EXCELLING STUDENTS FORM 4 MOCK SERIES 1 EXAMS *(ALL SUBJECTS TESTED)*



EXCELLING STUDENTS FORM 4 MOCK SERIES ONE EXAMS

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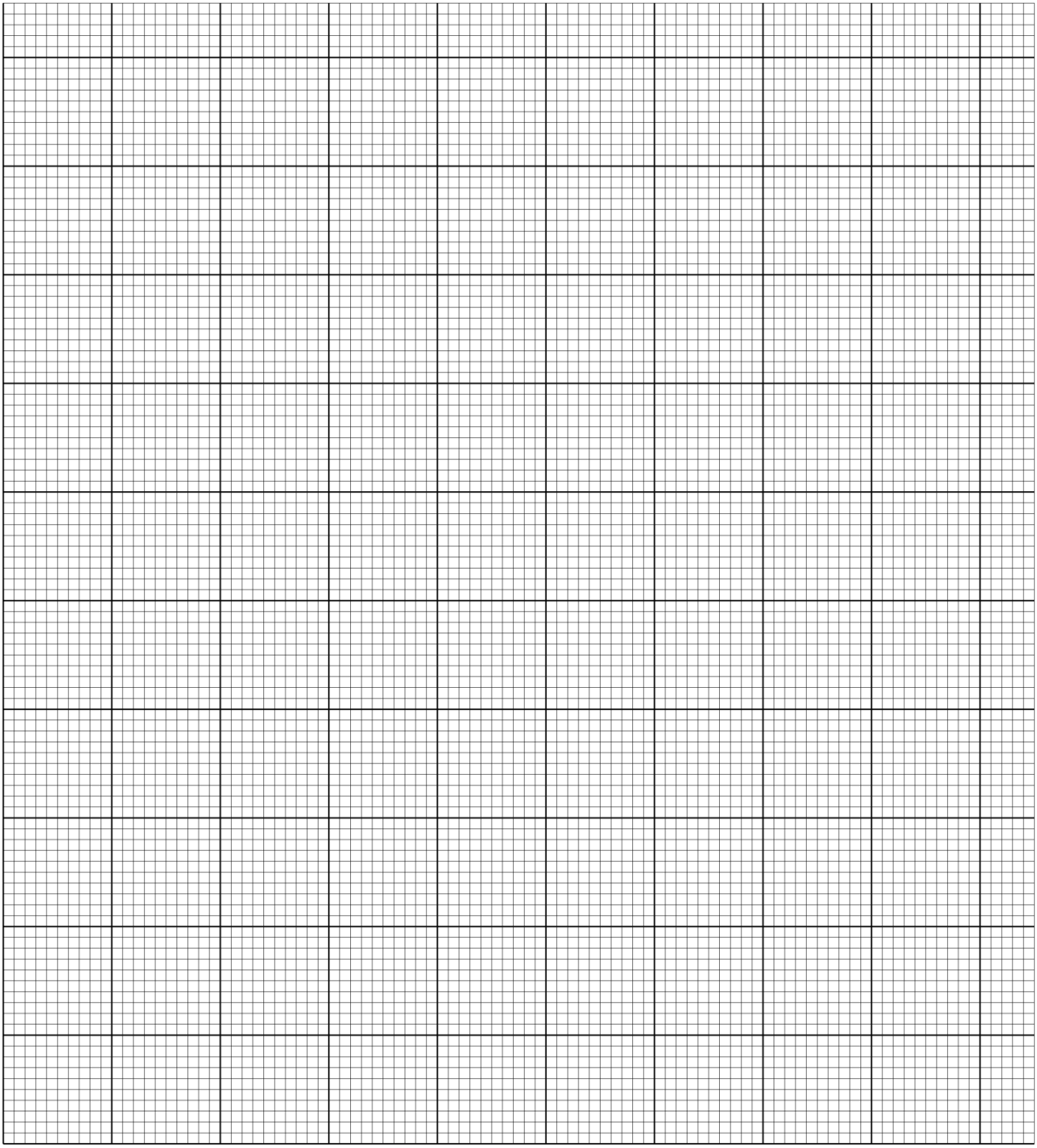
ORDER OF THE 14 SUBJECTS TESTED *(ALPHABETICALLY ARRANGED)*

1. **AGRICULTURE**
2. **BIOLOGY**
3. **BUSINESS STUDIES**
4. **CHEMISTRY**
5. **COMPUTER**
6. **C.R.E**
7. **ENGLISH**
8. **GEOGRAPHY**
9. **HISTORY**
10. **HOMESCIENCE**
11. **I.R.E**
12. **KISWAHILI**
13. **MATHS**
14. **PHYSCIS**

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GRAPH PAPER

NAME: ……



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EXCELLING STUDENTS FORM FOUR MOCK SERIES ONE EXAMS

NAME: ……

SHOOOL: ……

ADM NO: ……. SIGN:……..… DATE: ……..

AGRICULTURE (443/1)
PAPER 1
FORM FOUR (4)
Time: 2 Hours

Instruction to candidates

- Write your name and index number in the space provided at the top of this page .
- Sign and write the date of the examination in the space provided above
- This paper consists of three section A, B, and C
- Answer all questions in section A and B
- Answer any two questions in section C
- All answers should be written in the spaces provided
- Candidates should check the question paper to ascertain that all pages are printed as indicated and that no questions are missing
- Candidate should answer the questions in English

FOR EXAMINERS USE ONLY

SECTION	QUESTION	MAXIMUM SCORE	CANDIDATE SCORE
A	1-16	30	
B	17-20	20	
C		20	
		20	
	TOTAL SCORE	90	

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SECTION A (30 MRKS)

Answer all question in this section in the space provided

a) Differentiate between olericulture and pomoculture as used in crop production . **(1mk)**

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b) List the physical weathering agents in soil formation process **(1½mks)**

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c) Give four methods of farming **(2mks)**

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d) Give two examples for each of the following types of cost incurred in broiler production .

a) Variable cost **(2mks)**

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b) fixed cost **(2mks)**

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e) Give four advantages of crop rotation . **(2mk)**

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f) State four factors that should be considered when classifying crop pest **(2mks)**

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g) Give three reasons why a water logged soil is unsuitable for most crops **(1½mks)**

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8. Give four advantages of tissue culture **(2mks)**

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9. Outline four observable indictors of economic development of a nation **(2mks)**

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10. Outline four indicators of well decomposed manure **(1½mks)**

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11. Give two conditions where opportunity cost does not exist **(2mks)**

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12. Give four management practice that promote high herbage yields in pasture production **(2mks)**

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13. Give three reasons why primary cultivation should be done early before the onset of the rains **(1½mks)**

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14. Give two examples of farm records that are general in nature . **(1mk)**

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15. Give four roles of nitrogen in plants **(2mks)**

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16. Give four benefits of possessing a land title deed **(2mks)**

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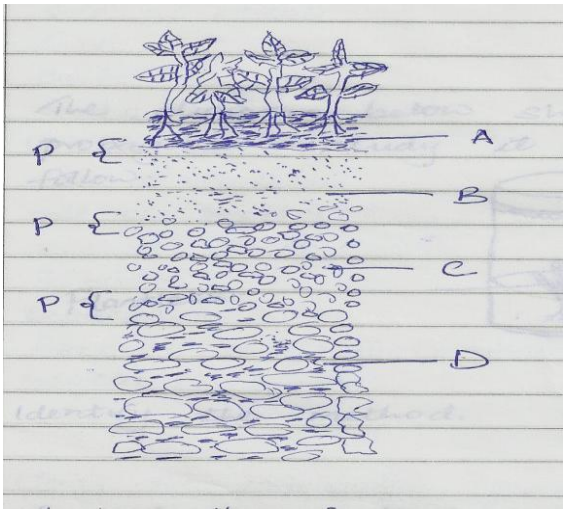
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SECTION B (20 MRKS)

Answer all the questions in this section in the spaces provided

17. The diagram below illustrates a feature observed after digging the soil several metres deep Study the diagram carefully and answer the question that follow



a) Identify the feature that the diagram above represents in the study of soil **(1mk)**

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b) What is the name given to the part labeled p **(1mk)**

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c)Give a reason why part b is also referred to as layer of accumulation **(1mk)**

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(d) State two ways in which the knowledge of the above feature would be of benefit to farmer **(2mks)**

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18. The diagram below shows a method of crop propagation .Study it and answer the questions that follow



a) Identify the method **(1mk)**

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b Name two crops that can be propagated using this method. **(1mk)**

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c. Give three ingredients used when preparing the tissue culture. **(1½mk)**

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19. The following information was obtained from the records of Mr Juma's farm for the year ended on 31st march 2011

Particulars	**kshs**
Opening Valuation	100,000
Calves	72,000
Hired Labour	21,000
Sales of milk	13,000
Sales of cereals	33,000
Rent	9,000
Feed	5,300
Seed	1,700

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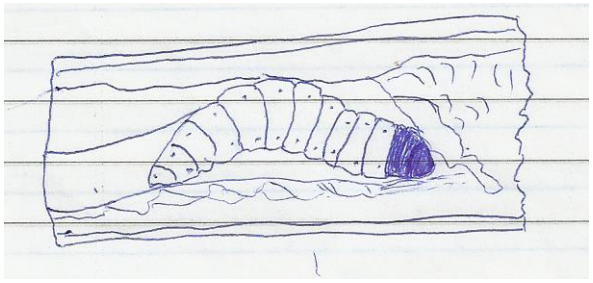
Fertilizers	4,700
Sales of Vegetables	9,300
Sales of poultry	1,800
Sales of fruits	700
Pesticides	1,250
Depreciation	650
Repair and Maintenance	950
Interest on loans	200
Closing Valuation	9,0000

a) Using the information given above , prepare a profit and loss account for Mr Juma's farm for the year ended 31st March **(7mks)**

b) Giving a reason, State whether Mr. Juma's farm made a profit or loss **(½ mk)**

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20) The diagram below shows a maize stalk infected by a certain pest. Study it and answer the questions that follow .



a) Indentify the pest **(1/2mk)**

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b) Apart from maize, name another crop attacked by the pest named above **(½mk)**

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c) Give three cultural measures that can be applied to control the pest **(3mks)**

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SECTION C (40MARKS)

Answer any two questions in this section in the spaces provided

21a) Describe six advantages of rotational grazing **(6mks)**

b) Explain eight ways in which soil fertility can be maintained **(8mks)**

c) Explain six factors considered when drawing a farm plan **(6mks)**

22a) Explain the factors that influence the type of irrigation to be used in a farm **(8mks)**

b) Explain six reasons for pruning coffee. **(6mks)**

c) Describe 6 ways in which lab our productivity can be improved on a farm **(6mks)**

23.a) Describe the importance of agro forestry in soil and water conservation **(6mks)**

b) Describe the process of silage making **(8mks)**

c) Describe the effects of over application of nitrogenous fertilizers **(6mks)**

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EXCELLING STUDENTS FORM FOUR MOCK SERIES ONE EXAMS

NAME: ……

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ADM NO: ……. SIGN:……..… DATE: ……..

AGRICULTURE (443/2)

PAPER 2

FORM FOUR (4)

Time: 2 Hours

INSTRUCTIONS TO CANDIDATES:

- *Write your **name** and **index number** in the spaces provided.*
- *Sign and write the date in the spaces provided above*
- *This paper consists of three section **A, B** and **C***
- *Answer **all** the questions in section **A** and **B***
- *Answer any **two** questions in section **C.***
- *Answers should be written in the spaces provided in this booklet.*

For Examiner's Use Only:

SECTION	QUESTIONS	MAXIMUM SCORE	CANDIDATES SCORE
A		30	
B		20	
C		20	
		20	
	TOTAL	90	

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SECTION A. (30 MARKS)

Answer ALL the questions in this section in the spaces provided.

1. State **four** maintenance practices of a forked jembe. **(2mks)**

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2. Fill in the origin for the breeds of livestock shown in the table below. **(2mks)**

Livestock breed	Origin
Friesian cattle	
Aberdeen Angus cattle	
Large white pig	
Boer goat	

3. State the importance of keeping livestock healthy. **(2mks)**

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4. Give the functional difference between a pruning knife and a pruning saw. **(1mk)**

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5. Name any **two** dual purpose breeds of sheep. **(1mk)**

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6. List any **four** pre-disposing factors of livestock diseases. **(2mks)**

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7. Differentiate between the terms breed and type of animal. **(1mk)**

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8. Give the factors that determine the amount of water taken by an animal. **(3mks)**

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9. List any **four** causes of livestock diseases. **(2mks)**

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10. Give the reasons for breeding in livestock. **(2mks)**

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11. List the materials used in making walls of farm buildings. **(2mks)**

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12. What is the meaning of the term immunity as used in livestock health. **(1mk)**

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13. State the measures that prevent egg eating in poultry. **(2mks)**

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14. State the signs of heat in pigs. **(3mks)**

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15. Give **one** use of a screen in a fish pond. **(1mk)**

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16. State **two** methods of service in livestock. **(1mk)**

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17. Give the advantages of wall fence. **(1mk)**

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18. List the factors considered in sorting and grading eggs for market. **(1mk)**

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SECTION B. (20 MARKS)

Answer ALL the questions in this section in the spaces provided.

19. The diagram X and Y below show the hooves of sheep.



X



Y

a) Which one of the two hooves would be more susceptible to foot-rot disease. **(1mk)**

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b) What routine management practice is required on the hoof to control foot rot? **(1mk)**

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c) State four symptoms of hoof rot. **(2mks)**

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20.a) The illustrations below labeled V, W, and X show three different ways some hens were debeaked.



I **II** **III**

i) Which hen was correctly debeaked? **(1mk)**

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ii) State two reasons for your choice in (i) above. **(1mk)**

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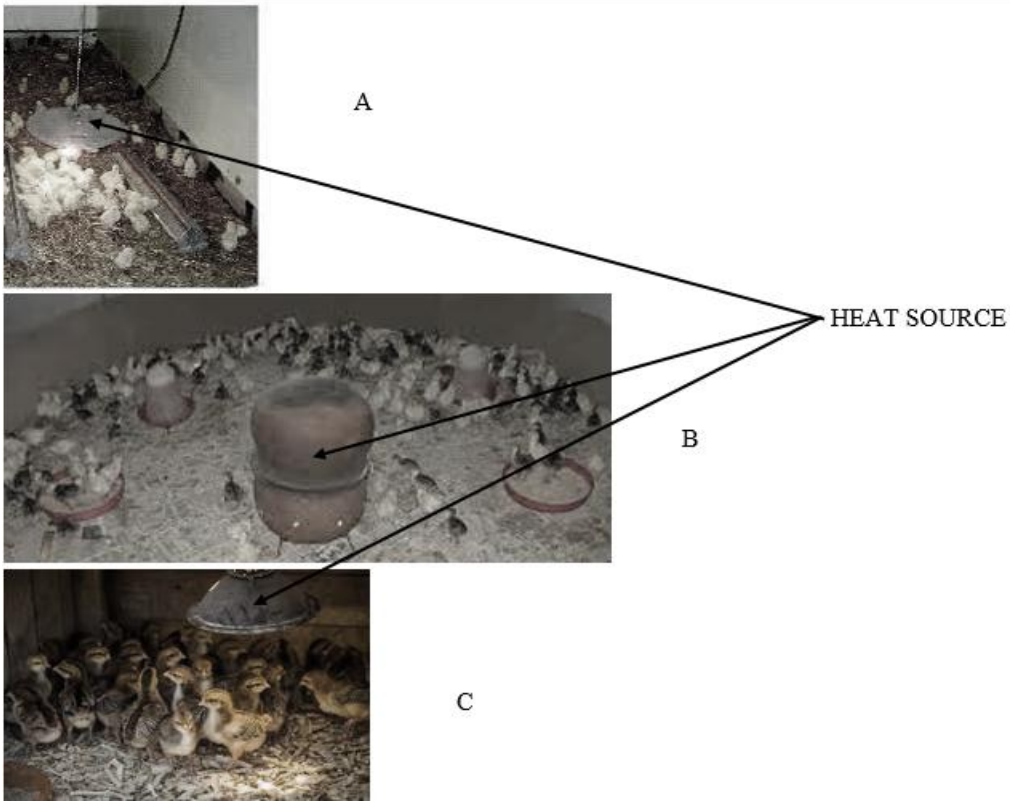
b) Name any two tools which would be used for debeaking. **(2mks)**

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21. Below are diagrams illustrating the behaviour of chicks in various brooders. Study the diagrams and answer the questions that follow:



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a) State the environmental problem in each brooder as illustrated by the behaviour of the chicks. **(3mks)**

A ……

B ……

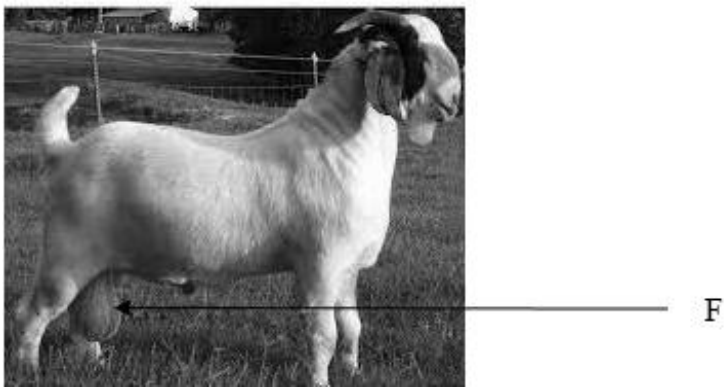
C ……

b) State one way of solving the problem in B. **(1mk)**

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22. Below is a diagram of a male goat.



a) What operation is carried out on the part labeled F. **(1mk)**

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b) Why is it necessary to carry out the operation. **(2mks)**

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c) Give any two suitable methods of carrying out the operation in (a) above. **(1mk)**

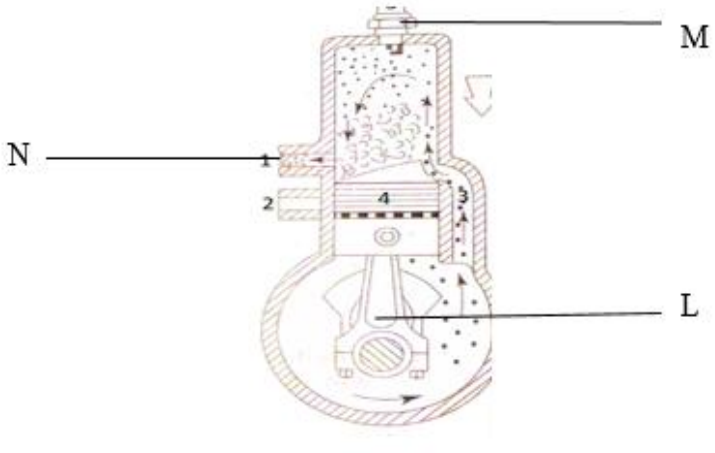
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23. Below is a diagram of a two-stroke engine cylinder.



a) Name any one farm machine where the above engine is used. **(1mk)**

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b) Identify the parts labeled **M, L,** and **N.** **(3mks)**

L …….

M …….

N …….

SECTION C (40 MARKS)

Answer any TWO questions in this section in the spaces provided after question 26.

24. a) Describe the feeding management of broiler chicks from one day old to slaughtering. **(10mks)**

b) Describe the routine management practices in dairy calves. **(6mks)**

c) Describe the factors that affect milk composition. **(4mks)**

25. a) Describe a blue tick (*Boophilus decolaratus*) under the following sub-headings.

i) Diseases transmitted. **(2mks)**

ii) Preferred site of attachment. **(3mks)**

iii) Non-chemical control measures. **(5mks)**

b) Discuss mastitis disease under the following sub-headings:

i) Predisposing factors. **(5mks)**

ii) Control and treatment. (5mks)

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26. a) Describe the functions of each of the following parts of a plunge dip. **(7mks)**

i) Foot bath

ii) Entrance race

iii) Roof

iv) Drainage race

v) Jump

vi) Dip tank

vii) Exit steps.

b) i) Describe the disadvantages of animal power. **(5mks)**

ii) State the advantages of four-strokes engine over two stroke engines. **(3mks)**

c) Describe the factors that influence the amount of concentrate a lactating animal would be given. **(5mks)**

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EXCELLING STUDENTS FORM FOUR
MOCK SERIES ONE EXAMS

NAME: …….

SHOOOL: ……...

ADM NO: ……..……. SIGN:……..……..… DATE: ……..

BIOLOGY (QUESTION PAPER)

FORM FOUR

TIME: 2 HOURS

PAPER 1

INSTRUCTIONS

1. All Questions are Compulsory

2. Write your Answers in the Spaces Provided

3. Wrong Spelling of Technical Terms shall be Penalized

Max Score	Student's Score
80	

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1. State **TWO** ways in which the study of Biology has helped the world in the accelerated fight against the recent Covid-19 pandemic. **(2mks)**

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2. **a)** Give **ONE** function of centrioles **(1mk)**

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b) Name a Kingdom in which all members lack centrioles in their cells **(1mk)**

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3. **a)** Name the skin pigment formed by cells in the mammalian skin **(1mk)**

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b) Which genetic disorder is associated with the absence of the pigment named in 2a)? **(1mk)**

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c) How does the skin pigment help protect human beings against skin cancer? **(1mk)**

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4. Explain the following observations

a) More water hyacinth plants are found growing along the shore of Lake Victoria than in the deep waters **(1mk)**

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b) Green plants grow faster in lower altitudes areas than in higher altitude areas **(2mks)**

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5. State **TWO** functions of a cover slip in light microscope work **(2mks)**

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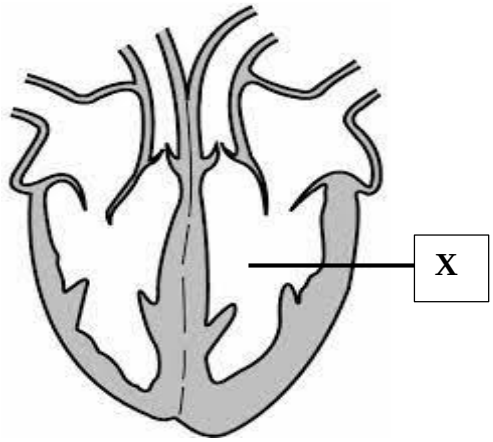
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6. Use the diagram of the heart shown below to answer the questions that follow



a) From the diagram, give a reason to show that **X** is the left ventricle **(1mk)**

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b) Name a class of organisms where all members have the heart structure above **(1mk)**

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c) Why are the muscles found in the heart above said to be myogenic? **(1mk)**

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7. Account for the following

a) Red blood cells lack mitochondria **(1mk)**

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b) The testes are found hanging outside the body in male human beings **(1mk)**

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8. a) Why is pancreas said to be a dual gland? **(1mk)**

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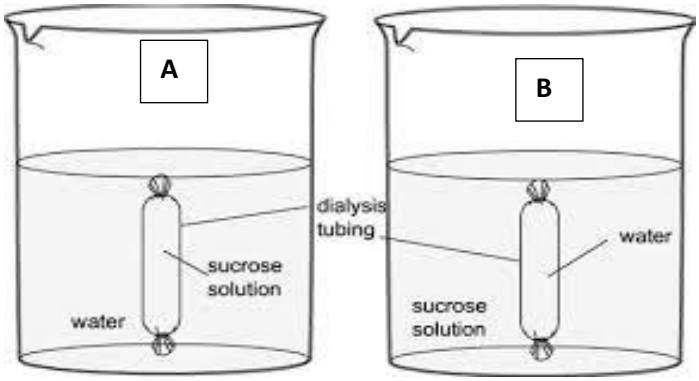
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b) Name the endocrine tissue in the pancreas **(1mk)**

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9. A student made a set up shown below to study a physiological process



a) In which beaker did the dialysis tubing reduce in size? **(1mk)**

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b) Account for your answer in a) above **(2mks)**

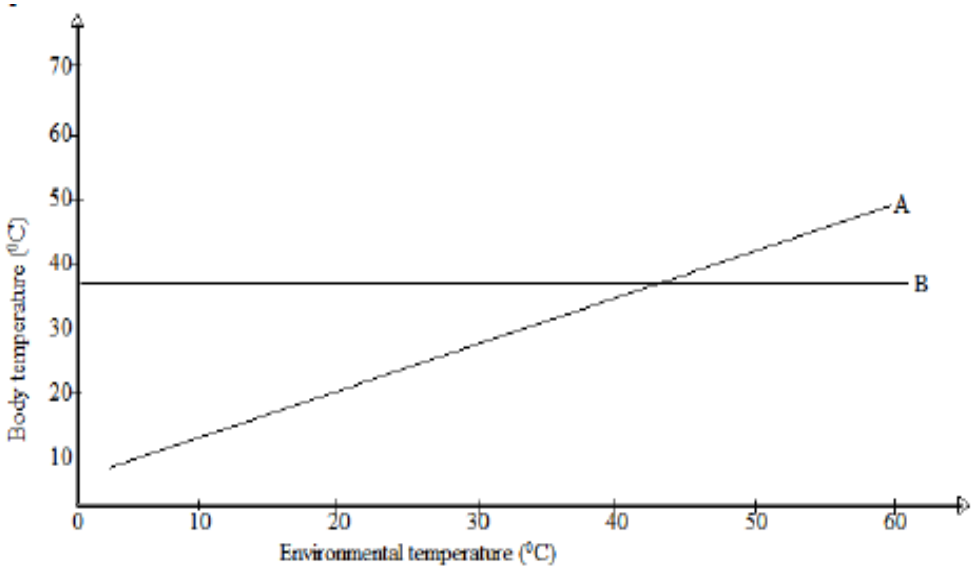
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10. The diagram below shows a graph of body temperature of two different organisms against changing environmental temperature



