitrate fertilizer. Calculate the percentage composition of nitrogen in ammonium nitrate. (N = 14, O = 16, H = 1) (3 marks)

_____

_____

7. a) ***State*** Graham's Law. (2mks)

_____

_____

_____

b) The table below shows the relationship between the pressure and volume of a fixed mass of ozone gas.

Pressure (K pa)	1	4	8	16	20	160
Volume (cm^3)	140	40	20	10	8	1
Inverse of volume 1/v (cm^{-3})						

i) Complete the table by filling the inverse of volume. (3mks)

ii) ***Draw*** a graph of pressure against the reciprocal (*inverse*) of volume. (4mks)

(c) Using the graph, ***determine*** the volume of ozone if pressure is 12Kpa. (3mks)

_____

_____

_____

_____