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a) State the name used to refer to animal **A** in terms of thermoregulation **(1mk)**

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b) State **TWO** advantages animal **B** has over animal **A** **(2mks)**

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11. The diagram shown below is of a flower



a) Name the agent of pollination for this flower **(1mk)**

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b) Give **TWO** adaptive features from the diagram to support your answer in a) above **(2mks)**

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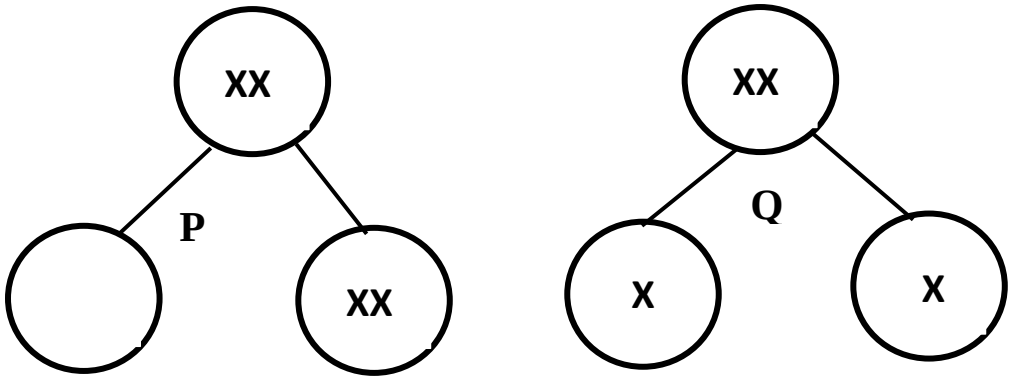
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12. The process of gamete formation is represented below



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a) State a reason why the process above represents gamete formation in female mammals **(1mk)**

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b) Name the chromosomal mutation represented above **(1mk)**

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c) Identify the genetic disorder that arise when the following gametes are fertilized

i) P ……. **(1mk)**

ii) **Q …….** **(1mk)**

13. A sample of air was passed through pyrogallic acid and its volume reduced from 8 cm^3 to 7 cm^3. When it was later passed through lime water, the volume reduced to 6.8cm^3.

a) What was the role of pyrogallic acid in this experiment? **(1mk)**

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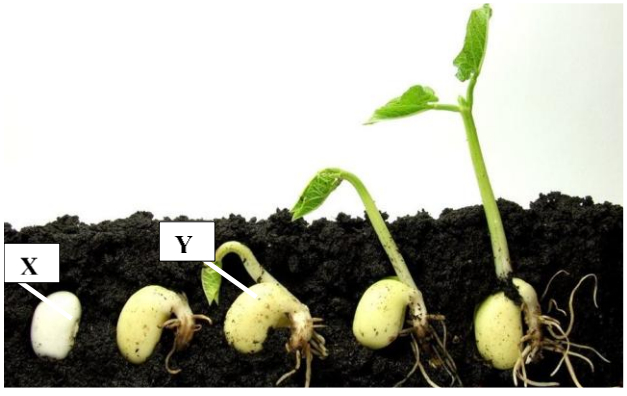
b) Determine the percentage of Carbon (IV) oxide in the sample of air **(2mks)**

c) Is this sample of air exhaled air or inhaled air? **(1mk)**

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14. The stage-wise process of germination of a seed is shown below



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a) Give a reason why the diagram above represents hypogeal germination **(1mk)**

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b) Account for the change in dry weight of the cotyledon at stage **X** and **Y** **(2mks)**

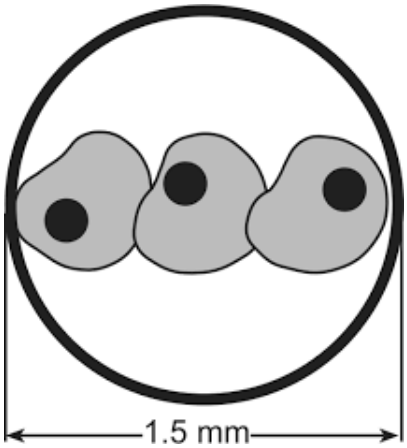
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15. Barbra observed animal cells in a field of view of a light microscope as shown below. If she used a total magnification of X1000 determine the actual diameter of one cell **(3mks)**



16. Explain the importance of the following features

a) Acrosome in the spermatozoa **(2mks)**

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b) Hair-like structures in the fallopian tube **(1mk)**

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17. a) What are vestigial structures? **(1mk)**

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b)Explain why divergent evolution is advantageous to living organisms? **(2mks)**

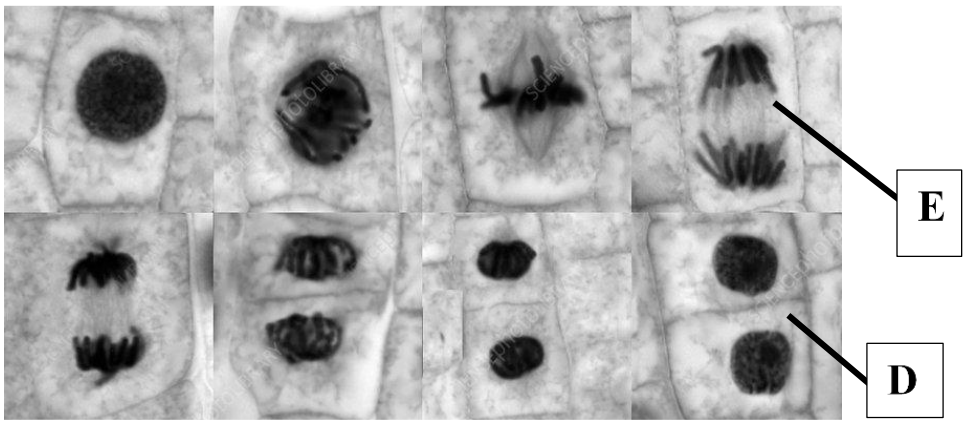
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18. The various stages of mitosis are represented below



a) Identify the stages represented by the letters:

i) **D** ……..…….. **(1mk)**

ii) E ……..…….. **(1mk)**

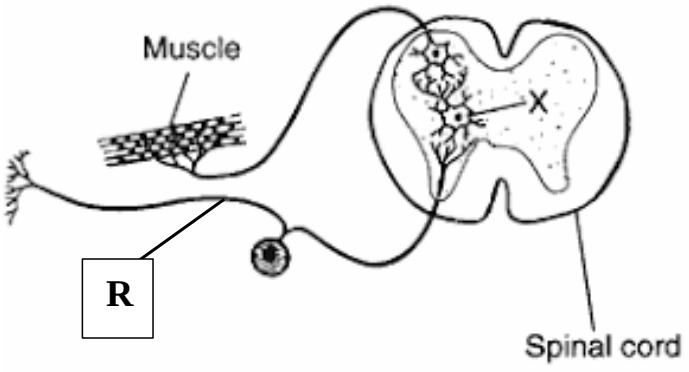
b) What shows that the process represented above is taking place in a plant cell? **(1mk)**

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19. The diagram shown below represents the various nerve cells



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a) Use arrows to show direction of impulse in a reflex arc in the diagram above **(1mk)**

b) Outline expected **TWO** structural differences between nerve cell **R** and **X**. **(2mks)**

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20. State the function of the following muscles in the body

i) Cardiac sphincter muscles **(1mk)**

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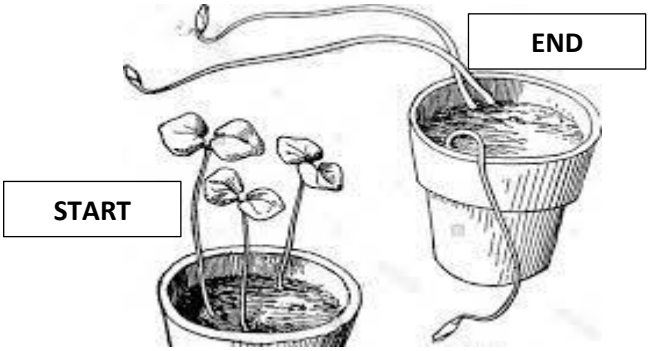
ii) Erector pili muscles **(1mk)**

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21. The diagrams below are of seedlings before and after an experiment.



a) Under which light condition was the experiment carried out **(1mk)**

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b) Which term describes the appearance of the seedlings at the end of the experiment **(1mk)**

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c) What is the importance of the above experiment in crop production? **(1mk)**

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22. State the function of the following cells in the body of organisms

a) Palisade **(1mk)**

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b) Schwann **(1mk)**

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c) Sertoli **(1mk)**

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23. a) Mary suspects that she has diabetes mellitus. Using a sample of her urine describe a school laboratory procedure she can follow to confirm it is true **(3mks)**

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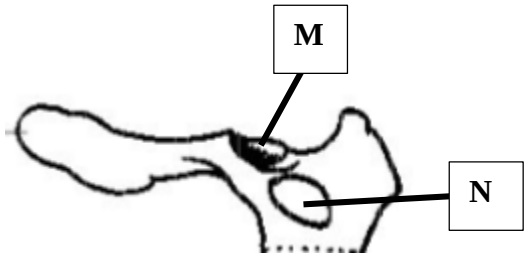
b) Why is insulin not administered orally? **(1mk)**

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24. The following is an illustration of a bone



a) Give the name of the bone **(1mk)**

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b) State an advantage of the joint formed at the part labelled **M** **(1mk)**

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c) State the function of the part labelled **N** **(1mk)**

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25. a) Distinguish between population and community as used in ecological studies. **(2mks)**

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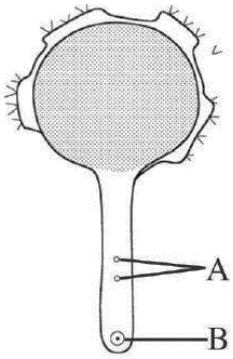
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b) State the formula for population estimation using capture recapture method. **(1mk)**

26. The diagram below shows the structure of germinating pollen grain



a) Name the type of cell division that formed the parts labelled A **(1mk)**

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.....

b) State the role of part labelled B **(1mk)**

.....

.....

27. The picture of a common animal is represented below



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a) Name the class to which the organism shown above belongs **(1mk)**

.....

.....

b) Give **TWO** reasons for your answer in a) above **(2mks)**

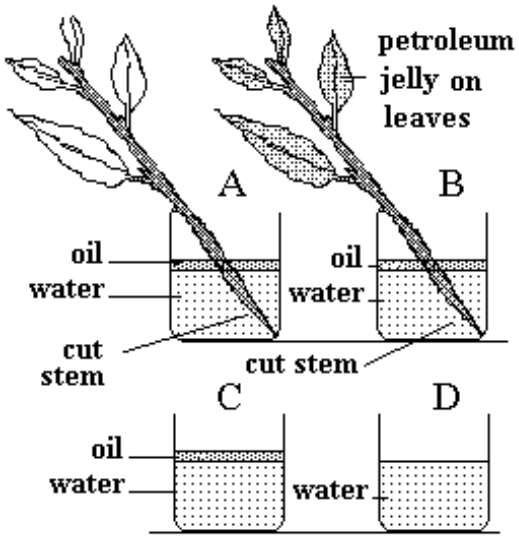
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28. The following experimental set up was placed in sunshine to investigate a biological process



a) Account for the expected result in the level of water in the beaker labelled **B** **(2mks)**

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b) Why were the set up **C** and **D** included in the experiment? **(1mk)**

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EXCELLING STUDENTS FORM FOUR MOCK SERIES ONE EXAMS

NAME: ……

SHOOOL: ……...

ADM NO: ……..……. SIGN:……..……..… DATE: ……..……..

BIOLOGY (QUESTION PAPER)

FORM FOUR

TIME: 2 HOURS

PAPER 2

INSTRUCTIONS TO CANDIDATES

- Write your name and index number in spaces provided above.
- Sign and write the date.
- This paper consists of two sections; **A** and **B**. Answer **ALL** the questions in section A in the spaces provided.
- In section **B** answer Question **6 (compulsory)** and either question **7 or 8** in the spaces provided.
- Additional pages must not be inserted.

FOR EXAMINER'S USE ONLY

QUESTION	MAXIMUM SCORE	CANDIDATE'S SCORE
1	8	
2	8	
3	8	
4	8	
5	8	
6	20	
7	20	
8	20	
TOTAL SCORE	80	

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SECTION A: (40 MARKS)

Answer all the questions in this section

1. A woman whose blood group is O gives birth to a son whose blood group is A and a daughter whose blood group is B

a. (i) State the possible genotype of the father. **(1mk)**

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(ii) Using a punnet square work out the genotypes of the offsprings. **(3mks)**

b. (i) If the mother is rhesus positive and the father is rhesus negative what condition is the child likely to develop? **(1mk)**

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(ii) How can the condition be controlled? **(1mk)**

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c. Explain why the second born child is at risk of death that the first born child if no precaution is taken **(2mks)**

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2. The equation below shows a chemical reaction that takes place in green plants under certain conditions.

Carbon (IV) oxide + Water ⟶ Glucose + X

(a) What is the name of substance X ? **(1mk)**

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(b) Other than the reagents, state **three** conditions necessary for this reaction **(3mks)**

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(c) Name **three** types of cells in which this process occurs **(3mks)**

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(d) Name the process represented by the equation given above **(1mk)**

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3. The table below gives information about an aquarium community which is ecologically balanced;

Type of organism	Weight in grammes
Insect larva	500gms
Fishes	1200gms
Water plants	5000gms
Bacteria	10gms

a. What do you understand by the term ecological balance? **(1mk)**

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b. Calculate the total biomass of the aquarium. **(2mks)**

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c. Which organism in the table is

(i) Primary producer**?** **(1mk)**

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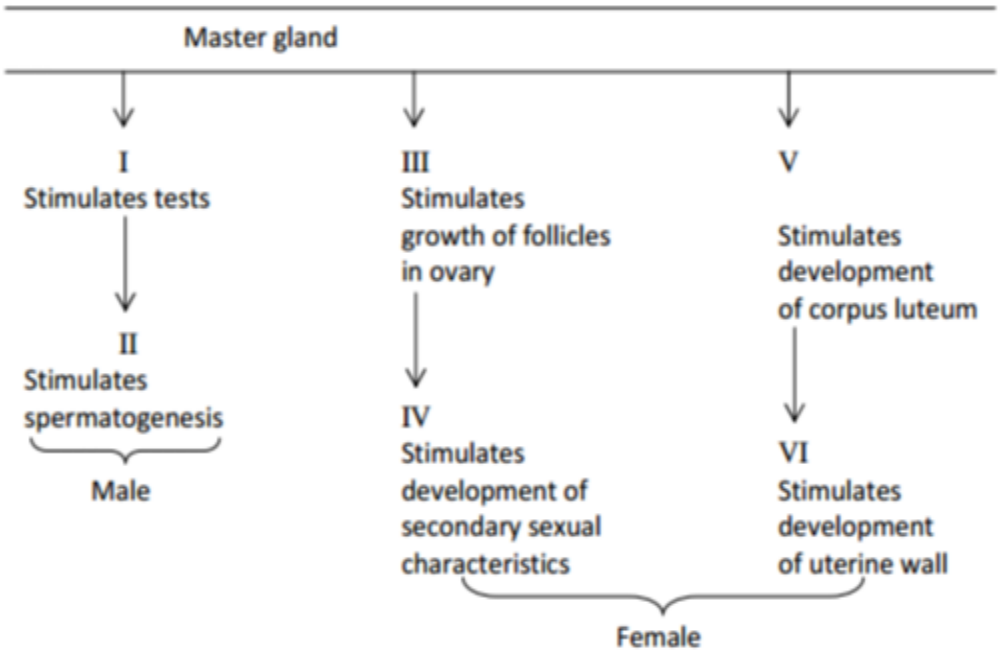
(ii) Secondary consumer? **(1mk)**

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d. Construct a food web of the aquarium **(3mks)**

4. The diagram below represents some hormones, their sources and functions in a mammal.



a) Identify the gland described as master gland. **(1mk)**

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b) Name the hormones II, III, V and VI **(4mks)**

II……

III……

V……

VI……

c) State a consequence of deficiency of hormone II in man. **(1mk)**

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d) Other than stimulating development of uterine wall, suggest **two** other functions of hormone VI **(2mks)**

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5. Use the diagrams below to answer the questions that follow

Diagram M

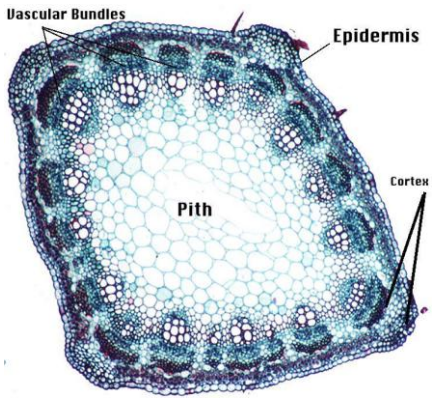


Diagram N



a) i) Name the class of plants represented by the cross-section in **diagram M.** **(1mk)**

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……

ii) Give a reason for your answer in a i) above. **(1mk)**

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iii) Identify the plant organ whose cross section is shown in M above. **(1mk)**

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b) Name the tissues responsible for secondary growth in diagram M. **(2mks)**

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c) Give two reasons to show that N is a member of class Arachnida. **(2mks)**

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d) Label the part used to capture prey on diagram N. **(1mk)**

SECTION B. (40 MARKS)

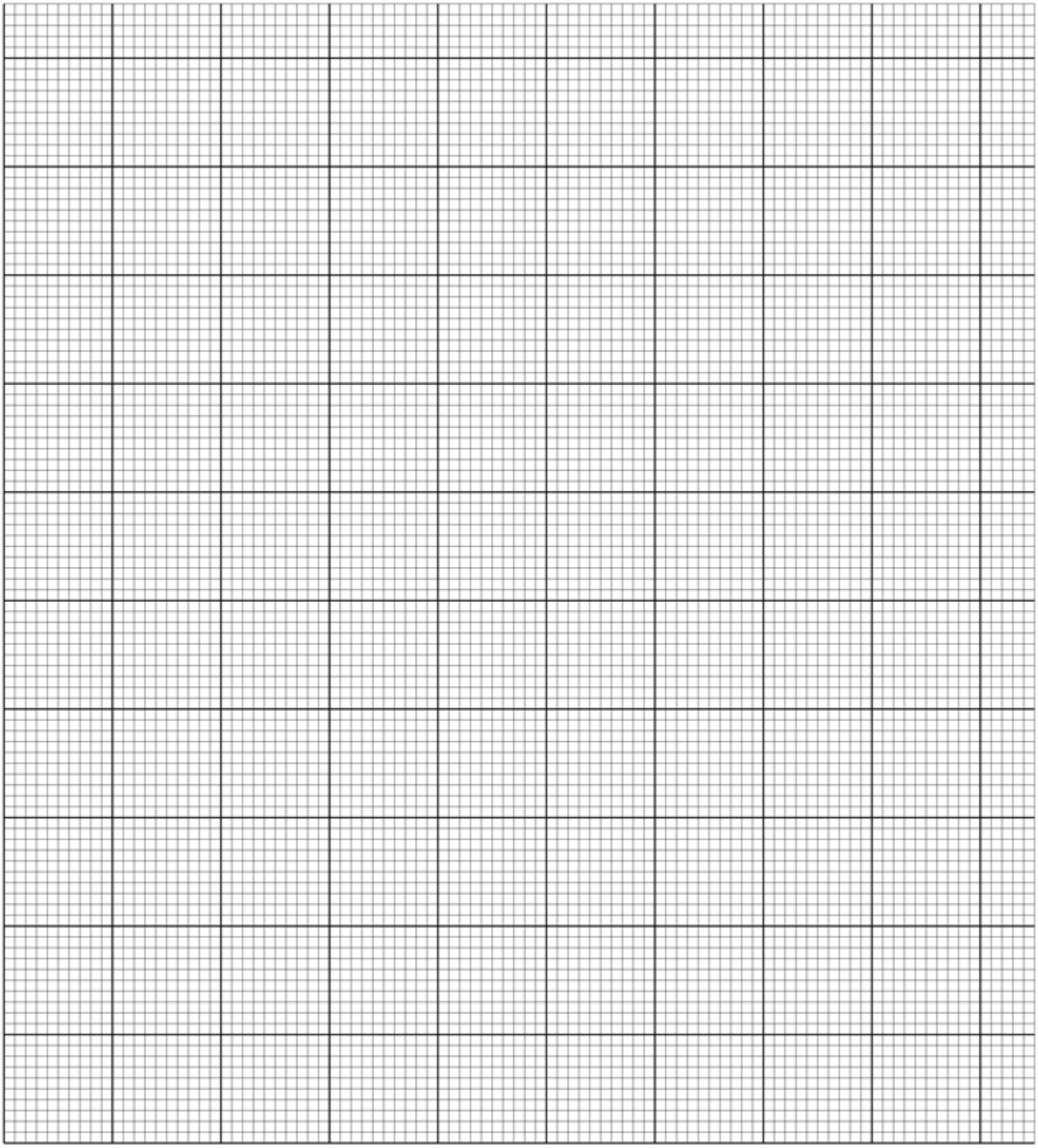
Question 6 is compulsory.
Choose either question 7 or 8 and answer them in the spaces provided

7. A hungry person had a meal, after which the concentrations of glucose and amino acids in the blood were determined. This was measured hourly as the blood passed through the hepatic portal vein and the iliac vein in the leg. The results were as shown in the table below.

Time (hrs)	Concentrations of contents in the hepatic portal vein (mg/100ml)		Concentration of contents in the iliac vein of the leg (mg/100ml)	
	Glucose	Amino acids	Glucose	Amino acids
0	85	1.0	85	1.0
1	85	1.0	85	1.0
2	140	1.0	125	1.0
3	130	1.5	110	1.5
4	110	1.5	90	3.0
5	90	3.0	90	2.0
6	90	2.0	90	1.0
7	90	1.0	90	1.0

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a. Using the same axis, draw graphs of concentration of glucose in the hepatic portal vein and the iliac vein of the leg against time**.** **(7mks)**



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b) Account for the concentration of glucose in the hepatic portal vein from

i. 0 – 1 hr. **(2mks)**

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ii. 1 – 2 hrs **(3mks)**

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iii. 2 – 4 hrs. **(2mks)**

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iv. 5 – 7 hrs. **(2mks)**

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b. Account for the difference in concentration of glucose in hepatic portal vein and the iliac vein between 2 and 4 hrs. **(3mks)**

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c. Using the data provided in the table, explain why the concentration of amino acids in the hepatic portal vein took longer to increase. **(1mk)**

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7. (a) Explain the roles of the mammalian placenta. **(7mks)**

(b) Explain the different evidences of evolution **(13mks)**

8. Describe causes and methods of controlling water pollution. (20mks)

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EXCELLING STUDENTS FORM FOUR MOCK SERIES ONE EXAMS

NAME: ……

SHOOOL: ……...

ADM NO: ……. SIGN :……..……..… DATE: ……...……

BIOLOGY (QUESTION PAPER)

FORM FOUR

TIME: 1 3/4 HOURS

PAPER 3

INSTRUCTIONS TO CANDIDATES:

- .Write your **name, index number, admission number**, **school** and **stream** in the spaces provided above.
- **Sign** and write the **date of examination** in the spaces provided above.
- You are required to spend the first 15 minutes of the $1^3/4$ hours allowed for this paper reading the whole paper carefully before commencing your work.
- Answer **ALL** the questions in this paper in the spaces provided.
- Candidates **should** answer the questions in English.

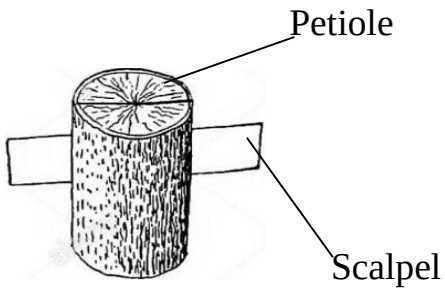
FOR EXAMINER'S USE ONLY

Question	Maximum score	Candidate's score
1	16	
2	12	
3	12	
Total	40	

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1. You are provided with **<u>Specimen A</u>, Solution X** and **Solution Y.**

(a) Cut out a cylindrical portion of the petiole from **<u>Specimen A</u>** measuring 5cm long (reserve the leaves for **part b** of the question). Make a longitudinal section through the petiole so as to divide it into two identical straight halves as shown below;



Place one straight half of the petiole into the boiling tube containing **solution X**, and label the tube as **Set up I.** Place the other straight half of the petiole into the boiling tube containing **solution Y**, and label the tube as **Set up II.** Leave the two set ups to stand for 30 minutes.

Remove the two halves of the petiole from the solutions and examine them.

(i) Account for the curvature of half of the petiole in **set up I**. **(5mks)**

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(ii) Based on your observation of the curvature of half of the petiole in **set up II**, state the nature of **solution Y** in relation to plant cells. **(1mk)**

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(b) Cut the leaves of specimen A into small pieces and place them into a mortar. Add 10ml of distilled water, then grind them using a pestle so as to obtain an extract called **solution R**. Using the reagents provided,

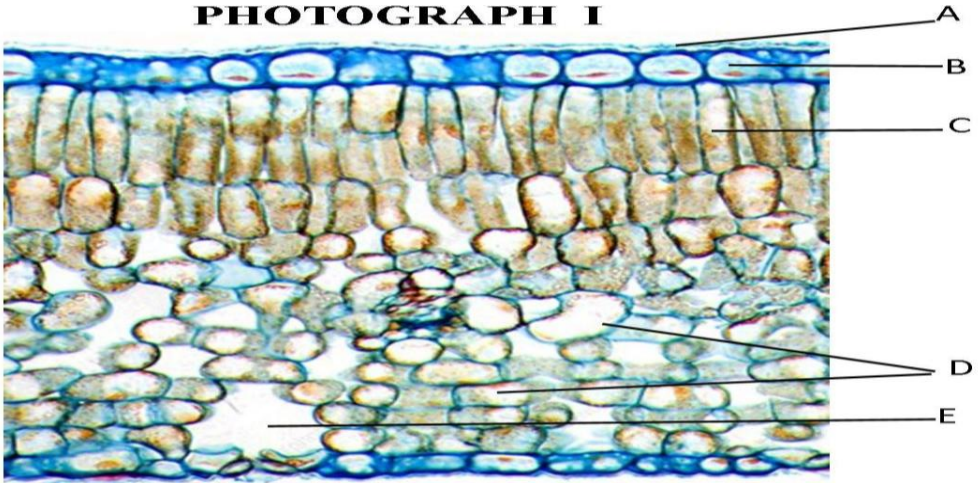
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carry out various tests using the procedures in the table below to determine the food substances in the solution R. In each case, state the observation and conclusion made**.** **(6mks)**

Food substance	Procedure	Observation	Conclusion
Proteins	-Place 2ml of solution R into a test tube. - Add equal amount of NaOH solution. -Add $CuSO_4$ solution dropwise and shake		
Reducing sugars	-Place 2ml of solution R into a test tube. -Add equal amount of Benedict's solution. -Boil the mixture.		
Vitamin C	-Place 2ml of DCPIP into a test tube. -Add solution R dropwise as you shake.		

(c) The **photograph I** below shows the internal structure of **Specimen A.** Study it carefully and answer the questions that follow.

PHOTOGRAPH I



(i) Identify the structures labelled A and B. **(2mks)**

A: .....

B: .....

(ii) State **one** structural difference between cells C and D. **(1mk)**

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(iii) What is the function of the part labelled E ? **(1mk)**

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2. You are provided with **Specimens X, Y** and **Z.**

(a) State the type of dry, indehiscent fruit represented by **specimen X.** **(1mk)**

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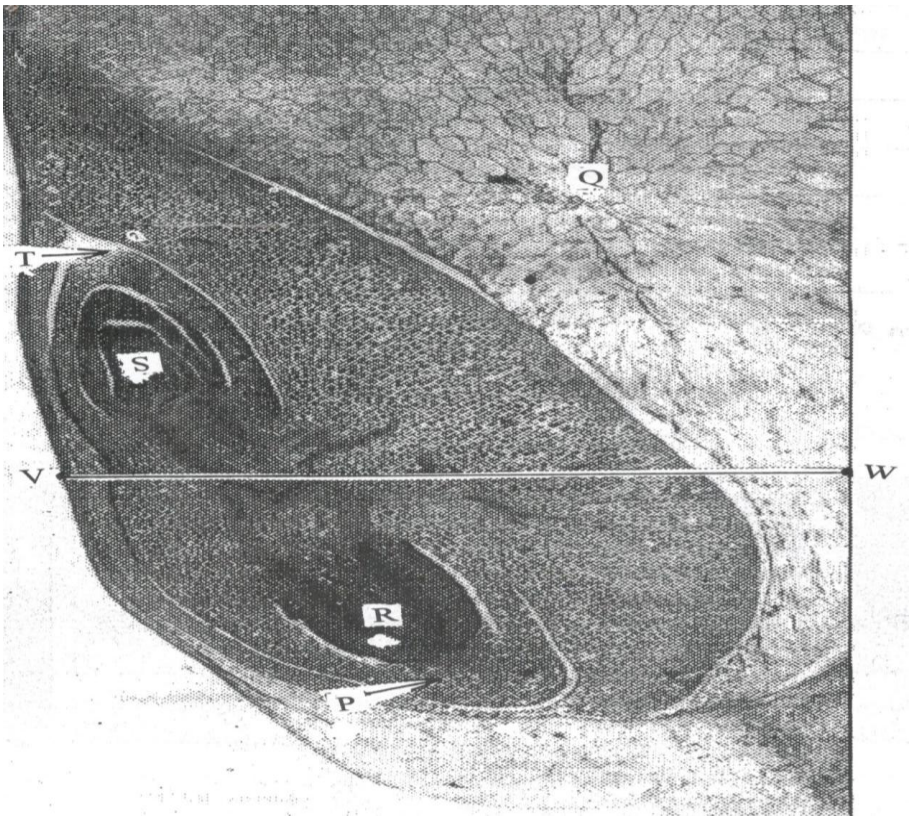
(b) With a reason, state the method of dispersal of **specimen Y.** **(2mks)**

(i) Method of dispersal.....

(ii) Reason.....

(c) Cut **specimen Z** transversely so as to obtain two identical halves. Draw and label the cut surface of one half. **(3mks)**

(d) Below is a photograph of the internal longitudinal section of **Specimen X**.



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(i) Name the parts labelled P and S**.** **(2mks)**

P.....

S.....

(ii) State the function of the part labelled T. **(1mk)**

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(iii) Identify the region that would stain blue black with iodine solution. **(1mk)**

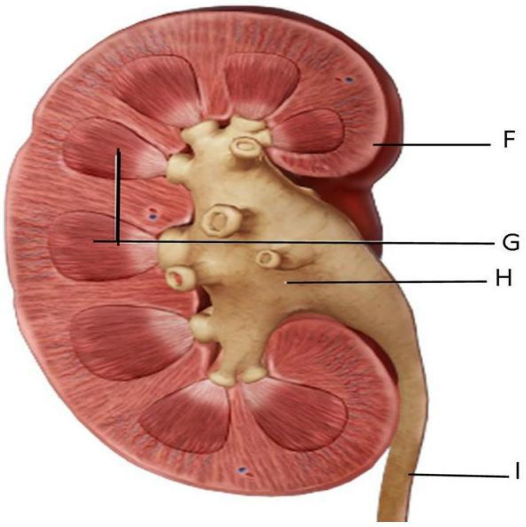
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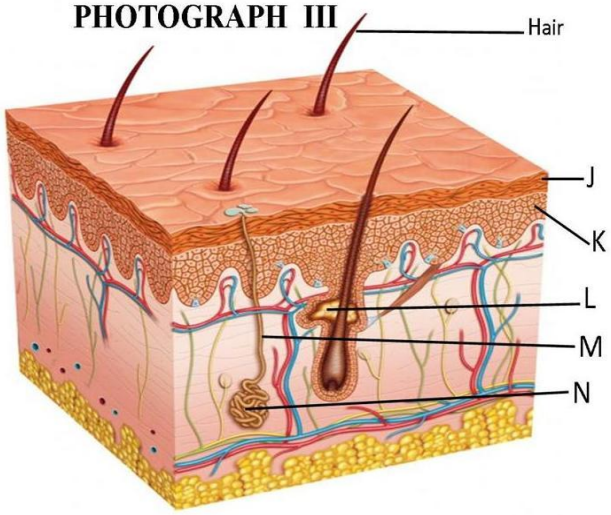
(e) The magnification of the internal longitudinal section in the above photomicrograph was X30,000. Measure the distance of the dark horizontal line between V and W in millimetres. Calculate the actual width of the section between V and W in micrometres**.** **(2mks)**

3. Below are photographs II and III of the mammalian kidney and skin respectively.

PHOTOGRAPH II



PHOTOGRAPH III



(a) Identify the layers labelled F, J and K. **(3mks)**

F:.....

J:.....

K:.....

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(b) State the function of each of the parts labelled L and M**.** **(2mks)**

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(c) Explain how the structure labelled N is adapted to its function**.** **(1mk)**

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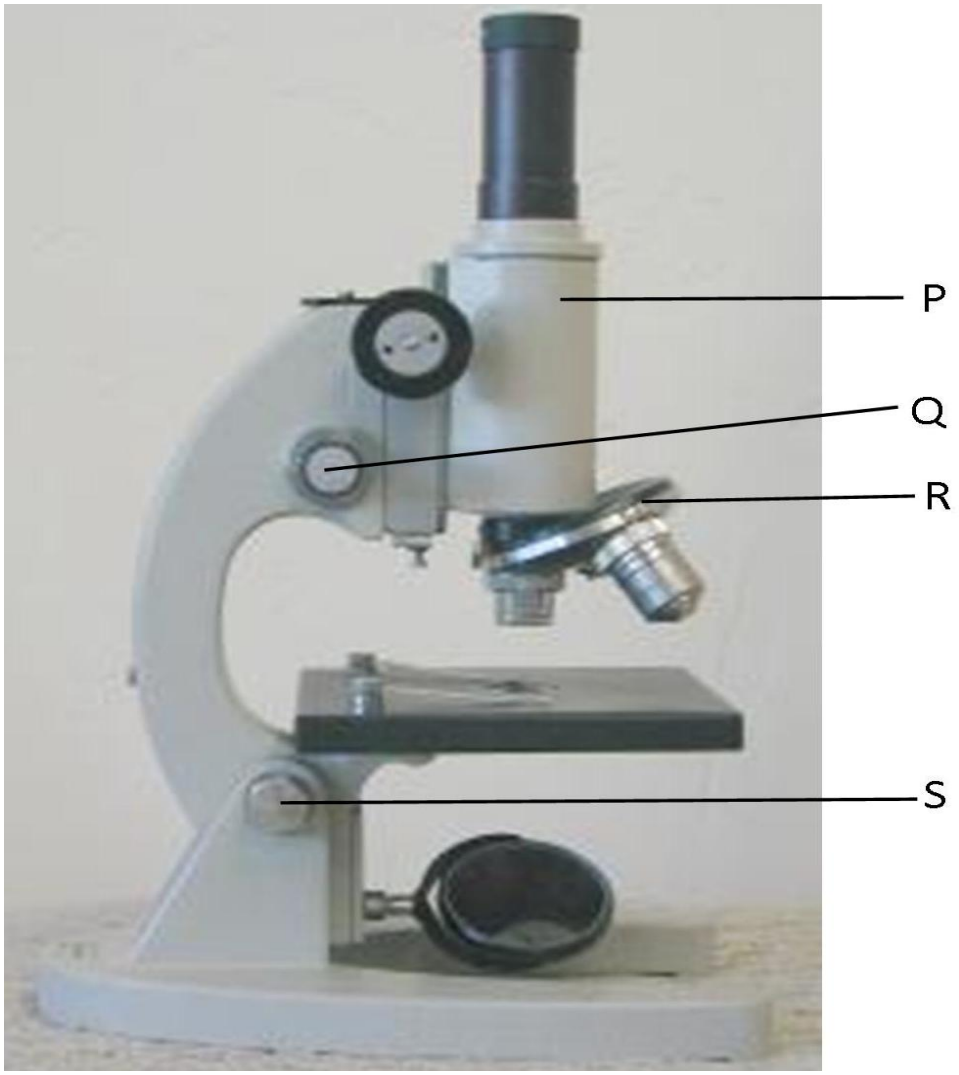
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(d) Identify part in photograph II that contains glomeruli**.** **(1mk)**

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(e) The cells in the layer labelled J can be examined using the light microscope shown below.



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(i) Identify on the above photograph the structure that would be adjusted to improve on the clarity of blurred images of the cells in layer J. **(1mk)**

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(ii) State the significance of using a sharp razor or scalpel to cut through layer J to obtain the cells for examination in the above microscope. **(1mk)**

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(iii) Name the part labelled S in the above microscope. **(1mk)**

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(iv) State **two** functions of the light microscope during examination of the cells in layer J. **(2mks)**

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EXCELLING STUDENTS FORM FOUR MOCK SERIES ONE EXAMS

NAME: ……

SHOOOL: ……

ADM NO: ……. SIGN:……..… DATE: ……..

BUSINESS STUDIES 565/1
PAPER 1
FORM FOUR (4)

TIME 2½Hrs

Instructions

i) Answer all questions in the space provided

1. List four reasons why a business exists. **(4Mks)**

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2. State four elements that constitute the internal business environment**.** **(4Mks)**

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3. Most firms are adopting electronic filing systems. Mention 4 demerits of using such a system **(4Mks)**

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4. Identify the type large scale retailers described by each of the following statements **(4Mks)**

i) Huge shopping complexes with many shops under one roof each under a different management

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ii) Many shops under one roof and one management each selling a particular line of products

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iii) Businesses where customers make their orders through the post

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iv) Shops operated by one company and located in different areas where they sell specialized products

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5. Highlight four circumstances under which a co-operative may be dissolved **(4Mks)**

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6. Highlight four barriers to effective communication **(4Mks)**

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7. Identify four ways in which the efficiency of a warehouse can be guaranteed **(4Mks)**

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8. State four circumstances under which an insurance policy may be terminated **(4Mks)**

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9. Highlight four factors that may cause the supply curve to shift to the right **(4Mks)**

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10. State four measures that Kenya government may take to attract firms to an area. **(4mks)**

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11. The following is a representative basket of an average family.

Year	Prices
2019	6,000
2020	7,200

Determine the increase in C.P.I using 2019 as a base year. **(4Mks)**

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12. Highlight four factors which may contribute to business failure **(4Mks)**

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13. Highlight four problems associated with the income approach of measuring the national income **(4Mks)**

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14. Highlight four features associated with a monopoly market structure. **(4Mks)**

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15. Outline four roles of transport in the facilitation of trade **(4Mks)**

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16. The following balances were extracted from the books of Maua Traders on 31st December, 2020.

	Shs
Fixed assets	300,000
Current assets	123,700
Creditors	84,500
5 year loan	125,000

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Determine the net worth of the business as at 31st December 2020 **(4Mks)**

17. Highlight three ways in which the introduction of money helped eliminate problems faced in barter trade **(3mks)**

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18. Highlight four forms of economic integration **(4mks)**

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19. State four measures that the government can use to encourage increase in the country's volume of exports. **(4Mks)**

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20. Unemployment solving has been an agenda to Kenya. Identify the type of unemployment being solved below. **(4mks)**

(i) Government initiating irrigation projects to ensure continuous production of food

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(ii) Retraining teachers to embrace use of technology in teaching and learning

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(iii) Government and private sectors inventing job advertisement sites for easy access by job seekers

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(iv) Parliament passing legislation that accommodate the disabled people to acquire jobs

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21. The following information relates to Makini Traders for the year ending 31st December 2015.

Margin	15%
Sales	640,000
Purchases	480,000
Stock on 1/1/2015	130,000
Closing stock	?

Required Trading Account of Makini Traders for the year ending 31st December 2015. **(5Mks)**

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22. State any four types of advertising that a trader may adopt **(4Mks)**

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23. State any four types of indirect taxes in Kenya **(4Mks)**

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24. State four problems encountered at the plan implementation stage in economic planning and development **(4Mks)**

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25. Wanja enterprises had the following assets and liabilities on 5th October 2021.

Item	Kshs
Equipment	800,000
Capital	1,200,000
Creditors	100,000
Debtors	200,000
Stock	250,000
Cash at bank	50,000

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The following transactions took place on 7th October 2021.

i) Bought goods for resale Ksh. 150,000 on credit

ii) A debtor paid Ksh. 50,000 by cheque

iii) Sold the equipment for Ksh. 700,000 cash

Required : Prepare Wanja enterprises balance sheet after the above transactions **(4Mks)**

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EXCELLING STUDENTS FORM FOUR

MOCK SERIES ONE EXAMS

NAME: ……..……

SHOOOL: ……..……

ADM NO: ……..……. SIGN:……..……..… DATE: ……..……..

BUSINESS STUDIES 565/2

PAPER 2

FORM FOUR (4)

TIME 2½Hrs

INSTRUCTIONS TO CANDIDATES

- This paper consists of six questions
- Answer any FIVE questions
- Write your answers in the answer sheet provided
- All questions carry equal marks

1. a) Labour is an important factor of production. Explain five barriers that may hinder its mobility as a factor of production**.** **(10mks)**

b) Explain five circumstances under which a high population growth may be desirable to a country. **(10mks)**

2.a) Explain five factors that influence the amount of money held by an individual for transactionary motive. **(10mks)**

b) Manufacturers distribute their products to the final consumers through various channels. Explain five factors considered when choosing a particular channel of distribution. **(10mks)**

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3.a) On 1st June 2008 Happy Traders had cash in hand shs.5000 and cash at Bank shs7500. The following transactions took place during the month.

June 2: Bought goods in cash sh750

June 4: Paid salaries by cash shs. 3750

June 5 Received cheques from the following debtors after allowing 2% discount in each case, Kamau sh. 490, Jane sh. 980.

June 8: Paid the following accounts by cheque in each case deducting a 5% discount Otieno sh.1,500, Wanjiku sh.600.

June 12: Bought office machinery by cheque shs.2,500

June 20: Withdrew cash sh.500 for private use.

June 25: Cash sales sh.1000

June 26: Banked cash amounting to sh.500

June 29: Received shs.1,500 cash from Wanjohi a debtor.

Required: Prepare a three column cash book duly balanced. **(12mks)**

b) Explain four reasons why the Government imposes tax on its Citizens. **(8mks)**

4.(a) Outline five differences between a parastatal and a co-operative society **(10mks)**

(b) The table below shows the age distribution of a country.

Age (year)	%
0-15	45
16-55	31
56 and above	24

Explain five negative economic implications of this age distribution to a country **(10mks)**

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5.(a) Describe the procedure that should be followed when taking an insurance policy **(10mks)**

(b) Amobi Investment operates a wholesale business and the following information relates to various transactions during the month of May, 2019.

May 3 sold goods on credit to Anyimba sh 60,000

8 purchased goods on credit from Mjuaji stores sh 120,000

12 returned goods bought on credit from Mjuaji stores sh 6,000

16 purchased goods on credit from Mjuaji stores sh 160, 000

22 sold goods on credit to Mafala retailers sh 150,000

23 bought a new motor vehicle from Mashariki motors worth sh 3,200,000 on credit

24 Anyimba returned goods worth sh 10,000 to the business

29 sold equipment worth sh 840,000 on credit to Chap Chap limited.

Record these transactions into Zeraki investment books of original entry. **(10mks)**

6.a) Motorcycles have become a common feature in transport in Kenya. Outline **five** reasons that explain the rapid growth of motorcycle transport in Kenya **(10mks)**

b) Explain FIVE reasons for the existence of small firms despite competition from large scale firms **(10mks)**

EXCELLING STUDENTS FORM FOUR MOCK SERIES ONE EXAMS

NAME: ……..……

SHOOOL: ……..…

ADM NO: ……. SIGN:…….……..… DATE: ……..……..

CHEMISTRY (233/1)

PAPER 1

FORM FOUR (4)

Time: 2 Hours

Instructions to candidates

(a) Write your name, stream, and admission number in the spaces provided above.

(b) Answer **ALL** the questions in the spaces provided, and working **MUST** be clearly shown

(c) This paper consists of **11 printed pages**; Candidates should check the question paper to ascertain that all the pages are printed as indicated, and that no question is missing.

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QUESTIONS	MAXIMUM SCORE	CANDIDATE'S SCORE
1 – 28	80	

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1. A magnesium ribbon sample was heated in separate volumes of pure oxygen and air.

a) In which sample was the mass of the product higher? Explain. **(2Mks)**

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b) Write the equations for the reactions in the sample with air. **(2Mks)**

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2. Give the systematic name of the following compound and draw the structure of the polymer it forms:

CH_2CHCl

Name..... **(1Mk)**

Structure **(1Mk)**

3. When aqueous sodium hydroxide solution was added to freshly prepared acidified iron (II) sulphate solution, a green precipitate was formed. When hydrogen peroxide was first added to iron (II) sulphate solution followed by sodium hydroxide solution, a brown precipitate was formed. Explain these observations. **(3Mks)**

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4. Study the following nuclear reaction and complete it by giving the values of **m** and **n**

$$\mathbf{^{232}_{92}X \rightarrow ^{m}_{n}Y + 2\ ^{0}_{-1}e^{-} + ^{4}_{2}He}$$

m _____ **(1Mk)** **n** _____ **(1Mk)**

5.

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a) State Charles' Law **(1Mk)**

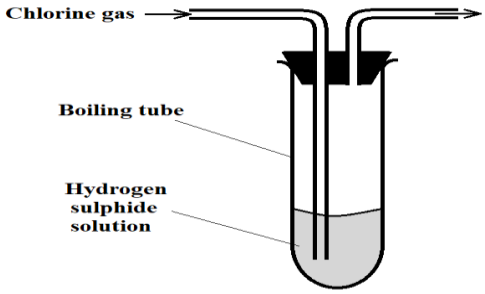
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b) A certain mass of carbon (IV) oxide gas occupied 200cm^3 as 25^{o}C and 750mmHg pressure. Calculate the volume occupied by the same mass of gas if pressure is lowered to 300mmHg and the temperature raised to 30^{o}C. **(2Mks)**

6. Chlorine gas was bubbled into as solution of hydrogen sulphide as shown in the diagram below.



a) Explain the observation made in the boiling tube **(2Mks)**

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b) What precaution should be taken in this experiment? **(1Mk)**

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c) Distinguish between the bleaching action of chlorine and that of sulphur (IV) oxide. **(1Mk)**

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7. Concentrated sulphuric (VI) acid was left exposed in air for a few days. It was found that the level of the acid had risen.

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a) Why did the level of the acid in the container rise? **(1Mk)**

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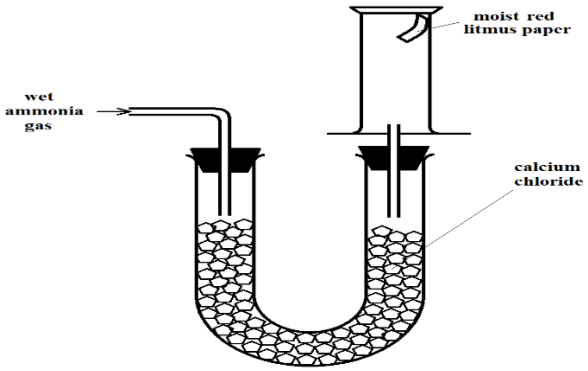
b) How is this property useful in the laboratory? **(1Mk)**

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8. The setup below can be used to dry and collect ammonia gas. Use it to answer the questions that follow.



a) The wet red litmus paper remained red. Explain. **(1Mk)**

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b) Name the method used when collecting ammonia gas. **(1Mk)**

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9. 400cm^3 of **gas D** diffuses from a porous plug in 50 seconds while 600cm^3 of oxygen gas diffuses from the same apparatus in 30 seconds. Calculate the relative molecular mass of **gas D**. **(3Mks)**

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10. Use the information in the table below on solubility to answer the questions that follow.

Salt	Solubility at	
	70°C	**35°C**
$CuSO_4$	38	28
$Pb(NO_3)_2$	78	79

A mixture containing 38g copper (II) sulphate and 78g of lead (II) nitrate in 100g of water at 70°C is cooled to 35°C.

a) Which of the two salts will crystallize? **(1Mk)**

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b) Calculate the mass of crystals formed. **(1Mk)**

c) State the salt that will be unsaturated at 35°C **(1Mk)**

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d) How much of the salt in **c)** above would be required to make a saturated solution at 35°C? **(1Mk)**

11. Methane burns in oxygen as shown by the equation below.

$$\mathbf{CH_4\ (g) + 2O_2\ (g) \rightarrow CO_2\ (g) + 2H_2O\ (g)}$$

Given the following bond energies:

Bond	Bond Energy (kJ/mole)
C – H	413
O = O	497
C = O	740
O – H	463

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a) Calculate the heat change for the reaction. **(2Mks)**

b) Define molar heat of combustion. **(1Mk)**

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12. Given solid sodium carbonate, lead (II) nitrate crystals and water, explain how you can obtain a solid sample of lead (II) carbonate. **(3Mks)**

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13. Calculate the volume of oxygen produced when 10g of silver nitrate was completely decomposed by heating at s.t.p. (Ag = 108, N = 14, O = 16, MGV at s.t.p. = 22.4dm^3) **(3Mks)**

14. A solution of hydrogen chloride gas in water conducts an electrical current, while that of hydrogen chloride in methylbenzene does not conduct. Explain. **(2Mks)**

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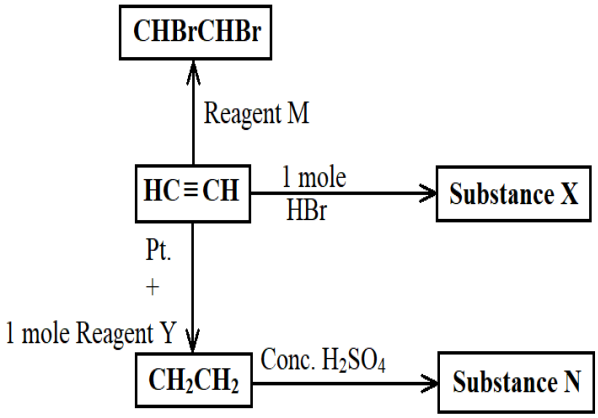
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15. The scheme below shows some reactions, starting with ethyne. Study it and answer the questions that follow.



a) Name substance

i) X _____ **(½Mk)**

ii) N _____ **(½Mk)**

iii) M _____ **(½Mk)**

b) Ethene undergoes polymerization to form a polymer. Give an equation for the reaction and name the product. **(1½Mks)**

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16. When 16g of ammonium nitrate was dissolved in 100cm^3 of water at 25^{o}C, the temperature of the solution drops to 19^{o}C.

a) Calculate the molar enthalpy of solution of ammonium nitrate **(3Mks)**

(N = 14, O = 16, H = 1, Specific Heat Capacity for Water = 4.2kJ/kg/k)

b) Is the enthalpy change endothermic or exothermic? Give a reason **(1Mk)**

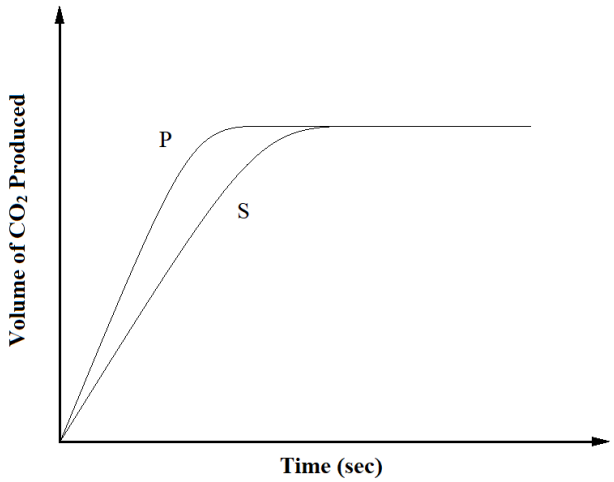
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17. The curves below represent the volume of carbon (IV) oxide gas evolved when 2M hydrochloric acid was reacted with 100g of powdered calcium carbonate and when 1M hydrochloric acid was reacted with the same quantity of calcium carbonate.



a) Which of the two curves represents the reaction of 2M concentrated hydrochloric acid? Explain. **(2Mks)**

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b) Why do the two curves flatten at the same level of production of CO_2? **(1Mk)**

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18. The electron arrangement of ions X^{3+} and Y^{2-} are **2.8**, and **2.8.8** respectively.

a) In which groups do **X** and **Y** belong? **(1Mk)**

X_____ **Y**_____

b) State the formula of the compound that would be formed between **X** and **Y** **(1Mk)**

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19.

a) State **two** ores from which sodium metal can be extracted. **(1Mk)**

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b) During the extraction, calcium chloride solid is added into the sodium chloride solid. Why is calcium chloride added to the sodium chloride? **(1Mk)**

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c) State **two** uses of sodium metal. **(2Mks)**

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20. Using and energy cycle diagram, calculate the enthalpy change of formation of carbon disulphide, given: **(3Mks)**

$S(s) + O_2(g) \rightarrow SO_2(g)$ **$\Delta H = -294kJ/mole$**

$CS_2(g) + 3O_2(g) \rightarrow CO_2(g) + 2SO_2(g)$ **$\Delta H = -1072kj/mole$**

$C(s) + O_2(g) \rightarrow CO_2(g)$ **$\Delta H = -393kJ/mole$**

21. The table below shows tests carried out in a sample of water and the results obtained.

Sample	Results	observations
A	Addition of sodium hydroxide dropwise until excess	Whit precipitate which dissolves in excess
B	Addition of excess ammonia solution	White precipitate
C	Addition of dilute nitric (V) acid followed by barium chloride	White precipitate

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a) Identify the **anion** present in the water sample **(1Mk)**

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b) Write an ionic equation for the reaction in **C** **(1Mk)**

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22. Use the following information to answer the questions that follow:

$Sn^{2+}(aq) + 2e^- \rightarrow Sn(s)$ $E^\theta = -0.14V$

$Cu^{2+}(aq) + 2e^- \rightarrow Cu(s)$ $E^\theta = +0.34V$

a) Write the cell representation for the cell made up of the two half cells **(1Mk)**

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b) Identify the reducing species **(1Mk)**

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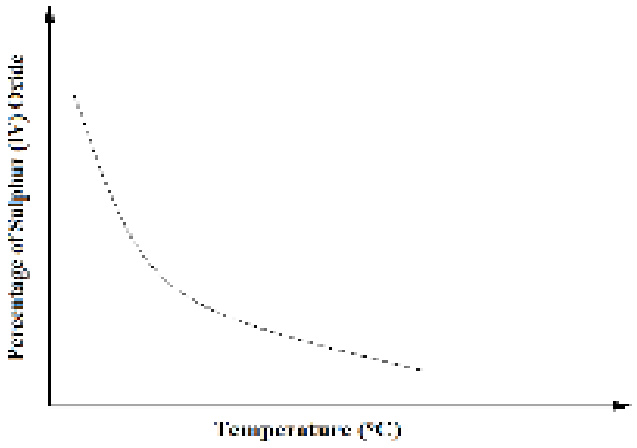
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c) Calculate the E^θ value for the cell **(1Mk)**

23. The following is a reaction of an equilibrium mixture:

$$2SO_2(g) + O_2(g) \rightleftharpoons 2SO_3(g)$$

The percentage of sulphur (VI) oxide in the equilibrium mixture varies with temperature as illustrated in the sketch graph below



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a) How does the percentage of sulphur (VI) oxide in the equilibrium mixture vary as the temperature increases? Explain. **(1½Mk)**

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b) Is the forward reaction in the equilibrium exothermic or endothermic? Give a reason for your answer. **(1½Mk)**

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24. Radioactive polonium (Po) with a mass number of 212 and atomic number of 84 was detected in a sample of water. The water had an activity of 1000 counts per second.

a) If the water is boiled, explain whether the activity would be affected or not. **(1Mk)**

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b) Given that polonium resulted from bitumen (B) following emission of a beta (β) particle, write a nuclear equation for the decay. **(1Mk)**

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c) State **one** medical application of radioactivity. **(1Mk)**

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25. Name and give the formula of:

a) The **chief ore** from which zinc is extracted **(1Mk)**

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b) The **main impurity** in the ore. **(1Mk)**

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c) The ore is concentrated by froth floatation. What is froth floatation? **(1Mk)**

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26. The atomic number of sulphur is 16. Write the electron arrangement of sulphur in the following compounds

a) H_2S _____ **(1Mk)**

b) SO_3^{2-} _____ **(1Mk)**

27. For the reaction: **Cl_2 (g) + $2I^-$ (aq) → $2Cl^-$ (aq) + I_2 (s)**

Using oxidation numbers, state and explain the reducing species. **(2Mks)**

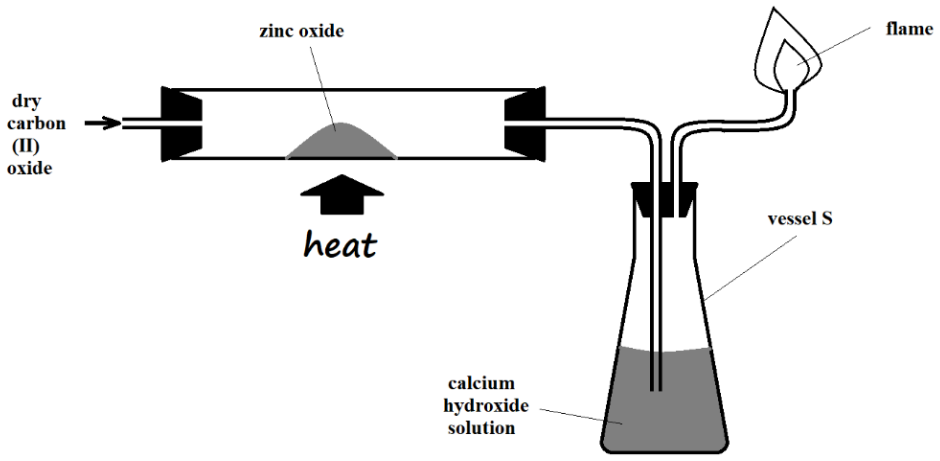
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28. The setup below was used to investigate the effect of carbon (II) oxide on zinc oxide.



a) State the observations made on the setup. **(2Mks)**

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b) Write equations for the reactions that took place. **(2Mks)**

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EXCELLING STUDENTS FORM FOUR MOCK SERIES ONE EXAMS

NAME: ……..……

SHOOOL: ……

ADM NO: ……..……. SIGN:……..… DATE: ……..……..

CHEMISTRY (233/2)

PAPER 2

FORM FOUR (4)

Time: 2 Hours

Instructions to candidates

(a) Write your name, stream, and admission number in the spaces provided above.

(b) Answer **ALL** the questions in the spaces provided, and working **MUST** be clearly shown

(c) This paper consists of **11 printed pages**; Candidates should check the question paper to ascertain that all the pages are printed as indicated, and that no question is missing.

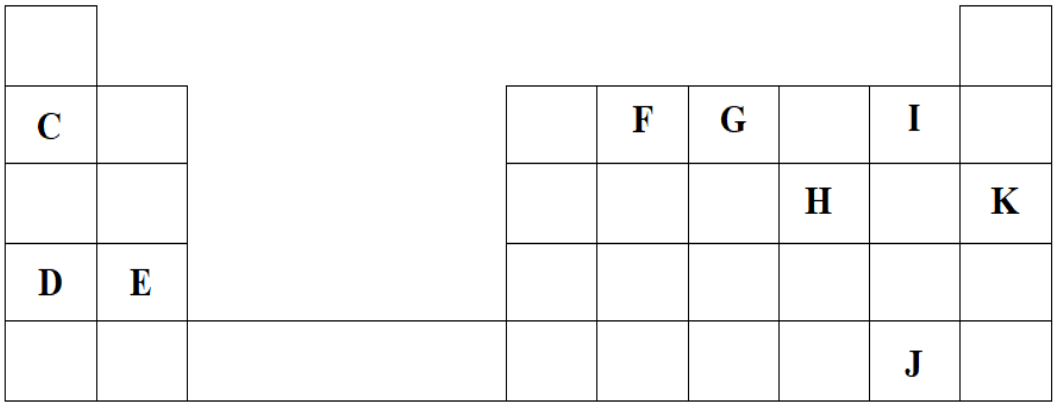
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QUESTION	MAXIMUM SCORE	CANDIDATE'S SCORE
1 – 6	**80**	

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1.

a) The grid below represents part of the periodic table. Study it and answer the questions that follow. The letters do not represent actual symbols of the elements



i) Identify the most reactive non-metal. Explain **(2Mks)**

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ii) What is the name given to the family of elements to which **I** and **J** belong? **(1Mk)**

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iii) Using dots (•) and crosses (×) to represent electrons, show bonding in the compound formed between **C** and **H**. **(2Mks)**

iv) How does the atomic radius of **F** compare with that of **I**? Explain. **(2Mks)**

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b) Study the table below and answer the questions that follow.

Substance	M	N	O	P	Q	R
Melting Point (^oC)	801	1356	-101	26	-39	113
Boiling Point (^oC)	1410	2850	-36	154	457	445
Electrical conductivity in solid state	Poor	Poor	Poor	Poor	Good	Poor
Electrical conductivity in molten state	Good	Poor	Poor	Poor	Good	Poor

i) Explain why **substance M** is a good conductor of electricity in the molten state but not in the solid state. **(2Mks)**

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ii) What is the most likely structure and bond in **substance N**? Explain. **(2Mks)**

Structure _____ Bond _____

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iii) Identify, with a reason, a substance that exists as a liquid at room temperature. **(2Mks)**

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2.

a)

i) What name is given to different forms of an element which exist in the same physical state? **(1Mk)**

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ii) Name **two** crystalline forms of carbon **(1Mk)**

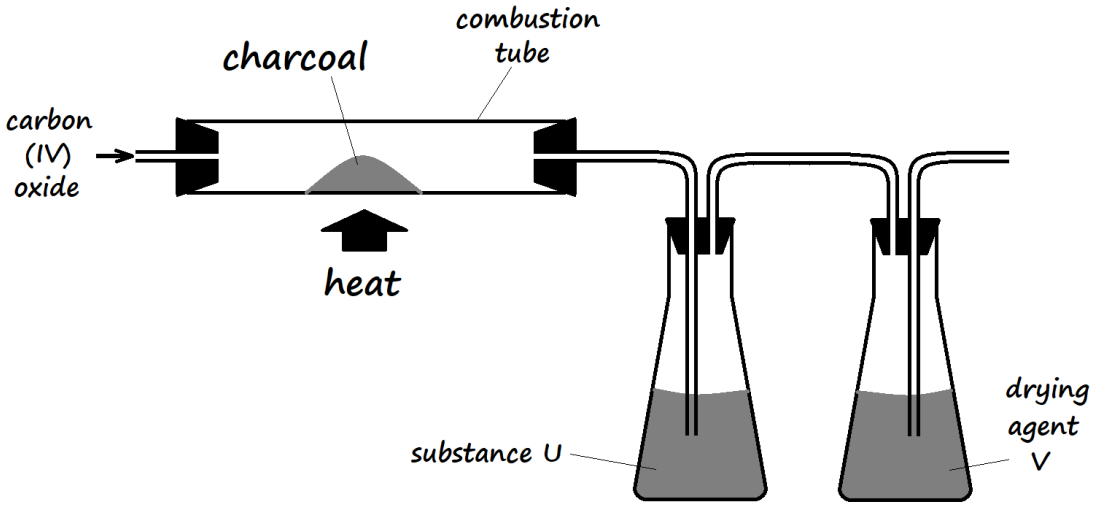
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b) The figure below is part of a setup used to prepare and collect dry carbon (II) oxide from carbon (IV) oxide.



i) Complete the diagram to show how dry carbon (II) oxide gas is collected. **(1Mk)**

ii) Identify:

- Substance **U** and state its use

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- Drying agent **Y**

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iii) Write a chemical equation for the reaction which takes place in the combustion tube **(1Mk)**

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iv) Carbon (II) oxide is a major environmental pollutant.

- Give **one** major source of carbon (II) oxide in the atmosphere **(1Mk)**

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- Explain how carbon (II) oxide causes poisoning **(1Mk)**

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c) State **one** use of carbon (II) oxide **(1Mk)**

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d) Write an equation for the formation of water gas. **(1Mk)**

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e) Explain why sodium hydroxide solution is not used in testing for carbon (IV) oxide gas, while calcium hydroxide is preferably used. **(2Mks)**

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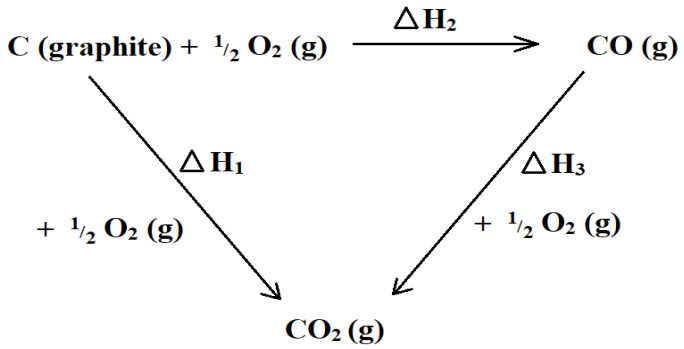
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3.

a) Study the following energy cycle diagram and then answer the questions that follow.



i) Name the enthalpy change represented by ΔH_2. **(1Mk)**

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ii) Use the following information to calculate the value of ΔH_1 for 144g of graphite. **(2Mks)**

ΔH_2 = -110 kJ/mole ΔH_3 = -283kJ/mole

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b) The following are thermochemical equations for molar enthalpies of combustion for some substances. Study them and answer the questions that follow.

$C_4H_{10}(g) + \frac{13}{2}O_2(g) \rightarrow 4CO_2(g) + 5H_2O$ $\quad \Delta H^{\theta}_c = -2877kJ/mole$

$C(s) + O_2(g) \rightarrow CO_2(g)$ $\quad \Delta H^{\theta}_c = -399kJ/mole$

$H_2(g) + \frac{1}{2}O_2(g) \rightarrow H_2O(l)$ $\quad \Delta H^{\theta}_c = -286kJ/mole$

i) What is molar enthalpy of combustion of a substance? **(1Mk)**

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ii) Calculate the molar enthalpy of formation of butane (C_4H_{10}) using the information given above. **(3Mks)**

c) The following results were obtained in an experiment, to determine the heat of neutralization of $25cm^3$ of 2M sodium hydroxide solution, using $25cm^3$ of hydrochloric acid:

Initial temperature of acid	= 25.0°C
Initial temperature of alkali	= 26.0°C
Final temperature of mixture of acid + alkali	= 38.5°C
Density of solution	$=1g/cm^3$
Specific heat capacity of solution	=4.2 J/g/K

i) Define molar heat of neutralization **(1Mk)**

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ii) Write an **ionic equation** for the neutralization reaction involving hydrochloric acid and sodium hydroxide solution. **(1Mk)**

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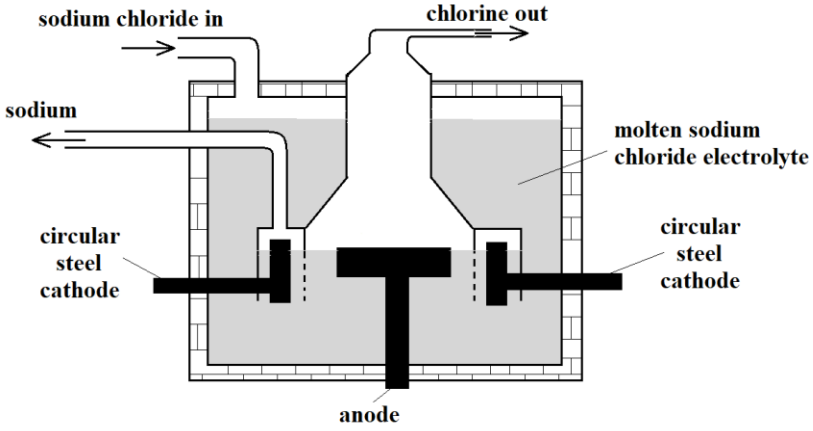
iii) Calculate:

- The enthalpy change during this experiment. **(2Mks)**

- The molar enthalpy of neutralization for this reaction **(2Mks)**

4.

a) Below is a simplified diagram of the Down's Cell, used for the manufacture of sodium. Study it and answer the questions that follow.



i)What material is the anode made of? Give the reason why that material is used. **(2Mks)**

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ii) What precaution is taken to prevent chlorine and sodium from re-combining? **(1Mk)**

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(iii) Write an ionic equation for the reaction in which chlorine gas is formed **(1Mk)**

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b) In the Downs process, (used for manufacture of sodium), a certain salt is added to lower the melting point of sodium chloride from about 800^{o}C to about 600^{o}C.

i)Name the salt that is added. **(1Mk)**

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ii) State why it is necessary to lower the temperature in **b)** above **(1Mk)**

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c) Explain why aqueous sodium chloride is not suitable as an electrolyte for the manufacture of sodium in the Down's Process. **(2Mks)**

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d) Sodium metal reacts with air to form two oxides. Give the formulae of the two oxides **(1Mk)**

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e) State **two** uses of sodium **(2Mks)**

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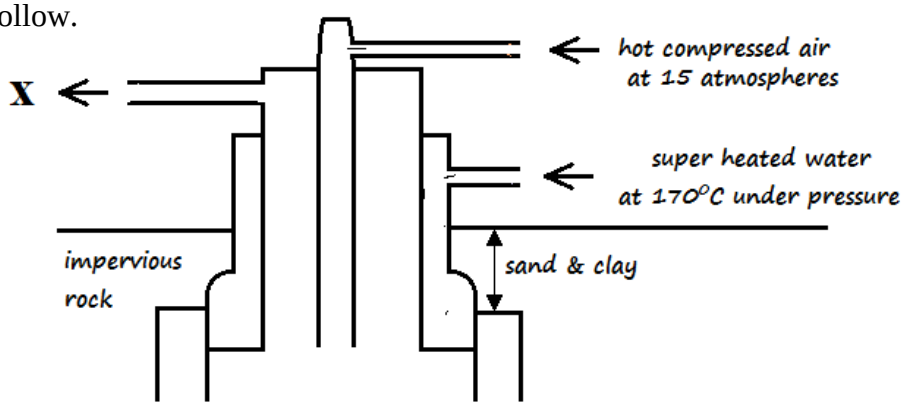
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5.

a) The diagram below shows part of the Frasch process, used for the extraction of sulphur. Use it to answer the questions that follow.



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i) Identify **X** _____ **(1Mk)**

ii) Why is it necessary to use superheated water and hot compressed air in this process? **(2Mks)**

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iii) State **two** physical properties of sulphur that makes it possible for it to be extracted by this method. **(2Mks)**

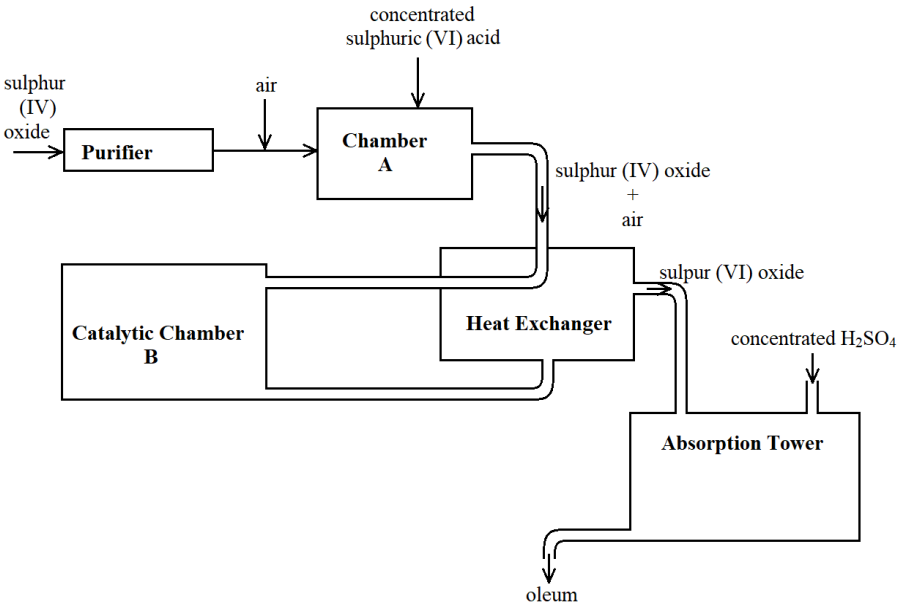
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b) The diagram below shows part of the process in the manufacture of sulphuric (VI) acid. Study it and use it to answer the questions that follow.



i) Give **two** reasons why air is referred to as a mixture **(2Mks)**

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ii) What is the role of concentrated sulphuric (VI) acid in **Chamber A**? **(1Mk)**

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iii) Name **two** catalysts that can be used in the Catalytic **Chamber B**. **(2Mks)**

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iv) State **two** roles of the heat exchanger **(2Mks)**

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v) Describe the test for sulphite anion, SO_3^{2-} **(2Mks)**

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vi) Explain the observation made when a few drops of concentrated sulphuric (VI) acid are added to crystals of hydrated copper (II) sulphate. Explain your answer. **(2Mks)**

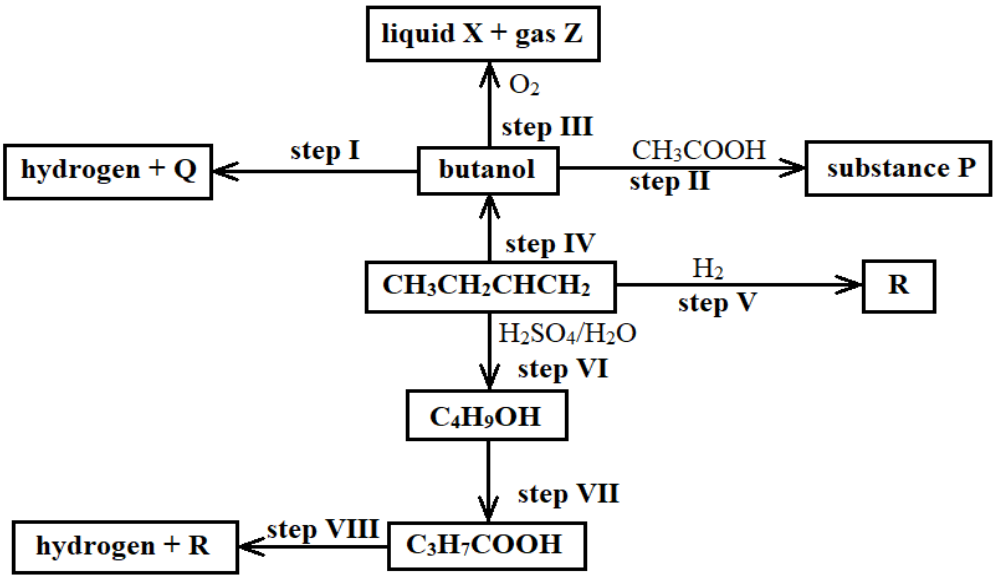
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6. Study the reaction scheme below and answer the questions the follow:



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i)What is the distinguishing physical property of **Substance P**? **(1Mk)**

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ii) Identify a suitable reagent that can be used in **Step I**. **(1Mk)**

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iii) Describe a chemical test on how **C_3H_7COOH** can be distinguished from **C_4H_9OH**. **(2Mks)**

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iv) Write an equation for the reaction that takes place in **Step III** **(1Mk)**

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v)Name the types of reaction that occur in steps **II**, **III**, **V**, and **VII** **(2Mks)**

II _____ **III** _____

V _____ **VII**_____

vi) If 7.4g of butanol completely underwent Step III, determine the volume of gas Z produced at s.t.p. (MGV = 22.4 litres, C = 12, H = 1, O = 16) **(3Mks)**

vii) Write an equation for the reaction between **R** and one mole of fluorine gas **(1Mk)**

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viii) Describe a chemical test for **liquid X** (2 Marks)

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EXCELLING STUDENTS FORM FOUR
MOCK SERIES ONE EXAMS

NAME: ……

SHOOOL: ……

ADM NO: …….…… SIGN:……..… DATE: ……..……..

CHEMISTRY (233/3)
PAPER 3
FORM FOUR (4)
Time: 2¼ Hours

Instruction to Candidates:

a) Write your name and class in the spaces provided on this page above

b) Sign and write the date of examination in the spaces on this page above.

c) Answer ALL the questions in the spaces provided after EACH question in the question-paper.

d) You are NOT allowed to start working with the apparatus for the first 15minutes of the 2¼ hours allowed for this paper. This time is to enable you read the question-paper and make sure you have ALL the chemicals and apparatus that you may need.

e) Mathematical tables and silent electronic calculator may be used.

f) ALL working MUST be clearly shown where necessary.

g) This paper consists of 9 printed pages.

h) Candidates should check the question-paper to ascertain that ALL the pages are printed as indicated and that no questions are missing.

Questions	Maximum Score	Candidate's Score
1	25	
2	15	
Total Score	40	

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QUESTION 1.

You are provided with:

- Sulphuric acid solution A
- 0.5M sodium hydroxide solution B
- Magnessium ribbon labelled C

You are required to:-

- Investigate the rate of reaction between solution A and metal C
- Determine the concentration of sulphuric acid in moles per litre

Procedure I

(i) Using a ruler, make 6 marks at 2cm length interval on the Magnesium ribbon provided. Cut the magnesium ribbon into 2 cm long pieces.

(ii) Transfer $50cm^3$ of acid solution using a measuring cylinder into a clean dry 100ml beaker. Place 2cm length piece of magnesium ribbon into the beaker with the acid and immediately start the stop watch/clock. Shake gently and note the time taken for the piece of magnesium ribbon to react completely.

(iii) Record in table I below. Place another piece of magnesium ribbon (2cm) to the same solution and again note the time taken.

(iv) Repeat the procedure until all six pieces of magnesium ribbon have reacted with the same solution initially placed in the beaker

(v) Complete the table I below:

Note: Keep the solution obtained in this experiment for use in procedure II

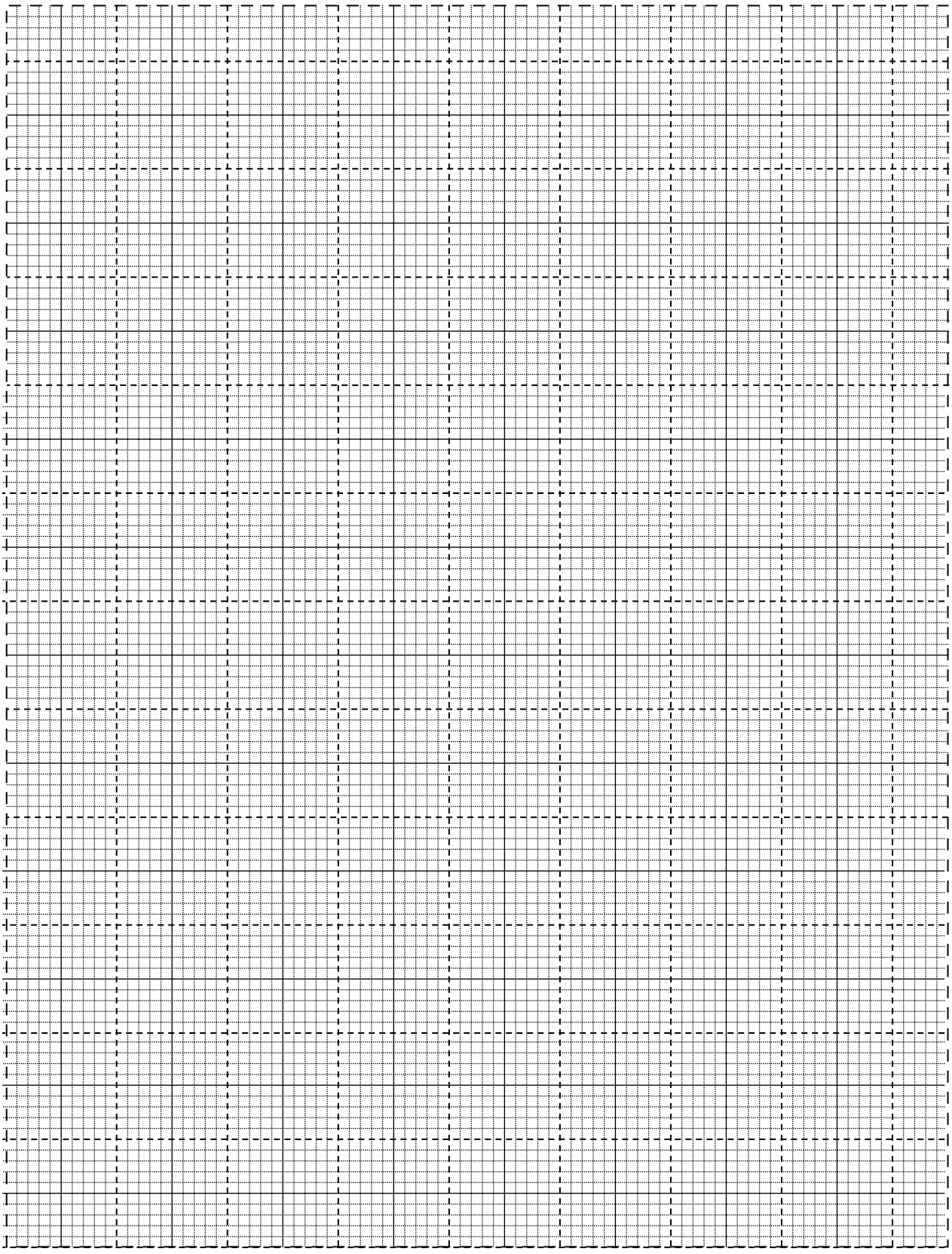
(a) Table I

Piece of magnesium added	1	2	3	4	5	6
Length of magnesium added (cm)	2	4	6	8	10	12
Time taken t(second)						
Reciprocal of time $^1/_{t^{(s-1)}}$						

(4mks)

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(b)(i) On the grid provided, plot a graph of total length of magnesium ribbon added against reciprocal of time ($^{1}/_{t}$) for the reaction to go to completion. **(3mks)**



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(ii) From your graph, determine the time taken when 4.5cm length of magnesium ribbon to react completely. **(1mk)**

(iii) Write a chemical equation for the reaction between magnesium and sulphuric acid. **(1mk)**

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(iv) Given that the mass of solid V, which reacted was 0.12g and that atomic mass of magnesium is 24.0g, determine the number of moles of sulphuric (VI) acid that were used up during the reaction. **(1mk)**

(v) From your graph, state and explain the relationship between the length of magnesium ribbon and the reciprocal of time ($^1/_t$) **(1mk)**

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Procedure II

Place all the solution obtained in procedure I in a clean 100ml measuring cylinder. Add distilled water to make 100cm^3 of solution. Transfer all the solution into a beaker and shake well. Label it solution D. Fill the burette with solution B. Pipette 25.0cm^3 of solution D into a conical flask. Add 2-3drops of phenolphthalein indicator and titrate with solution. Record your results in the table II below. Repeat the titration two more times

Table II

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

(4mks)

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(c) (i) Determine the average volume of solution B used . **(1mk)**

(ii) Calculate the number of moles of sodium hydroxide solution B used. **(1mk)**

(d) Calculate:

(i) The number of moles of sulphuric acid in 25.0cm^3 of solution D. **(1mk)**

(ii) The number of moles of sulphuric acid in 100cm^3 of solution D. **(1mk)**

(e) Determine the total number of moles of sulphuric acid in 50cm^3 of solution A. **(1mk)**

(f) Calculate the concentration of the original sulphuric acid solution A in moles per litre. **(1mk)**

QUESTION 2.

You are provided with solid E. Carry out the following tests and write your observations and inferences in the table below:

(a) Place all the solid E in a boiling tube. Add about 15cm^3 of distilled water and shake vigorously for about 2 minutes.

Observations	**Inferences**
(½mk)	**(1mk)**

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b) Divide the solution into five equal portions in five different clean test tubes.

(i) To the first portion, add 2M ammonia solution drop wise until in excess.

Observations	**Inferences**
(½mk)	**(1mk)**

ii) To the second portion add 2M Sodium hydroxide solution dropwise until in excess.

Observations	**Inferences**
(1mk)	**(1mk)**

iii) To the third portion add 4 drops of 2M Lead (II) nitrate solution.

Observations	**Inferences**
(1mk)	**(1mk)**

iv) To the fourth portion, add 4 drops of 0.2M silver nitrate solution.

Observations	**Inferences**
(1mk)	**(1mk)**

(v) Clean one end of the glass rod provided. Dip the clean end of the glass rod in the fifth portion. Remove the end and heat it in the non-luminous part of a Bunsen burner flame. Note the colour of the flame and record below.

Observations	**Inferences**
(1mk)	**(1mk)**

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QUESTION 3.

You are provided with solid F. Carry out the tests below. Write your observations and inferences in the spaces provided

(a) Place about a half of solid F on a metallic spatula and burn it using a Bunsen burner flame.

Observations	Inferences
(½ mk)	**(½mk)**

(b) Place the remaining of solid F in a boiling tube. Add about 10cm3of distilled water and shake the mixture well.

Observations	Inferences
(1mk)	**(1mk)**

(c) Divide the mixture obtained into three portions.

(i) To the first portion, add a small amount of solid sodium hydrogen carbonate.

Observations	Inferences
(1mk)	**(1mk)**

(ii) To the second portion, add about $1cm^3$ of acidified potassium dichromate (VI) and warm.

Observations	Inferences
(1mk)	**(1mk)**

(iii) To the third portion, add two drops of acidified potassium magnate (VII)

Observations	Inferences
(1mk)	**(1mk)**

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EXCELLING STUDENTS FORM FOUR MOCK SERIES ONE EXAMS

NAME: ……

SHOOOL: ……...

ADM NO: ……. SIGN:……..……..… DATE: ……..……..

COMPUTER STUDIES 451/1

FORM FOUR (4)

PAPER 1

THEORY

TIME 2 ½ Hours

INSTRUCTION TO CANDIDATES

- Write your name and index number in the spaces provided above
- This paper consists of **Two** sections **A** and **B**
- Answer **ALL** questions in section **A**
- Answer question16 and any other **THREE** questions from section **B**
- All answers should be written in the spaces provided on the question paper

FOR EXAMINER'S USE ONLY

SECTION	QUSTIONS	CANDIDATE'S SCORE
A	1 -15	
B	16	
	17	
	18	
	19	
	20	
	TOTAL SCORE	

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SECTION A (40 MARKS)
Answer ALL the questions in SECTION

1. State three functions of the control panel **(3mks)**

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2. Use the passage below to answer the questions that follows

ral literature is a broad term that includes: epics, folklore, proverbs, folksongs, oral poetry, jokes, myths, ritual chants, spells, legends, riddles, tongue-twisters, word games, recitations and word games. *Broadly it refers to any form of verbal art that is transmitted through word of* mouth.

Jane Nandwa and Austin Bukenya (1993) describe oral literature as:

"Those utterances whether spoken, recited or sung whose composition and ~~performance exhibit to an appreciable~~ degree the artistic character of accurate observation, vivid imagination and ingenious expression."

When used in a piece of writing, oral literature in its various genres creates the effect of livening up the story and giving it an identity besides other functions such as capturing the audience's attention and stressing important points. These effects of orature are portrayed vividly in Okot P' Bitek's novel "**White Teeth**."

(a) Mention three paragraph formatting features used in the passage above **(3mks)**

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(b) With an aid of examples describe three text formatting features applied in the above passage **(3mks)**

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3. As regards to communication within computer network, what do you understand by the following terms **(2mks)**

(i) Point –to-Point

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(ii) Broadcast

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4. Describe three components of video conferencing **(3mks)**

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5. With reference to Desktop publishing describe the following terms **(2mks)**

(i) Gutter

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(ii) Stroke

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6. Lindah does not understand why computers are said to be **Automatic** at the same time they have No Intelligent Quotient (**IQ**) **(2mks)**

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7. State the difference between private university and public university **(2mks)**

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8. Ronaldo a student from Lenana School lives in a house with full internet access. She spends most of her time on phone and Desktop computer. State any three social issues associated with doing this **(3mks)**

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9. Mention three factors to consider when choosing a file organization method **(3mks)**

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10. Give two reasons to justify why many computer users today prefer saving their documents in the google drive **(2mks)**

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11. Computerization and automation are the great innovations of the 21st century. Describe how introduction of computers in the work place affected the job market **(3mks)**

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12. Mention three characteristics of human beings that can be used to enable computerized law enforcement systems **(3mks)**

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13. Use illustrations to explain two ways of implementing FOR loop **(2mks)**

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14. Explain the function of the following as used in data security and control **(2mks)**

(i) Patches

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(ii) Firewall

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15. The office has a fast internet connection for transferring information. However sometimes the internet run slowly. Give two reasons why this could be the case. **(2mks)**

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SECTION B (60 MARKS)

Answer Question 16 (Compulsory) and Any other THREE in this Section

16.

(a) Describe the following qualities of an algorithm **(2mks)**

(i) Definiteness

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(ii) Finiteness

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(b) State three differences between Assembly language and Machine language **(3mks)**

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Study the Pseudo code below and use it to answer the question that follows

```
Start
    Input Initial Deposit
    Input Interest Rate
    Set Deposit to Initial Deposit
    Set Year to Zero
    While Year <=4 Do
    Interest =Deposit * Interest rate
    Total = Deposit +Interest
    Deposit =Total
    Year=Year+1
    Endwhile
        Display Total
Stop
```


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(i) Given that the Initial Deposit is 2000 and the Interest rate is 10% get the final total **(4mks)**

(ii)Draw a flowchart for the above algorithm using a Repeat.... Until **(6mks)**

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17.

(a) Study the table below and answer the questions that follow

	A	B	C	D	E	F	G
1	**Student Name**	**Math**	**English**	**Computer**	**Total**	**Average**	**Grade**
2	James Pesa	24	22	52			
3	Maureen Kamau	60	17	71			
4	James Jared	24	41	10			
5	Mary Anna	52	63	81			
6							

(i) Write down the formula that

(a) Calculate the total marks for Maureen Kamau **(2mks)**

(b) Calculate the total marks for students with more than 50 and above in Maths **(2mks)**

(c) Get the mean score for Computer **(2mks)**

(ii) The grading system is a shown in the table below .Write a function that will assign grades as reflected in the table below **(3mks)**

Average	Grade
80 - 90	A
70 - 80	B
60 -70	C
50 - 60	D
0 - 49	E

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(iii) Write a formula using named reference that counts the total number of students who have scored more than 50 in computer **(2mks)**

(b) Describe three features that make spreadsheet application suitable for mathematical applications **(3mks)**

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(c) A formula = B$2+$C2 was typed in cell C2 the copied to cell C3 and the finally to D3. State how the formula will appear in D3 **(1mk)**

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18.

(a) What is the binary equivalent of $24\frac{12}{32}$ base 10 **(3mks)**

(b) Convert 5BA2H to Binary **(3mks)**

(c) Using 8-bits twos complement subtract 19_{10} from 14_{10} **(3mks)**

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(d) Given that the left most digit is a sign bit work out the decimal equivalent of the following binary numbers

(i) 00111010110_2 **(2mks)**

(ii) 10100111010_2 **(2mks)**

(e) Describe two coding schemes used by computers to represent data in a computer **(2mks)**

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19.

(i) Study the tables shown below and use them to answer the questions that follow

Table 1

Admission No	Name	Guardian ID	Date of Birth	Class	Hall	County
0978	Peter Kilulu	P0023	12-12-1999	Form Three	Moi	Kiambu
4678	John James	P0045	07-08-1999	Form Two	Kenyatta	Muranga
6754	Luke Kenya	P0023	06-01-2000	Form One	Uhuru	Migori

Table 2

Guardian ID	Name	Address	Telephone	County
P0023	John Mayi	P.O Box 123 Kisumu	0723567453	Kisumu
P0045	Jerry Watu	P.O. Box 2341 Nairobi	0745897654	Nairobi

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(a) Choose the most appropriate key field for Table 1 and 2 **(2mks)**

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(b) Identify the most suitable data types Admission No and Date of Birth **(2mks)**

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(c) Describe how a relationship can established between Table 1 and 2 **(3mks)**

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(d)(i) Write an expression to validate Date of Birth to allow dates that following in the year 1999 only **(2mks)**

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(ii) Peter Kipasi is the system analyst for Finaly group of companies. The Company Management automated their operations to have a competitive advantage over other companied in the same field. Peter received a memo from the CEO requesting him to consider changing the current information system. State what might have necessitated this **(3mks)**

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(iii) State three qualities of a good system analyst **(3mks)**

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20.

(i) Mention four limitations of computer networking **(4mks)**

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(ii) Explain how fibre optic transmit data signal and yet the core can only allow light signals to pass through **(3mks)**

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(iii) State the function of the following Communication devices

(a) Router **(1mk)**

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(b) Switch **(1mk)**

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(c) Bridge **(1mk)**

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(d) NIC **(1mk)**

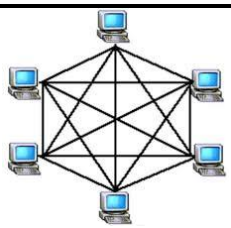
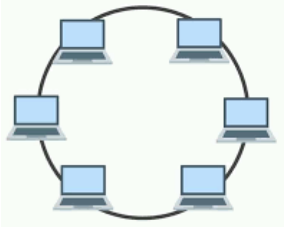
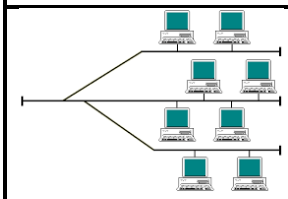
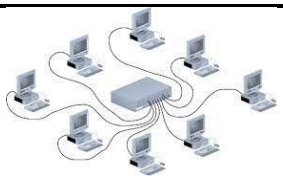
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(iv) Identity the Network topologies represented in the table **(4marks)**

Name:	Name:
	
Name:	Name:
	

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EXCELLING STUDENTS FORM FOUR
MOCK SERIES ONE EXAMS

NAME: ……

SHOOOL: ……..

ADM NO: ……. SIGN:……..… DATE: ……..……..

COMPUTER STUDIES 451/2

FORM FOUR (4)

PAPER 2

PRACTICAL

TIME 2 ½ Hours.

INSTRUCTIONS TO CANDIDATES

a) Indicate your **name** and **Index number** at the top right hand corner of each print out
b) Write your **Name**, and **Index Number** on the CD / Removable storage medium provided
c) Write the **name** and the **version** of each S/W used for each question attempted in the answer sheet provided.
d) Answer **all** the questions
e) All questions carry equal marks
f) Passwords **should not be used** while saving in the CD/Removable storage medium
g) All answers **must** be saved in the CD / Removable storage medium
h) Make a printout of answers on the answer sheet provided.
i) Arrange your printouts and tie/staple them together.
j) hand in all the **printout** and the CD/removable storage medium used
k) This paper consists of 5 printed pages
l) Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing

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1. Jumia sales and marketing company sells products J, K, L. The table below shows an extract of a spreadsheet for the company`s salespersons and their respective sales in shillings for each product.

	A	B	C	D	E	F	G	H
1	**SALES PERSON**	**PRODUCT J**	**PRODUCT K**	**PRODUCT L**	**TOTAL SALES**	**POINTS**	**CATEGORY**	**TOTAL PAY**
2	Thomas	4,000.00	6,230.00	7,500.00				
3	Mary	4,500.00	6700.00	8,000.00				
4	Cantona	5,678.00	10,000.00	7,800.00				
5	Janeth	3,200.00	4,000.00	9,600.00				
6	Maxwell	8,000.00	7,005.00	8,900.00				
7	Nambwa	9,800.00	9,670.00	10,000.00				
8	Kedeki	2,700.00	3,400.00	2,300.00				
9	**TOTAL**							

(a)i) Using a spreadsheet package enter the above information and save it as

SALES_TABLE. **(13mks)**

(b)(i) Type a formula:

I at cell B9 to compute the total sales for product J; **(1mk)**

II at cell E2 to compute the total sales for Thomas . **(1mk)**

(ii) Apply the formulae to the appropriate cells. **(2mks)**

(c)A Salesperson earns points for the sales of each product based on the following criteria;

- 1 point for every shs. 50 for product J,
- 2 points for every shs.65 for product K
- 3 points for every shs.40 for product L

(i) Type a formula in cell F2 to compute the total points earned by Thomas; **(3mks)**

(ii) Apply the formula in (c) (i) to the rest of the salespersons. **(1mk)**

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(d) A salesperson is categorized based on points earned as follows.

POINTS RANGE	CATEGORY
Over 1300	Gold
1101-1300	Silver
Up to 1100	Bronze

Those salespersons attaining a Gold category earn a promotion.

(i) Type a formula in G4 to determine Cantona's category. **(4mks)**

(ii) Apply the formula in (d) (i) to other appropriate cells. **(2mks)**

(iii) Type a formula at G10 to determine the number of Sales who will earn a promotion **(4mks)**

(e) Each salesperson earns a total pay of Shs 20,000 plus 2% commission of their total sales. Using absolute referencing, determine the total pay for each salesperson if the value 2 is entered in cell B12. **(5mks)**

(f) Create a bar chart showing product J and L sales person. Insert appropriate labels on the chart.

(g) Rename the worksheet containing the data as **SalesData** and the chart sheet as **SalesChart**. **(2mks)**

(h) Print the following: **(3mks)**

(i) **SalesData**;

(ii) **SalesData** showing the formulae;

(iii) **SalesChart**.

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Question 2

Witu Company is an organization that has employed several workers .In order for it to monitor the performance of its workers and the different duties assigned to its workers, the company needs a database to organize the information required.

(a) Create a database file and name it records 2016 **(2mks)**

(b) (i) Using the table below create the appropriate fields and split the data into two tables ,one for storing employees records and the other for storing employment records and give them appropriate names **(8mks)**

EMPLOYEE NO.	NAME	DEPARTMENT	MARITAL STATUS	SALARY	AGE	DEP CODE
2213	JOHN CLAY	TRANSPORT	MARRIED	8,000.00	35	D001
2214	ROSE JOHNS	CUSTOMER CARE	MARRIED	10,000.00	40	D002
2215	PETER ROGERS	HEALTH	MARRIED	50,000.00	45	D003
2216	JED OTIENO	FINANCE	SINGLE	20,000.00	25	D004
2217	VINCENT JED	TRANSPORT	SINGLE	8,000.00	20	D001
2218	ALLAN LIMO	HEALTH	SINGLE	4,000.00	22	D003
2219	PETER OLOO	HEALTH	MARRIED	80,000.00	35	D003
2220	HUSSEIN KIMAN	FINANCE	SINGLE	15,000.00	26	D004
2221	ROBERT KIBANI	FINANCE	SINGLE	5,000.00	28	D004
2222	JANE LESSOS	TRANSPORT	MARRIED	6,000.00	31	D001
2223	LUCY OJWANG	CUSTOMER CARE	MARRIED	8,000.00	30	D002

(ii) Create screens for each table for inputting the data in the table above **(12mk)**

(iii) For each of the tables, choose the most appropriate primary key **(2mks)**

(iv) Create a relationship between the two tables **(2mks)**

(c.) Create a query to display the files Name, Department and Salary for those employees who earn more than 10,000.00.Save as experts **(5mks)**

(d)

(i) Generate a tabular report with landscape orientation from the table to display the fields in the following order **(5mks)**

EMPLOYEE NO., NAME, SALARY, DEPARTMENT, AGE

(ii) Sort records in the report in alphabetical of the name field **(2mks)**

(iii) Compute the total of salary for all the employees and place it below the salary column. Save as **Expenses** **(5mks)**

(iv) Create a query to display Name, Marital Status, Age and the workers years of birth and save it as YOB **(5mks)**

(e) Print the two **tables, experts, expenses** and **YOB** **(2mks)**

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EXCELLING STUDENTS FORM FOUR MOCK SERIES ONE EXAMS

NAME: …….

SHOOOL: …….

ADM NO: ……..…. SIGN:……..……..… DATE: ……..

CHRISTIAN RELIGIOUS EDUCATION (QUESTION PAPER)

FORM FOUR (4)

TIME 2 HOURS

PAPER 1

INSTRUCTIONS TO CANDIDATES:

1) Write your name and index number in the spaces provided above.

2) This paper consists of **SIX** questions.

3) Answer any five questions on the foolscaps provided.

4) Each question carries 20 marks.

For Examiner's Use Only

Questions	1	2	3	4	5	6	TOTAL
Score							

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1a) Explain why the Bible is referred to as the word of God. **(6mks)**

b) State seven reasons for translating the Bible into local languages **(7mks)**

c) Show how the study of CRE has promotes morality in the society **(8mks)**

2. a) Describe the call of Moses in Exodus 3:1-22 **(8mks)**

b) What precaution were made by the Israelites to celebrate the passover feast ? Exodus 12 :1-3 **(7mks)**

c) In what ways does God show mercy to Christians today **(5mks)**

3 a) Give reasons why Elijah was forced to escape from Israel. **(7mks)**

b) Explain the main features of Canaanite Religion **(7mks)**

c)What can Christians learn from the happenings at the Mt. Carmel contest about the, nature of God. **(6mks)**

4 a) Give reasons why God called prophets in Israel **(5mks)**

b) Describe the Day of the Lord as it was taught by prophet Amos **(Amos 8:7-13)** **(8mks)**

c) Identify the roles played by prophets in traditional African Society. **(7mks)**

5a) Give reasons why Jeremiah wrote the letter to the Exiles in Babylon. **(7mks)**

b) State the teachings of Jeremiah on judgement and punishment. **(7mks)**

c) What is the relevance of the suffering and lamentation of Jeremiah to Christians? **(8mks)**

6a) How was the problem of sickness solved in traditional African society. **(7mks)**

b) Give six moral values expected of initiates in African traditional society **(6mks)**

c) Outline the changing attitude to birth and naming in society today. **(6mks)**

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EXCELLING STUDENTS FORM FOUR MOCK SERIES ONE EXAMS

NAME: ……..…

SHOOOL: ……..……

ADM NO: ……..…. SIGN:……..……..… DATE: ……..……..

CHRISTIAN RELIGIOUS EDUCATION (QUESTION PAPER)

FORM FOUR (4)

TIME 2 HOURS
PAPER 2

INSTRUCTIONS TO CANDIDATES:

1) Write your name and index number in the spaces provided above.

2) This paper consists of **SIX** questions.

3) Answer any five questions on the foolscaps provided.

4) Each question carries 20 marks.

For Examiner's Use Only

Questions	1	2	3	4	5	6	TOTAL
Score							

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1a) With reference to the incident when Jesus was dedicated to God , outline seven revelation of Simeon and Annah about His life. **(7mks)**

b) List seven Jewish ceremonies in which Jesus was involved. **(7mks)**

c) State the rituals performed during the birth of a baby in African society. **(6mks)**

2 a) Describe the incident when Jesus was rejected at Nazareth. Lk. 4: 16-30 **(7mks)**

b) State the teaching of Jesus on the healing of Gerasene Demoniac **(6mks)**

c) Identify six characteristics of a true follower of Jesus **(6mks)**

3a) Explain four areas of conflict between Jesus and the Jewish religious leaders in His Jerusalem ministry

b) State how Judas Iscariot betrayed Jesus. **(6mks)**

c) Identify six ways in which the church continues with the healing ministry of Jesus **(6mks)**

4 a) Explain what the teachings of Jesus about the Vine and the branches reveal about the unity of believers (John 15: 1-10) **(8mks)**

b) Mention six leadership qualities demonstrated by Peter on the day of Pentecost **(6mks)**

c) What role do women play in the church today . **(6mks)**

5 a) Identify six roles of parents in a Christian family **(6mks)**

b) Explain biblical teachings on celibacy as an alternative to marriage. **(7mks)**

c) Why are Christians opposed to child labour. **(7mks)**

6 a) Explain how unfair distribution of wealth can lead to social disorder in Kenya today. **(7mks)**

b) Give possible remedies to the problem of ethnicity in Kenya. **(7mks)**

c) State six ways in which Christens can put their wealth in good use **(6mks)**

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EXCELLING STUDENTS FORM FOUR
MOCK SERIES ONE EXAMS

NAME: ……

SHOOOL: ……..…

ADM NO: ……. SIGN: ……..… DATE: ……..

ENGLISH (101/1)
PAPER 1
FORM FOUR (4)
Time: 2 hours

Instructions to candidates:
a) Write your name, school and index number in the spaces provided.
b) Sign and write the date of exam in the spaces provided.
c) Answer **all** the questions in this paper.
d) All your answers must be written in the spaces provided.

For Examiner's Use Only:

SN	Question	Maximum Score	Candidate's Score
1	Functional Writing	20	
2	Cloze Test	10	
3	Oral Skills	30	
	Total Score	60	

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1. FUNCTIONAL WRITING 20MARKS

a) Imagine you are Mrs. Linde, and you have learnt that Torvald, your friend's husband has been appointed as the manager of a bank. Write a congratulatory note to Torvald **(10mks)**

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b) In the above regard, you intend to invite them and prepare your favorite meal. Write a recipe. **(10mks)**

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2. CLOZE TEST 10MARKS

2. *Read the passage below and fill in each blank space with the most appropriate word.* **(10mks)**

Curriculum reform in education is a worldwide-practiced phenomenon that is involved in striving for the **(i)……**educational practices, primarily with the demands of the twenty-first-century knowledge economy. African **(ii)……**immediately after independence had to inherit the colonial education system, which **(iii)……** discriminative and which demanded realignment to societal and cultural demands of the nation. Coincidentally curriculum **(iv)…….** in most African nations adopted the content or knowledge-based approach. Not long, the Knowledge-based curriculum dissatisfied most countries for its products were too academic, but lacking skills and knowledge **(v) ……** the applicability as required by the demands from the workplace. Kenya and Tanzania adopted a curriculum with the philosophy of education for self-reliance; **(vi)…….....** due to the inadequately trained teachers and insufficient resources, it ended up being **(vii)……** examinable and losing its goal. That **(viii)……**to unemployment, increased vices, and rampant dropouts, among other factors. Currently, due to technological advancement, most countries have opted **(ix)…….** a competency-based curriculum (CBC), which appears as worldwide trends in offering skills that match with the requirements of companies' employers. **(x)……**question shall be: does the job market currently determine the curriculum reforms in education?

3. Oral Skills 30MARKS

A. Read the following poem carefully and answer the questions that follow.

BALLAD OF THE LANDLORD

Landlord, Landlord
My roof has sprung a leak
Don't you remember I told you about it Way last week ?

Landlord, Landlord
These steps is broken down
When you come up yourself
It's a wonder you don't fall down

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Ten bucks you say I owe you ?
Ten bucks you say is due ?
Well, that's ten bucks more n I'll pay you
Till you fix this house up new

What? You gonna get eviction orders
You gonna cut off my heat ?
You gonna take my furniture and
Throw it in the street

Um-huh! You think high and mighty
Talk on- till you get through
You ain't gonna be able to say a word
If I land my fist on you

Police! Police
Come and get this man
He's trying to ruin the government
And overturn the land!

Copper's whistle
Patrol bell
Arrest
Precinct station
Iron cell
Headlines in press

a) List all the pair of rhyming words. **(3mks)**

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b) How does the punctuation in the fifth stanza influence your reading of the poem? **(3mks)**

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c) How would you say the last two lines in the fourth stanza? **(3mks)**

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B. You have been invited as a guest speaker to give a talk on discipline of students. At the end of the speech the students comment that it was well delivered. Suggest reasons why they commented so. **(6mks)**

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C. Imagine that one of your classmates has disappeared mysteriously. You decide to report the matter to the police. What three important details must you include in your oral report. **(3mks)**

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D. Identify the odd one out from the following groups of words according to the pronunciation of the underlined words. **(3mks)**

(i) Respect religion, referee .....

(ii) Keys advise books .....

(iii) Visual pleasure, passion .....

E. Jane has been invited by her friend to attend a birthday party at her home. She goes to the father to ask for permission to attend the party. However, her father turns down her request. Identify the possible weaknesses in her negotiation skills that could have contributed to this. **(3mks)**

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F. After you deliver your points during the **debate**, everyone claps for you. How could you have delivered your points to earn their applause? **(2mks)**

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G. You are the Chairperson of a panel that is set to carry out an important interview.

(i) Explain briefly what you would do in preparation for this important occasion. **(2mks)**

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(ii) What would you do during the interview to ensure you get enough information to enable you to make the right decision? **(2mks)**

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EXCELLING STUDENTS FORM FOUR MOCK SERIES ONE EXAMS

NAME: ……

SHOOOL: ……

ADM NO: ……. SIGN: ……..… DATE: ……..

ENGLISH (101/2)

PAPER 2

FORM FOUR (4)

Time: 2 ½ hours

INSTRUCTIONS TO CANDIDATES

- The exam has ***FOUR sections***.
- All the sections are ***compulsory.***
- Write your answers in space provided.
- The exam carries ***80 marks.***

FOR EXAMINER'S USE ONLY

S/NO	SECTION	MAXIMUM MARKS	STUDENTS SCORE
1	COMPREHENSION PASSAGE	20	
2	EXCERPT	25	
3	ORAL NARRATIVE	20	
4	GRAMMAR	15	
Grand Total		80 marks	

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1. COMPREHENSION **20 marks**

Read the passage below and then answer the questions that follow.

The insect is not a blind **automation**. There is a ray of conscious thought running through its whole life. This view will meet opposition: to some people, the insect is a machine without emotion; to others, it is just a shade over the mechanical, process of something called `discernment,' but without the slightest gleam of reason.

Ants, however, show great intelligence as excavators. The ordinary plan of excavation is for ants to carry out earth and throw it outside the nest. There is nothing particular to note about it; all the ants engaged at the task behave in the same way. But one day I noticed a deviation. Some ants had made a nest on the side of a bank. The ejected earth ran down from it in a shoot, like a landslide on the face of a hill. The shoot was very steep and crumbling, and as each ant carried out its load it slipped on the loose material and tumbled down to the bottom of the slope. The ants, however, refused to be defeated. After some days of slipping and falling they managed to devise an ingenious plan for **surmounting** the serious difficulty. They assigned to one particular ant the duty of consolidating and hardening the ground. This ant set about collecting pebbles which it found near the base of the shoot. These pebbles it carried up the shoot and then spread them out in the form of a platform at the very top; just outside the mouth of the nest.

This was tremendous labour for one ant. The carrying of the pebbles up the slippery slope was a task that lasted several days. It required the entire labourer's strength, and caused it innumerable falls. It was interesting to see selection at work. The ant never took the first pebble that offered. Several were examined, picked up and tested, until one was found that fitted the job. Moreover, it did not place its pebbles in a haphazard way: it carefully found a suitable spot for fitting of each load. The final result was a platform of pebbles on which the excavators walked easily, and no more of them fell down the slope.

Can we deny intelligence to this? Is this the action of automation, a thing that works blindly like a machine? No. intelligence runs all through the act. There is divergence from the accustomed habits; there is choice in the selection of pebbles; there is design in the making of the platform; there is the end in view, and one very much to the advantage of the ants. It was not instinct but reason at work.

I can no more deny intelligence to this ant than I can to a man who builds a **parapet** to prevent people from tumbling down a hill.

QUESTIONS

(a) Why does the writer believe that the insect is not a blind automation? **(2mks)**

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(b) Identify and illustrate the figure of speech used in the second paragraph. **(2mks)**

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(c) How did the ants overcome the problem of tumbling down the slope? **(2mks)**

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(d) State how this problem was solved. **(3mks)**

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(e) Make **notes** on the procedure followed by the particular ant in making the platform. **(6mks)**

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(f) Why was there a divergence from accustomed actions of the ant? **(2mks)**

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(g) Explain the meaning of the following as used in the passage. **(3mks)**

(i) Automation

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(ii) Surmounting

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(iii) Parapet

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2. EXCERPT **25 MARKS**

Read the following extract from the play "The Samaritan" by John Lara and then answer the questions after. *(25 marks)*

Mossi:(Turning to Bembe) Oh, yes. And remember to get your undercover officers to shoot in the air now and then. You know... they must know that I leave thunder and smoke in my wake!

Bembe: Consider that done. But the land? Are you sure about it?

Mossi: Consider it done, too. (After some interval of silence) So those are two problems solved; your hotel and tomorrow's vote of no confidence meeting. But we still need to figure out how to deal with The Samaritan.

Mossi:I liked the idea of talking to that teacher at Sagrada Secondary School.

Harvester: Yes, it would be good if we secured an understanding that she will edit or filter some of the information coming out about us.

Mossi;That would solve the whole problem! Very well, I will go there first thing tomorrow morning and talk to her.

Harvester: You never know, she might oblige.

Mossi: But I seriously doubt she will. She struck me as a very difficult person, an enemy of the progress of our Municipality.

Bembe: Let's just try. If she doesn't yield, I will visit her. I have a way of making people switch **allegiances.**

Mossi:I doubt it is advisable for you to go there. You might make things worse. You know sometimes when I think about your approach to problems, I am reminded of what they call the law of the instrument.

Bembe: What is it about?

Mossi: That if all you have is the hammer, you tend to think of every problem as a nail.

Bembe: In times such as these, every instrument must be put to good use. In fact, I have been thinking that we should accuse her of some crime, like stealing school furniture or let's say, a computer, or even a generator and then pin it on her! Then we can tell the judge to put her in!

Harvester: I don't think that will work. Certainly the judge will no**t oblige.**

Mossi:I think so too. (There is silence. Mossi scratches his head thoughtfully) I think our next step will be to talk to the Judge. If he can imprison Ramdaye and his team, we will have killed two hirds with one store: we will have **aborted.**The no confidence vote and we will have responded to the people's demand for imprisonment of corrupt leaders! I will talk to him.

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QUESTIONS

(a) Place this excerpt in its immediate context. **(4 marks)**

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(b) What two character traits of Inspector Bembe and one of Mayor Mossi come out in the excerpt?

(4mks)

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(c) (i) Certainly the judge will not oblige. **(Rewrite adding a question tag)** **(1mk)**

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(ii) Yes, in fact, we will get someone to steal the school generator and then pin it on her. **(Rewrite in the reported speech)** **(1mk)**

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(iii) But we still need to figure out how to deal with The Samaritan. *(Rewrite replacing phrasal verb in bold with one word)* **(1mk)**

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(iv) If she doesn't yield, I will visit her. (Rewrite replacing "if" with "unless") **(1mk)**

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(d) Identify two features of style used in the excerpt. **(4mks)**

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(e) Discuss two themes raised in the excerpt**.** **(4mks)**

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f) ***Explain*** the meanings of following words used in the excerpt. **(4mks)**

- Filter-

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- Allegiance's

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- Oblige

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- Aborted

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ORAL NARRATIVE **(20mks)**

Read the narrative below and answer the questions that follow.

One day on a farm, cat took out her walking stick and started to walk laboriously along the road, leaning heavily on her stick. Hen, who was pecking at the ground nearby, looked up and said, "Aunty Aunty, where are you going?"
The cat said, "I am off to the holy city to give my annual offering". Hen said, "May I come with you? I will accompany you on your long journey and at the same time perform my pilgrimage as well". Cat replied "If you must, there is no stopping you". So both of them started moving further on the road. Then they met Duck. Duck said, "Aunty, where are you going?"
Cat replied, "Come if you must," Duck joined them.
A little ahead they met Mouse. Mouse asked, "Aunty where are you going?" Cat replied, "I am going to the holy city," Mouse asked, "May I come along with you?"Cat said, "If you want to dear." They walked along the road for some time then cat said, "Oh my old bones, now they ache ohoo." The three stopped and offered to rest along with her. Cat said, "Hen may wait with me if she likes, the two of you go on ahead. We will catch up with you." The cat pounced on the Hen and ate her up.
After a few hours, Cat caught up with Duck and Mouse. When they enquired about Hen, Cat said, "Oh, she had forgotten her offering at home and has gone back for it," And they walked on.
The next day Cat began to groan again, and this time asked Duck to stay with her. Mouse went on ahead. When Cat caught up with Mouse she said Duck has forgotten her offering as well.
At this Mouse got suspicious for if Duck forgotten her offering as well she would have turned back with Hen. Meanwhile, Cat thought: "Now it is the turn of Mouse, what a delicacy! The taste will linger for a long time in my mouth."
Then she said to the Mouse, "Mouse let us stop for a rest." After a while she said, "It is long since I played catch and catch with anyone. Why don't I fulfill this desire for who knows how long I have to live?"
Mouse began to play; he ran here and there; soon he realized that Cat was out to get him so he quickly darted into a hole in the ground. Now cat know she could not get Mouse so she said, "Mouse, Mouse, come out. I want to tell you a story," Craftily Mouse replied, "You tell the story and I will listen to it in here."
So, you see whenever Mouse sees Cat, he runs quickly to hide for he knows that Cat is after him. He has not forgotten the uncompleted journey to the holy city.

(a) Giving a reason, classify this narrative. **(2mks)**

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(b) What features of oral narratives are evident in this story? Explain any 4. **(4mks)**

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(c) Briefly explain any two character traits of the Cat in this story. **(4mks)**

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(d) What two lessons do we learn from the story? **(4mks)**

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(e) Why do you think the Duck did not complete the journey? **(2mks)**

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(f) What does the story reveal about the community from which the story was taken? **(2mks)**

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(g) Explain the two problems you could encounter when collecting this type of oral genre. **(2mks)**

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4. GRAMMAR (15mks)

1. Rewrite the following sentences according to the instructions given. (3marks)

i. John never reported late to work last year. (Beginning with "Not once")

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ii. If I had not missed the train last night, I _____(give) my first lecture now. (use the correct tense of the verb in brackets)

iii. As soon ass the man left, they started talking. (rewrite using No sooner…)

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2. Fill in the blank with the suitable prepositions. (2mks)

i. The thief who snatched my bag walked _____ a limp.

ii. Liverpool won because the spectators cheered them _____

3. Rewrite the following sentences inserting appropriate question tags. 2 marks

a. It is cold.

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b. They haven't come.

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4. Rewrite the underlined phrasal verbs with appropriate verbs in each sentence. (2mks)

a. The students' performance did not measure up to the expected standards.

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b. After the disagreement, he walked out on her family.

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5. Fill in each blank space with the correct form of the word in brackets. (3mks)

i. It is easy to spell a word from his _____(pronounce)

ii. Do not wait for the train, it comes to this town very_____(regular)

iii. The hunt for the criminals has been _____ (intense)

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6. Rewrite the following sentences punctuating them appropriately. (3marks)

a. Definitely said Liam I will finish the novel next month.

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b. Do you take meals daily asked mutual.

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c. if you need anything the lady said call my number.

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EXCELLING STUDENTS FORM FOUR MOCK SERIES ONE EXAMS

NAME: ……

SHOOOL: ……

ADM NO: ……. SIGN: ……..… DATE: ……..

ENGLISH
FORM 4
ENGLISH
PAPER 3
TIME: 2 ½ HOURS

INSTRUCTIONS TO THE CANDIDATES

Answer three questions only

- ***Questions one and two are compulsory.***
- In question three choose only one of the optional texts, for which you have been prepared.
- Where a candidate presents work on more than one optional text, only the first to appear will be marked
- Each of your essay must not exceed 450 words
- This paper consists of 2 printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.

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Imaginative Composition (COMPULSORY) **(20mks)**

Either

a) Write a composition that has the following words: *friends, police, court, jail.*

Or

b) Write a composition on the following statement: "Technological advancement has impacted negatively on the society, especially the youth."

1. Compulsory text Compulsory text "Fathers of Nations by Paul B. Vitta" **(20mks)**

"Despite the obvious human weaknesses, Abiola is an adorable man." Making close reference to the novel, Fathers of Nations by Paul B. Vitta, write a composition to validate this statement.

2. Optional texts

a) **The Novel**: Kazuo Ishuguro, **an Artist of the Floating World.** **(20mks)**

War is a social evil that should be avoided at all costs owing to its adverse consequences. Validate the statement referring to Kazuo Ishuguro's novel ***An Artist of the Floating World.***

or

(b) The Short Stories Godwin Shiundu, 'A silent Song and other stories' **(20mks)**

In a society today, some people who have power end up abusing it " Drawing illustration's from Naquib Mahfouz ***A man of Awesome Powers***, justify the above statement.

or

c) Parliament of owls by Adipo Sidang' **(20mks)**

Discuss how Adipo Sidang' has addressed oppression in the play 'Parliament of Owls'.

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EXCELLING STUDENTS FORM FOUR MOCK SERIES ONE EXAMS

NAME: ……

SHOOOL: ……

ADM NO: ……. SIGN: ……..… DATE: ……..

GEOGRAPHY (QUESTION PAPER)

FORM 4

TIME 2¾ HOURS
PAPER 1

Instructions to candidates

(a) Write your name, admission number and class in the spaces provided above.

*(b) This paper has **two** sections: **A** and **B***

*(c) Answer **all** the questions in section **A***

*(d) Answer **question 6** and any other **two** questions from section **B***

(e) This paper consists of 14 printed pages.

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

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Section	Questions	Maximum Score	Candidate's Score
A	1 – 5	25	
B	6	25	
		25	
		25	
	Total Score	100	

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SECTION A

*Answer **all** questions in this section*

1. (a) Define the term equinox. **(2mks)**

(b) If the local time at 75^0W is 8.00 a.m., what is the local at the longitude 35^0E? **(3mks)**

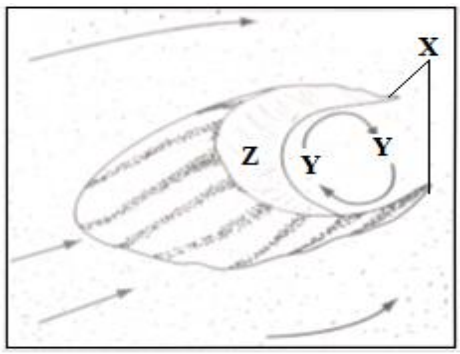
2. (a) Give **two** examples of non-metallic minerals. **(2mks)**

(b) State **three** ways through which sedimentary rocks are formed. **(3mks)**

3. (a) What is natural vegetation? **(2mks)**

(b) State **three** characteristics of Mediterranean type of vegetation. **(3mks)**

4. The diagram below shows a barchan. Use it to answer question (a).



(a) Name **(i)** the feature marked **X**. **(1mk)**

(ii) the air current marked **Y**. **(1mk)**

(iii) the slope marked **Z**. **(1mk)**

(b) Give **two** ways in which wind transport its load in deserts. **(2mks)**

5. (a) Differentiate between a catchment area and a watershed. **(2mks)**

(b) Give **three** features that result from river rejuvenation. **(3mks)**

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SECTION B

*Answer **question 6** and any other **two** questions from this section*

6. Study the map of KIJABE 1:50,000 (134/3) provided to answer the following questions.

(a) (i) What is the approximate height of Kijabe hill? **(1mk)**

(ii) Give the six grid reference of the school at Mai Mahiu in the southern area. **(2mks)**

(iii) Calculate the area covered by the thicket to the west of the rail way line. **(2mks)**

(b) (i) What is the approximate location of Kijabe Railway Station in terms of latitude and longitude? **(2mks)**

(ii) Identify **three** methods used to represent relief on the area covered by the map. **(3mks)**

(c) Draw a rectangle measuring 10cm by 5cm to represent the area enclosed by easting 30 and 40 and Northing 95 and 00. **(1mk)**

On it mark and name the following features:

- Railway **(1mk)**
- All weather road bound surface **(1mk)**
- Forest **(1mk)**
- Murrum pit **(1mk)**

(d) Citing evidence from the map, identify **two** economic functions of Kijabe centre. **(4mks)**

(e) Explain **three** factors influencing the distribution of vegetation in the area covered by the map. **(6mks)**

7. (a) (i) What is plate tectonics? (2 marks)

(ii) Explain **three** evidences supporting the continental drift theory. (6 marks)

(b) (i) Apart from fold mountains, give **three** other features resulting from folding. (3 marks)

(ii) With the aid of well labeled diagrams, describe how movement of tectonic plates may lead to formation of fold mountains. (8 marks)

(c) Explain **three** positive significance of fold mountains to human activities. (6 marks)

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8. (a) (i) Define the term climate. **(2mks)**

(ii) Explain how the following factors influence the climate of an area.

- latitude **(2mks)**
- distance from the sea **(2mks)**

(b) The table below shows temperature readings at a weather station.

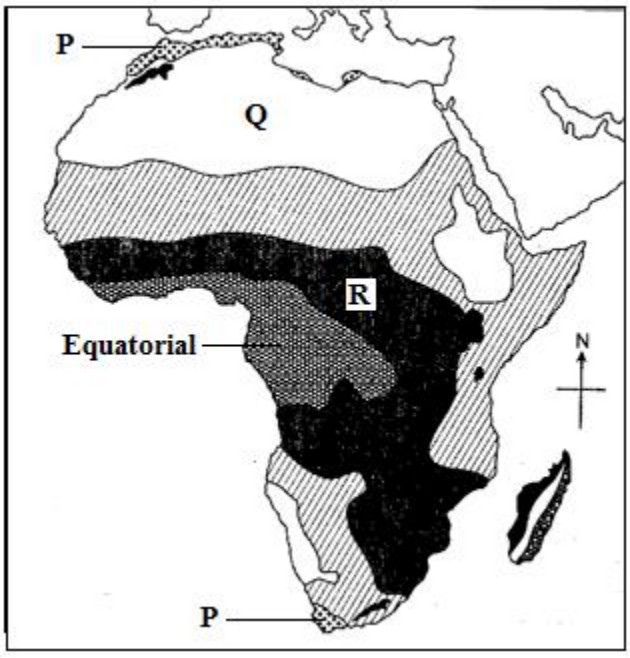
Day	MON.	TUE.	WED.	THUR.	FRI.	SAT.	SUN
Max (°C)	26	25	26	24	27	27	24
Min. (°C)	15	17	17	13	19	18	17

Calculate;

(i) the diurnal temperature range for Monday. **(2mks)**

(ii) the mean daily temperature for Friday. **(2mks)**

(c) Study the climate map of Africa below and answer the questions that follow.



(i) Name the climatic regions marked **P**, **Q** and **R**. **(3mks)**

(ii) Describe the characteristics of equatorial climate. **(6mks)**

(d) Explain **three** ways in which vegetation has adopted to the climatic conditions in the region **Q**. **(6mks)**

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9. (a) (i) What is an artesian basin? **(2mks)**

(ii) Explain **three** factors which influence the formation of features in limestone areas. **(6mks)**

(b) (i) A part from stalagmites, name **two** other underground features in limestone areas. **(2mks)**

(ii) With the aid of a diagram, describe how a stalagmite is formed. **(8mks)**

(c) Your supposed to carry out a field study on limestone region.

(i) Give **two** reasons why you would need a map of the area of study. **(2mks)**

(ii) State **two** ways you would prepare for the study. **(2mks)**

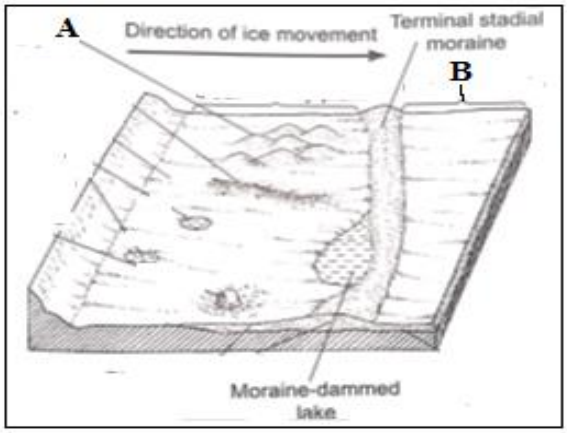
(iii) Give **three** reasons why you are likely to find few settlements in the study area. **(3mks)**

10. (a) (i) Define the term glacier. **(2mks)**

(ii) Give **two** processes of glacial erosion. **(2mks)**

(b) Explain **three** conditions that lead to glacial deposition. **(6mks)**

(c) The diagram below shows features resulting from glacial deposition in lowlands.



(i) Identify the features labeled **A** and **B**. **(2mks)**

(ii) Describe how a terminal moraine is formed. **(3mks)**

(d) Explain **five** positive significance of glaciation in lowland areas. **(10mks)**

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EXCELLING STUDENTS FORM FOUR MOCK SERIES ONE EXAMS

NAME: ……

SHOOOL: ……

ADM NO: ……. SIGN: ……..… DATE: ……..

GEOGRAPHY (QUESTION PAPER)

FORM 4

TIME 2¾ HOURS

PAPER 2

INSTRUCTIONS TO STUDENTS

- This paper consists of two sections **A** and **B**
- Answer **all** the questions in section **A**:
- In section **B** answer question **6** and any other **two** questions.

ALL the answers must be written in the answer booklet provided

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ANSWER ALL THE QUESTIONS IN THIS SECTION

1. (a) Name **two** types of fish caught from Lake Victoria **(2mks)**

(b) State **three** reasons why fish farming should be encouraged in Kenya **(3mks)**

2 (a) State **three** physical conditions that favour wheat cultivation in Kenya **(3mks)**

(b) Name two provinces where wheat is grown on large scale in Canada **(2mks)**

3 (a) What is urbanization **(1mk)**

(b) State **four** factors which have led to the development of Mombasa as a mojor sea port in the region **(4mks)**

4 (a) Differentiate between land reclamation and land rehabilitation **(2mks)**

(b) State **three** factors that influenced the establishment of perkerra irrigation scheme **(3mks)**

5(a) List **two** forms of telecommunication services in Kenya **(2mks)**

(b) State **three** ways in which Kenya would benefit from construction of standard gauge railway **(3mks)**

SECTION B:

ANSWER QUESTION 6 AND ANY OTHER TWO.

6. Use the data below to answer questions that follow:

Kenya's Export crop (1986-1989) in tonnes

Year/crop	1986	1987	1988	1989
Coffee	12.6	10.0	9.1	9.8
Tea	11.6	13.5	13.8	16.3
Sisal	3.2	2.8	3.1	3.3

(a)(i) Calculate the tones of crop export from Kenya between 1986-1989 **(2mks)**

(ii) Draw a compound bar graph to represent Kenya Export (1986-1989) **(8mks)**

(Scale 1 cm ref 5 tonnes)

(iii) Give **two** advantages of using compound bar graphs to represent data **(2mks)**

b) Describe the stages involved in coffee production from picking to marketing. **(8mks)**

c)i) A part from being a beverage, state **any** other use of coffee. **(1mk)**

ii) Explain two significance of coffee industry to the Kenyan economy. **(4mks)**

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7. (a) (i) Name **three** types of minerals. **(3mks)**

(ii) State **three** ways in which minerals occur. **(3mks)**

(b) (i) Describe shaft mining method. **(5mks)**

(ii) Outline **three** challenges faced by shaft miners. **(3mks)**

(c) Explain **four** problems facing the mining industry in Kenya. **(8mks)**

(d) Highlight **three** ways in which mining derelicts can be reclaimed. (**3mks)**

8. **(a)(i)** Apart from water and air pollution name **two** other types of pollution. **(2mks)**

(ii) Identify **three** ways through which water is polluted. **(3mks)**

(iii) Explain **three** effects of air pollution on the environment. (**6mks)**

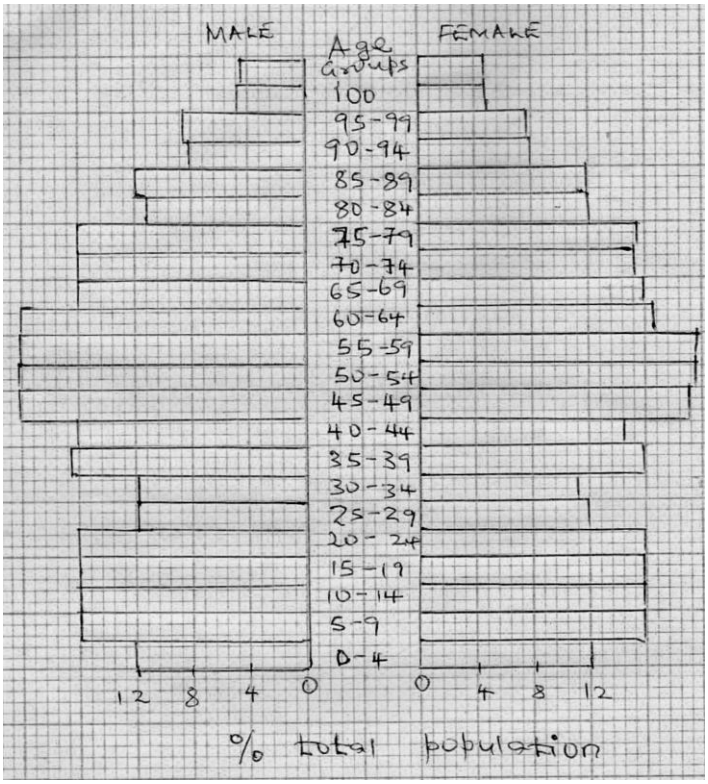
(b)(i) Explain **three** factors that lead to frequent flooding in the lake region of Kenya. **(6mks)**

(ii) Explain **two** ways through which floods are controlled in the lake region of Kenya. **(4mks)**

(c) State **four** effects of wind as an environmental hazard in Kenya. **(4mks)**

9. The pyramid below represents the population structure of country A.

Use it to answer the questions that follow.



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a. Describe the characteristics of the population represented by the pyramid. **(8mks)**

b. Apart from migration, explain **four** factors that influence population growth and structure. **(8mks)**

c. State **two** positive effects of high population growth. **(2mks)**

d.i. Give **five** problems that could arise from overpopulation. **(5mks)**

ii. Name **two** sources of population data. **(2mks)**

10.(a) (i) What is energy? **1mk)**

(ii) Name **three** renewable sources of energy. **(3mks)**

(b) (i) State **four** factor that led to the implementation of the seven forks dam project in Kenya**.** **(4mks)**

(ii) Explain **three** benefits of seven forks Dam to the economy of Kenya. **(6mks)**

(c) (i) Name **two** countries in Eastern Africa where crude oil has been discovered. **2mks)**

(ii) Describe the mode of formation of crude oil. **(4mks)**

(d) State **five** reasons why Kenya is investing in the development of renewable sources of energy. **(5mks)**

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EXCELLING STUDENTS FORM FOUR MOCK SERIES ONE EXAMS

NAME: ……

SHOOOL: ……

ADM NO: ……. SIGN: ……..… DATE: ……..

HISTORY AND GOVERNMENT (311/1)

PAPER 1

FORM FOUR (4)

Time: 2½ Hours

Instructions to Candidates

- This paper consists of three sections A, B and C.
- Answer all questions in section A, three from Section B and two from Section C.
- Answers to all the questions must be written in the answer booklet provided.
- This paper consists of three printed pages

SECTION A (25 MARKS)
ANSWER ALL THE QUESTIONS IN THIS SECTION

1. Give TWO examples of early inhabitants of Kenya. **(2mks)**

2. Identify TWO cultural practices introduced by the Cushites in Kenya. **(2mks)**

3. Identify the TITLE given to the war leader among the Luo community. **(1mk)**

4. What was the MAIN negative effect of plantation agriculture on the people of Kenyan coast? **(1mk)**

5. Give TWO diplomatic methods used by the British to establish colonial rule in Kenya **(2mks)**

6. Give the MAIN importance of the Devonshire white paper of 1923. **(1mk)**

7. State TWO economic benefits of the Kenya Uganda railway during the colonial period. **(2mks)**

8. Give TWO advantages of Representative democracy **(2mks)**

9. Give ONE reason why Africans were denied equal educational opportunities with other races during the colonial period. **(1mk)**

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10. Identify TWO features of African socialism as spelt out in the sessional paper no. 10 of 1965. **(2mks)**

11. Identify TWO ways of becoming a Kenyan citizen. **(2mks)**

12. Given ONE reason why the government of Kenya may limit a person's freedom of speech**.** **(1mk)**

13. Give TWO ways through which parliamentary supremacy in Kenya can be limited. **(1mk)**

14. Give ONE house committee of parliament which deals with government financial matters. **(1mk)**

15. What was the MAIN contribution of professor Wangari Maathai**.** **(1mk)**

16. Give the MAIN constitutional change in Kenya in 2008 **(1mk)**

17. State ONE type of public expenditure **(1mk)**

SECTION B (45 MARKS)

ANSWER ANY THREE QUESTIONS

18a) State three ways through which the Bantus interacted with the Cushites during the pre-colonial period**. (3Mks)**

b) Describe the social organization of the Abagusii during the pre-colonial period. **(12Mks)**

19.(a) Give three reasons why the early visitors came to Kenyan coast before 1500 A.D. **(3mks)**

(b) Explain six factors that contributed to the development of trade between Kenyan coast and outside world by 1900 **(12mks)**

20.(a) Give three grievances of the Kikuyu Central Association which were Presented by Jomo Kenyatta to the colonial secretary in 1929. **(3mks)**

b) Explain six roles played by trade unions to improve the lives of the people of Kenya during the colonial period **(12mks)**

21.(a) Identify three education commissions established in the post-colonial Kenya**.** **(3mks)**

(b) Explain six challenges facing the health sector in Kenya today. **(12mks)**

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SECTION C (30 MARKS)
ANSWER ANY TWO QUESTIONS

22. a) State three reasons why national integration is important in Kenya**.** **(3Mks)**

b) Explain six methods of conflict resolution. **(12mks)**

23(a) State three functions of cabinet secretaries **(3Mks)**

(b) Explain six functions of the Independent Electoral and Boundaries Commission. **(12mks)**

24.(a) State three functions of a governor in Kenya **(3Mks)**

(b). Explain six possible solutions to challenges facing County Government in Kenya **(12mks)**

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EXCELLING STUDENTS FORM FOUR MOCK SERIES ONE EXAMS

NAME: ……

SHOOOL: ……..……

ADM NO: ……..……. SIGN: ……..……..… DATE: ……..……..

HISTORY AND GOVERNMENT (311/2)

PAPER 2

FORM FOUR (4)

Time: 2½ Hours

INSTRUCTIONS TO THE CANDIDATES:

- This paper consists of **three** sections **A, B** and **C.**
- Answer **all** questions in section **A, three** questions from section **B** , and **two** questions from section **C**
- Answers to **all questions** must be written in a separate booklet provided.

SECTION	QUESTIONS	MARKS
A	1-17	
B	18	
	19	
	20	
	21	
C	22	
	23	
	24	

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SECTION A (25marks))

(Answer all questions in this section)

1. Give two ways in which archaeologists obtain historical information **(2mks)**

2. Name the period in history that is associated with microlithic tools **(1mk)**

3. Identify tools invented by the Sumerians that facilitated the production of food **(2mks)**

4. State two characteristics of regional trade **(2mks)**

5. Identify one earliest traditional means of water transport **(1mk)**

6. State two disadvantages of wood as a source of energy **(2mks)**

7. Give the contribution of Loius Pasteur in the field of medicine **(1mk)**

8. Identify the main factor that led to the growth of the ancient town of Meroe **(1mk)**

9. State one significance of the of the royal fire by the for Mwene Mutapa kingdom **(1mk)**

10. Name the Chartered Company used by the British government to administer her colonies in West Africa **(1mk)**

11. What was the main contribution of religion in the MajiMaji uprising of 1905-1907? **(1mk)**

12. State two roles of African chiefs in the French system of assimilation in Senegal **(2mks)**

13. Apart from African National Congress (ANC) name one other political party that fought for independence in South Africa **(1mk)**

14. Give two camps of fighting powers during the Second World War **(2mks)**

15. Name any two permanent members of the United Nations **(2mks)**

16. State the main political challenge that has faced Democratic Republic of Congo **(1mk)**

17. Identify two houses of Congress in United States of America **(2mks)**

SECTION B 45 MARKS

(Answer any three questions in this section)

18 a) Identify five ways in which the development of the upright posture improved early man's way of life **(5mks)**

b) Describe the way of life of early human beings during the Middle Stone Age **(10mks)**

19 a) State three contributions of oversee colonies to the expansion European industries in Europe **(3mks)**

b) Discuss six problems which the European society faced as a result of industrialization **(12mks)**

20 a) Identify three ways in which African collaboration with Europeans hastened colonization of Africa **(3mks)**

b) Explain six effects of the partition of Africa on African communities **(12mks)**

21 a) Give three political developments in South Africa between 1990 and 1991 which led to peaceful introduction of majority rule **(3mks)**

b) Explain six challenges faced by African Nationalists in their struggle for majority rule in South Africa **(12mks)**

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SECTION C 30MARKS

(Answer any two questions in this section)

22 a) State three functions of Lukiko of Buganda kingdom during pre-colonial period **(3mks)**

b) Describe the political organization of the Shona during the pre-colonial period **(12mks)**

23 a) Name three co-founders of Pan-African Movement **(3mks)**

b) Explain six achievements of Pan-Africanism between 1945 and 1963 **(12mks)**

24 a) Give three requirements one has to fulfill in order to contest as a president in India **(3mks)**

b) Describe six functions of the Prime Minister of Britain **(12mks)**

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EXCELLING STUDENTS FORM FOUR
MOCK SERIES ONE EXAMS

NAME: ……

SHOOOL: ……..…

ADM NO: ……..…. SIGN: ……..…… DATE: ……..……..

HOME SCIENCE (441/1)

PAPER 1

THEORY

FORM FOUR (4)

Time: 2½ Hours

Instructions to students

a) Write your name, admission number and class in the spaces provided
b) Sign and write the date of the examination in the spaces provided
c) This paper consists of **three** sections: **A**, **B** and **C**
d) Answer **all** the questions in sections **A** and **B** and any **two** questions from section **C**
e) Answers to all the questions must be written in the spaces provided in the paper
f) This paper consists of 14 printed pages
g) Students should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing
h) Students should answer the questions in English

For examiner's use only

Section	Question	Maximum Score	Student's Score
A	1- 20	40	
B	21	20	
C		20	
		20	
TOTAL SCORE		100	

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SECTION A: (40 marks)

*Answer **ALL** the questions in this section in the spaces provided.*

1. Name **two** examples of absorbers used in stain removal. **(1mk)**

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2. List down **two** stains that are removed by sunlight. **(1mk)**

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3. Give another name for the following nutrients. **(2mks)**

a. Vitamin A _____

b. Tocopherol _____

c. Vitamin C _____

d. Phylloquinone _____

4. State **two** qualities to look for when buying a kitchen knife. **(2mks)**

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5. Give **four** disadvantages of decayed teeth. **(2mks)**

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6. Mention **four** uses of milk in food preparation. **(2mks)**

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7. Give **two** signs and symptoms a person suffering from goitre would exhibit. **(2mks)**

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8. Dried fruits are used to in cake making. Give **two** reasons for this. **(2mks)**

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9. Give **two** advantages of using an ironing board instead of a table when ironing clothes. **(2mks)**

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10. Mention **four** reasons why excessive gain during pregnancy is dangerous. **(2mks)**

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11. State **two** precautions taken when laundering viscose rayon. **(2mks)**

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12. State **three** benefits of breast-feeding to a mother. **(3mks)**

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13. Give **two** uses of facings in clothing construction. **(2mks)**

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14. What is the difference between decorating and garnishing food. **(2mks)**

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15. List down **four** faults that may occur in cooking of mandazi. **(2mks**)

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16. Outline **two** reasons for blending fibres. **(2mks)**

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17. State **two** advantages of electricity as a form of lighting. **(2mks)**

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18. Highlight **two** disadvantages of réchauffé dishes. **(2mks)**

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19. Give **three** considerations to make when choosing cleaning agents. **(3mks)**

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20. State **four** uses of trimmings in garment construction. **(2mks)**

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SECTION B (20 marks)

COMPULSORY

Answer question 21 in the spaces provided.

21. You have been requested to assist with some chores in the home.

a. Outline **six** rules to observe when removing stains from clothes and household articles before doing the family wash. **(6mks)**

b. Outline the procedure you would follow when laundering a woolen blanket for a baby cot. **(14mks)**

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SECTION C (40 MARKS)

Answer any TWO questions from this section in the spaces provided at the end of this section.

22. (a) Outline **four** practices undertaken to prevent loss of colour when laundering clothes. **(4mks)**

(b) Explain **four** factors to consider when buying green leafy vegetables. **(8mks)**

(c) Mention four points to consider when taking body measurements. **(4mks)**

(d) Suggest **four** factors that can cause food prices to rise. **(4mks)**

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23. (a) State **four** ways of minimizing fatigue while working in the kitchen. **(4mks)**

(b) Give **four** qualities of a well-made patch on a bed sheet. **(4mks)**

(c) Identify and explain **three** activities carried out in preparation for a family wash. **(6mks)**

(d) Give two reasons for using each of the following ingredients in flour mixtures. **(6mks)**

i) Eggs

ii) Sugar

iii) Salt

24. (a) Outline **two** remedies for each of the following sewing machine faults. **(4mks)**

i.Needle breaking

ii.Missing stitches

(b) Describe **three** principles of food preservation. **(6mks)**

(c) Explain **four** benefits of living in a well-ventilated house. **(4mks)**

(d) Explain **three** factors to consider when selecting a baby's clothes. **(6mks)**

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EXCELLING STUDENTS FORM FOUR
MOCK SERIES ONE EXAMS

NAME: ……

SHOOOL: ……..……

ADM NO: ……. SIGN: ……..……..… DATE: …….……..

441/2

HOME SCIENCE

Clothing Construction
Paper 2
Practical
2 ½ Hours

INSTRUCTIONS TO CANDIDATES

a) This paper consists of **three**printed Pages.
b) Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.

A pattern of a pair of shorts is provided. You are advised to study the sketches; instructions and the layout carefully before you begin the test.

Materials provided

1. Pattern pieces A. Short front

B. Short back

C. Pocket

D. Waist band

2. Plain light weight cotton fabric 50cm long by 90cm wide.
3. Cotton sewing thread to match the fabric.
4. Embroidery thread 125cm long.
5. One button 1.3cm with two holes.
6. One large envelope.

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THE TEST

Using the materials provided, cut out and make the LEFT LEG of the shorts to show the following processes.

a) Making back dart.

b) Embroidering the letters on the pocket using stem stitches.

c) Preparing and attaching patch pocket.

d) Working of the side seam using an open seam.

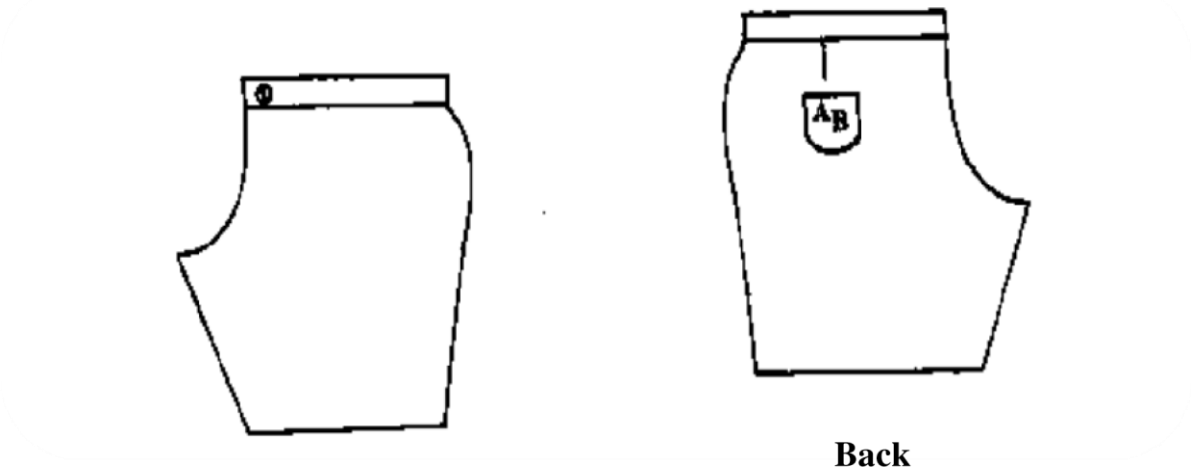
e) Working of the inner leg seam using French seam.

f) Preparing and fixing waist band.

g) Fixing button.

h) Managing half of the seam using slip hemming (include both seams).

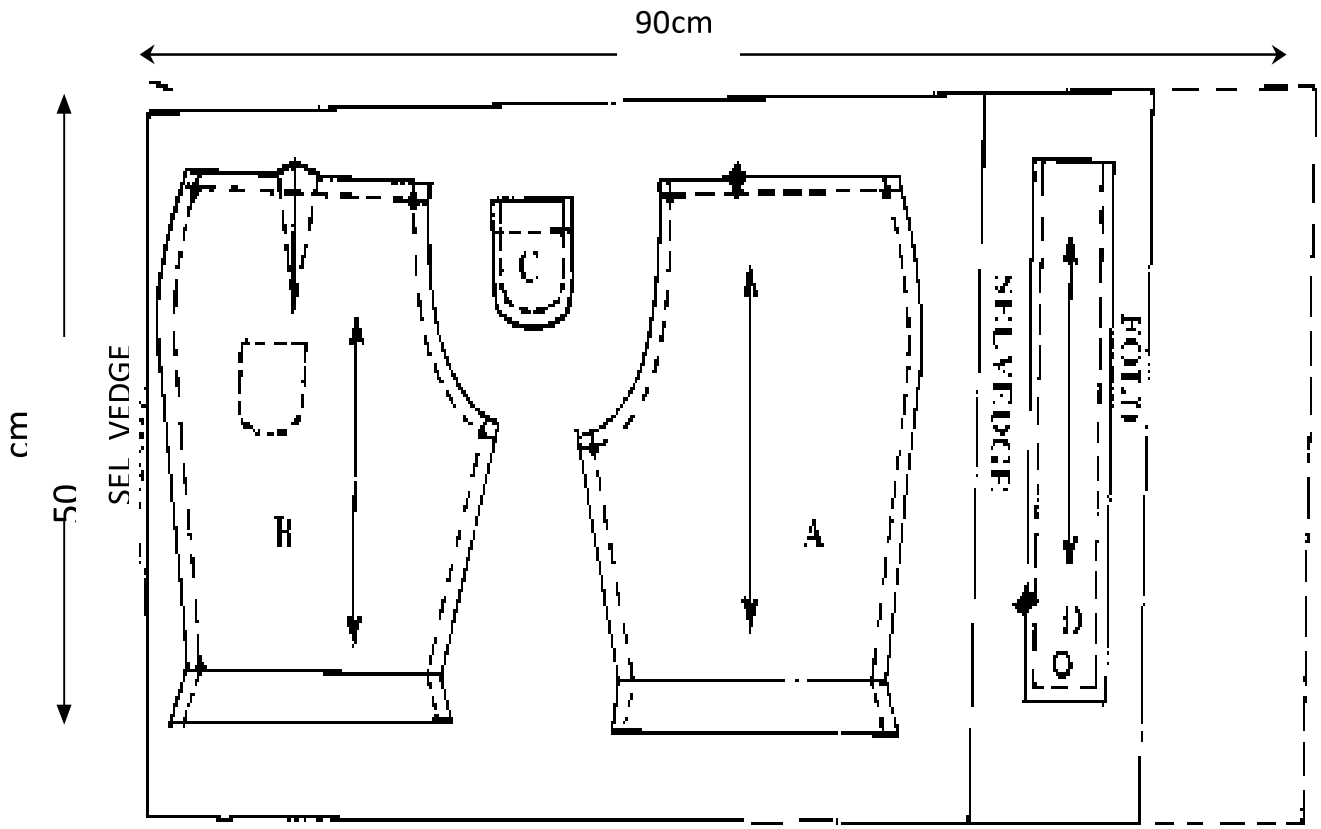
SHORT VIEW



Front **Back**

LAYOUT (Not drawn to scale)

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EXCELLING STUDENTS FORM FOUR MOCK SERIES ONE EXAMS

NAME: ……

SHOOOL: ……

ADM NO: ……. SIGN: ……..… DATE: ……..

HOME SCIENCE (FOODS AND NUTRITION) (441/3)

PAPER 3

PRACTICAL

FORM FOUR (4)

Time: 1½ Hours

Instructions to candidates

PLANNING SESSION	30 minutes
PRACTICAL SESSION	1 hour

Read the test carefully.

Text books and recipes may be used during the planning session as reference materials.

You will be expected to keep to your order of work during the practical session.

At the end of planning session you will only carry out your reference materials.

You are not allowed to bring additional notes to the practical session

This paper consists of 2 printed pages.

Candidates should check to ascertain that both pages are printed.

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THE TEST

You are making a quick lunch for yourself and your aunt. Using **all** the ingredients listed below, prepare, cook and present a one dish meal and a refreshing drink for the two of you.

Ingredients

Fruit in season

Beef/Beans

Salt

Tomatoes

Rice/Green bananas/Potatoes

Fat/Oil

Carrots

Sugar

Onions

PLANNING SESSION- 30 minutes

Use separate sheets of paper for each task listed below and a carbon paper to make duplicate copies. Then proceed as follows:

1. Identify the dishes and write down the recipes;
2. Write down your order of work;
3. Make a list of foodstuff, materials and equipment you will require.

THIS IS THE LAST PRINTED PAGE

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EXCELLING STUDENTS FORM FOUR
MOCK SERIES ONE EXAMS

NAME: ……

SHOOOL: ……

ADM NO: …… SIGN: ……..…….…. DATE: ……..……..

ISLAMIC RELIGIOUS EDUCATION (QUESTION PAPER)
FORM 4
TIME 2½ HOURS
PAPER 1

INSTRUCTIONS:

1. This paper contains six (6) questions.
2. Answer any FIVE questions
3. Write your answers in the answer sheet provided.
4. All answers must be in English.

1. a) State etiquettes to be observed during Qur'an recitation. **(7mks)**
b) State six characteristics of the language of the Qur'an. **(5mks)**
c) Discuss the reasons why mankind needed revelation of the Qur'an. **(8mks)**

2. a) Give factors that facilitated the compilation of the Qur'an. **(5mks)**
b) Why is the Qur'an considered as a miracle by Muslim? **(7mks)**
c) Explain five benefits of translating the Qur'an into other languages. **(8mks)**

3. a) Discuss the importance of Hadith. **(8mks)**
b) Explain the five themes of the forty Hadith of Iman Nawawi. **(5mks)**
c) "One who takes care of an orphan and I will be in paradise" he raise his force figure and middle figure by way of illustration in relation to this hadith. Identify five Islamic teachings in treatment of orphans. **(7mks)**

4. a) Discuss briefly the ulul Azm prophets and their trials. **(10mks)**
b) Explain the significance of the belief in Qadar to a Muslim. **(10mks)**

5. a) State the significances of shahadah. **(10mks)**
b) What are the functions of a Kadhi in Kenya. **(10mks)**

6. a) Explain the reasons why it becomes compulsory for a pilgrim to slaughter animals. **(7mks)**
b) What are the contribution of Imam Abu Hanifah to development of Figh. **(5mks)**
c) What are the major offenses of Hudud and punishment of each. **(8mks)**

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EXCELLING STUDENTS FORM FOUR MOCK SERIES ONE EXAMS

NAME: ……

SHOOOL: ……..……

ADM NO: ……..……. SIGN: ……..……..… DATE: ……..……..

ISLAMIC RELIGIOUS EDUCATION (QUESTION PAPER)

FORM 4

TIME $2^1/_2$ HOURS

PAPER 2

INSTRUCTIONS TO CANDIDATES:

- Write your name and index number on the answer sheets given
- This paper consists of six questions.
- Answer any five questions.
- This paper consists of two printed pagers.
- Candidates should check the paper to ascertain that all pages are printed and no questions are missing.
- Candidates should answer the questions in English.

1. (a). State the benefits of having the virtue of *Sidq (*Truthfulness*)* **(5mks)**

(b) Identify five importance of preserving the physical environment. **(5mks)**

(c) Discuss five ways Muslims can help in the fight against drug and substance abuse. **(10mks)**

2. (a) State five significance of marriage in Islam. **(5mks)**

(b) What are the rights that a Muslim husband is entitled to **(7mks)**

(c) Explain four Islamic teachings on how eddat should be observed **(8mks)**

3. (a) Under what circumstances can a business agreement be considered null and void in Islam **(8mks)**

(b) Identify seven forms of child abuse which are common in the society. **(7mks)**

(c) Mention five reasons that can lead to revocation of a Wasiya. **(5mks)**

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4. (a) Name six wives of the prophet (p.b.u.h). **(6mks)**

(b) Identify the contributions of Abubakar (R.A) to the prophet's (p.b.u.h) mission. **(7mks)**

(c) Explain the factors that led to the decline of the Fatimid dynasty. **(7mks)**

5. (a) Explain the roles that city states played in the spread of Islam along the coast of East Africa **(10mks)**

(b) Identify the social contributions of Muslims in Kenya **(5mks)**

(c) Outline **five** achievements of *Harun Ar-Rashid* of the *Abbasids* **(5mks)**

6. (a) State six contributions of *SeyyidQutb* in Islam **(6mks)**

(b) Explain seven of the ten rules of conduct formulated by *Imam Al Ghazali.* **(14mks)**

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EXCELLING STUDENTS FORM FOUR
MOCK SERIES ONE EXAMS

JINA: ……..……

SHULE: …….

NAMBARI YA USAJILI: ……..……. SAHIHI: ……..……..… TAREHE: ……..……..

102/1
KISWAHILI INSHA
KARATASI YA KWANZA

KIDATO CHA NNE
102/1
Kiswahili Insha
Karatasi ya 1

MAAGIZO KWA MTAHINIWA:

Maagizo

a) *Andika insha* ***mbili****. Insha ya kwanza ni ya* ***lazima****.*
b) *Kisha chagua insha nyingine moja kati ya hizo tatu zilizobakia.*
c) *Kila insha isipungue maneno* ***400.***
d) *Kila insha ina alama 20.*
e) *Kila insha* ***lazima*** *iandikwe kwa lugha ya* ***Kiswahili.***
f) *Insha zote* ***sharti*** *ziandikwe katika nafasi ulizoachiwa kwenye kijitabu hiki cha maswali.*
g) Watahiniwa ni lazima wahakikishe kwamba kurasa zote za karatasi hii zimepigwa chapa sawasawa na kuwa maswali yote yamo.

1. Wewe ni mhariri mkuu wa Gazeti la Mwangaza, andika tahariri kuhusu namna tatizo la ukosefu wa nafasi za ajira miongoni mwa vijana linavyoweza kukabiliwa.

2. Serikali za ugatuzi zina faida nyingi kuliko hasara . Jadili

3. Andika insha inayooana na methali **kutangulia si kufika**

4. Andika insha itakayoanza kwa maneno haya:

Milipuko mikubwa ilisikika pu! Pu! Puu! Kisha niliwaona watu wakikimbia kuelekea pande zote…

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EXCELLING STUDENTS FORM FOUR MOCK SERIES ONE EXAMS

JINA: ……...……

SHULE: ……..……

NAMBARI YA USAJILI: …..……. SAHIHI: ……..……..… TAREHE: ……..……..

102/2
KISWAHILI LUGHA
KARATASI YA PILI

KIDATO CHA NNE
102/2
Kiswahili Lugha
Karatasi ya 2

Muda:Saa 2 ½

Maagizo

(a) Andika jina na nambari yako ya mtihani katika nafasi ulizoachiwa hapo juu.

(b) Tia sahihi yako kisha uandike tarehe ya mtihani

(c) Jibu maswali yote.

Kwa matumizi ya mtahini pekee

Swali	Upeo	Alama
1	15	
2	15	
4	40	
4	10	

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1 UFAHAMU (alama 15)

Soma kifungu kifuatacho kisha ujibu maswali

Suala la mahusiano ya wanadamu katika jamii, uainishaji wake na udhihirikaji wake limewashughulisha wataalamu wa elimu jamii kwa dahari ya miaka. Suala hili huwatafakarisha wataalamu hao kutokana na umuhimu wake katika maisha ya binadamu. Msingi mkuu wa uainishanji wa mahusiano hayo ni kukichuza kipindi cha mahusiano yenyewe. Yapo mahusiano bainaya waja ambayo yanachukua muda mfupi, kwa mfano saa au dakika chache na mengine ambayo huenda yakachukua miaka ayami.

Mahusiano ya muda mrefu kabisa ni yale yanayojulikana kama mahusiano ya kudumu. Inamkinika kudai kuwa miundo ya kijamii, kisiasa na kiuchumi huweza kuyadhibiti mahusiano hayo kwa kiasi kikubwa. Watu wengi huitakidi kuwa uhusiano uliopo baina ya mtu na jamaa yake utachukua muda mrefu, na kwa hiyo ni uhusiano wa kudumu. Hali hii hutokana na uhalisi kuwa tunahusiana na jamaa zetu kwa kipindi kirefu labda tangu ukembe hadi utu uzima wetu. Uhusiano huuhautarajiwi kuvunjwa na umbali wa masafa baina yetu;tunaendelea kuwasiliana kwa barua au, katika enzi hii ya utandawazi,kwa kutumia nyenzo za teknohama kama mtandao na simu za mkononi na kudumisha uhusiano wetuwa kijamaa. Hata hivyo, inawezekana baadhi ya mahusiano ya kijamaa yasiwe ya kudumu. Mathalan, uhusiano uliopo baina ya mke na mume, na ambao unatarajiwa kuwa wa kudumu au wa kipindi kirefu,unaweza kuvunjwa kwa kutokea kwa talaka. Talaka hiyo inavunja ule uwezekano wa uhusiano wa kudumu unaofumbatwa na sitiari ya pingu za maisha.

Katika ngazi ya pili,mahusiano ya kipindi cha wastani,kuna mahusiano yanayohusisha marafiki zetu maishani, shuleni au kwenye taasisi zozote zile, majirani zetu, wenzetu katika mahali mwa kazi,washiriki kwenye sehemu za ibada au za burudani na wenzetu kwenye vyama tofauti na makundi ya kujitolea. Inawezekanakudahili kuwa baadhi ya mahusiano haya,hususan baina ya marafiki na majirani huweza kuwa ya miongo na daima. Hali hii huweza kutegemea muundo na mfumo wa jamii. Kwa mfano, kwa wanajamii waoishi kwenye janibu fulani mahsusi, na kwa miaka tawili bila ya kuhajiri,uhusiano wao na majirani huweza kuwa wa kudumu. Hali hii **inasigana** na hali iliyoko kwenye maisha ya mijini. Maisha ya mijini yana sifa ya kubadilikabadilika. Isitoshe,kutokana na mfumo wa maisha ya kibepari **yameghoshi** ubinafsi mwingi. Mawimbi ya mabadiliko na ubinafsi huweza kuumomonyoaukuta wauhusiano wa kudumu.

Mwelekeo wa maisha ya siku hizi ya uhamaji kutoka maeneo au viambo walikoishi watu unasababisha kupombojea kwa mahusiano ya kudumu baina yao na majirani zao. Uhusiano katiya wenza katika mazingira ya kazi unahusiana kwa kiasi fulani na ule wamajirani. Vimbunga vya ufutwaji kazi, ubadilishaji wa kazi, hali zisizotegemewa na mifumo ya kimataifa pamoja na hata mifumo ya kisiasahuweza kuathiri mshikamano wa wanaohusika kazini.

Kiwango cha mwisho cha mahusiano ni uhusiano wa mpito au wa muda mfupi. Mahusiano ya aina hii hujirikatika muktadha ambapo pana huduma fulani. Huduma hizi zinaweza kuwa za dukani, kwenye sehemu za ibada,kwenye kituo cha mafuta,kwa kinyozi, kwa msusi na kadhalika. Kuna sababu kadha zinazotufanya kuyazungumzia mahusiano ya aina hii kama ya mpito. Kwanza, uwezekanowa mabadiliko ya anayeitoa huduma hiyo ni mkubwa. Si ajabu kuwa unaporudi kwa kinyozi au msusi unatambua aliyekushughulikia hayupo. Hata hivyo, kuna **vighairi** hususa pale ambapo mtoa huduma anayehusika ni yule yule mmoja.

Mahusiano ya mpito yanatawaliwa na‘uhusiano wa chembe chembe.’ Uhusiano wa chembe chembe, bidhaa ya mfumo wa kibepari, unamaanisha kuwa kinachoshughulisha mtu ni chembe ndogo tu ya mwenzake. Chembe hiyo inaweza kuwa huduma, kwa mfano, gazeti analokuuzia mtu, viatu anavyokushonea,nguo anazokufulia,ususi anokufanyia na kadhalika. Mahussiano ya aina hii yametovukwa na hisia za utu na ni zao la mifumo ya kisasa ya

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kiuchumi na kijamii. Mtu anayehusiana na mwenzakekwa misingi ya chembe ndogo tu, huenda asijali kama mwenzake amekosa chakula,amefutwa kazi,amefiliwa,ameibiwa na kadhalika.
Suala kuu tunalopaswa kujiuliza ni: je, tunahusianavipi na jamaa zetu, marafiki zetuna majirani zetu? Je, uhusianowetu na raia wenzetu ni wa aina gani? Je, uhusiano wetu na nchi yetu ni wa mpito au ni wa kudumu?

(a) Taja kigezo cha kuzungumzia mahusiano. **(alm1)**

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(b) Eleza imani ya watu kuhusu mahusiano ya watu. **(alm1)**

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(c) Fafanua athari ya teknolojia kwenye mahusiano ya watu. **(alm2)**

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(d) Eleza sababu nne kuu za kuharibika kwa mahusiano katika maisha ya leo . **(alm2)**

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(e) Taja sifa kuu za mahusiano ya muda mfupi. **(alm2)**

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(f) Je, kifungu hiki kina ujumbe gani mkuu? **(alm2)**

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(g) Eleza maana ya maneno yafuatayo kama yalivyotumiwa katika kifungu. **(alm3)**

(i) inasigana

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(ii) yameghoshi

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(iii)vighairi

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2 UFUPISHO (alama 15)

Jamii ya leo inatawaliwa na kuendeshwa na kanuni ya maarifa. Inawezekana kusema kuwauchumi wa jamii za leo na zijazo utategemea maarifa zaidi kuliko utakavyotegemea uwezo wowote mwingine. Utambuzi wa uwezo mkubwa wa maarifa katika maisha ya binadamu ndio msingi wa watu kusema 'maarifa ni nguvu.'

Maarifa huelezwa kwa tamathali hii kutokana na uwezo wa: kuyadhibiti,kuyaendesha, kuyatawalana kuyaongoza maisha ya binadamu popote pale walipo. Mtu ameyakosa maarifa fulani huwa ameikosa nguvu hiyo muhimu na maisha yake huathirika pakubwa. Kwa msingi huu, maarifa yanawezakuangaliwa kama utajiri mkubwa ambao binadamu anaweza kuutumia kwa faida yake au kwa faida ya wanajamii wenzake. Ukweli huu ndio unaoelezwa na methali ya Kiswahili: 'Elimu ni mali.' Elimu ni chimbuko la maarifa muhimu maishani.

Msingi wa utajiri na maendeleo ya binadamu popote alipo basi ni maarifa. Je, maarifa kwa upande wake yana sifa gani? Maarifa yenyewe hayana upinzani. Maarifa uliyo nayo huweza kuwa na watu wengine pasiwe na upinzani baina yenu kwa kuwa kila mmoja ana maarifa sawa. Kila mmoja ana uhuru wa kuyatumia maarifa hayo kama chanzo cha kuyazalisha mengine. Utumiaji wa maarifa yenyewe hauyamalizi maarifa hayo. Maarifa hayawezi kugusika ingawa mtu anaweza kuyanyumbua maarifa yenyewe kwa kuyatumia kwa namna tofauti. Maarifa huingiliana na maarifa mengine. Maarifa aliyo nayo mtu huweza kuhusishwa na maarifa aliyo nayo mtu mwingine ili kuvyaza au kuzuka na maarifa tofauti. Maarifa yanaweza kuchukuliwa kutoka sehemu moja hadi nyingine kwa namna ambavyo mtu huweza kufanya bidhaa nyingine ile. Kwa mfano, ni muhali mtu kulalamika kuwa hawezi kutembea kutoka sehemu moja hadi nyingine kwa sababu ana mzigo wa maarifa kichwani.

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Sifa nyingine muhimu ya maarifa ni kuwa yanaweza kuwasilishwa kwa njia au mitindo mingine ya kidhahania. Ikiwa unataka kukihamisha chombo fulani kutoka sehemu moja hadi nyingine, lazima uwazie ukubwa wake, uzito wake na labda hata umbali wa panapohusika. Maarifa huweza kubadilishwa au kugeuzwa na kuwa ishara ambazo huyafanya kuwasilishswa kwa njia nyepesi kuliko kwa mfano ikiwa mtu atayawasilisha katika muundo wa, kwa mfano,kitabu.

Maarifa yana sifa ya uhusianaji. Kipengele fulani cha maarifa huwa na maana kinapowekwa sambabmba au kugotanishwa na kipengele kingine cha maarifa. Huo huwa muktadha mzuri wa kueleweka au kuwa na maana kwa mfano, neno ‘mwerevu’ huweza kuwa na maana kwa kuwekwa katika muktadha wa ‘mjinga’, ‘ mjanja’, ‘hodari’ na kadhalika.

Maarifa huweza kunifadhiwa katika nafasi ndogo sana. Suala hili linaeleweka kwa njia nyepesi tunapoangalia maarifa katika muktadha wa teknolojia. Data zinazowahusu mamilioni ya watu,ambazo zingehitaji maelfu ya maktaba na lukuki ya vitabu, huweza kuhifadhiwa kwenye kifaa kidogo kinachoweza kutiwa mfukoni.

Maarifa hayawezi kuthibitiwa au kuzuiliwa mahali fulani yasisambae. Maarifa huenea haraka sana. Maarifa ni kitu kinachoepuka pingu za watu wanaopenda kuwadhibiti binadamu wenzao. Hata pale ambapomfumo wa kijamii au wa kisiasa unafanya juu chini kuwadhibiti raia au watu wenyewe,ni muhali kuyadhibiti maarifa yenyewe. Inawezekana kuzidhibiti njia fulani za uenezaji wa maarifa lakini maarifa hayo yatapata upenyu wa kusambaa. Ni kweli kuwa maarifa ni nguvu inayozishinda nguvu zote.

(a) Fupisha aya ya pili na tatu (maneno 55-60)(alama 5, 1 ya utiririko)

Matayarisho

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Nakala safi

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(b) Eleza sifa kuu za maarifa kama zinavyojitokeza kuanzia aya ya nne hadi aya ya nane.
(maneno 100-110) (alama 10, 2 za utiririko)

Matayarisho

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Nakala safi

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3 MATUMIZI YA LUGHA (alm40)

(a) Taja sauti mbili zinazotamkwa mdomoni. **(alm2)**

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(b) Andika visawe vya maneno yafuatayo; **(alm2)**

i) doa

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ii) omba

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(c) Bainisha shamirisho na chagizo katika sentensi **(alm2)**

Vibarua wamefanya kazi haraka ipasavyo .

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(d) Eleza maana mbili za sentensi ifuatayo;

Hawa ni watoto wa marehemu Bwana Ndovu na Bi.Makombo **(alm2)**

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(e) Eleza matumizi ya alama ya ritifaa kwa neno lifuatalo;

N'shamchukua **(alm2)**

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(f) Eleza mofimu katika neno lifuatalo **(alm3)**

Walichokilalia

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(g) Bainisha vitenzi vilivyo katika sentensi ifuatayo: **(alm2)**

Kalamu aliyokuwa nayo mwalimu ni ya mwanafunzi.

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(h) Changanua sentensi ifuatayo ukitumia mistari au mishale **(alm4)**

Chakula kitamu kimeandaliwa.

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(i) Huku ukitoa mifano mwafaka onyesha matumizi matatu ya kinyota katika sentensi. **(alm3)**

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(j) Tunga sentensi moja ukitumia kielezi cha wakati na kielezi cha mahali**.** **(alm2)**

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(k) Toa mfano wa neno lenye muundo ufuatao wa silabi. **(alm1)**

IK+KI+KI+KI

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(l) Onyesha matumizi ya viakifishi vifuatavyo**.** **(alm2)**

(i) kibainishi

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(ii)parandesi

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(m) Tumia neno –baya kama**:** **(alm2)**

(i) kiwakilishi

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(ii)kielezi

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(n) Tunga sentensi sahili ukitumia kitenzi ‘la’ katika kauli ya tendewa. **(alm2)**

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(o) Unganisha sentensi zifuatazo ukitumia neno japo;

i)Selina alijitahidi sana.

ii) Selina hakushinda mbio hizo.

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(p) Kwa kuzingatia maagizo andika upya sentensi ifuatayo: **(alm2)**

Tinga amewafanya ng’ombe wake wanywe maji.

(Anza kwa : Mifugo wangu ……..usitumie ‘amewafanya’)

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(q) Tunga sentensi moja yenye nomino dhahania na kivumishi kimilikishi. **(alm2)**

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(r) Bainisha maana mbili zinazojitokeza kutokana na sentensi hii. **(alm2)**

Umu alimwandikisha mkewe.

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(s) Onyesha dhamira ya sentensi hii; **(alm1)**

Huenda mvua ikanyesha leo

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4. ISIMUJAMII **(Alm10)**

Kumekuwa na mijadala mingi kuhusu athari ya chanjo dhidi ya ugonjwa unaosababishwa na virusi vya Kovid-19.Wewe ni Afisa wa afya katika eneo lenu umealikwa kutoa hotuba kuhusu usalama wa chanjo hii .Eleza sifa kumi za lugha utakayotumia.

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EXCELLING STUDENTS FORM FOUR MOCK SERIES ONE EXAMS

JINA: ……

SHULE: …….

NAMBARI YA USAJILI: ……. SAHIHI: ……..… TAREHE: ……..

KIDATO CHA NNE

KARATASI YA TATU 102/3

MUDA: $2\frac{1}{2}$masaa

Maagizo-

- Swali la kwanza ni la lazima**.**
- Chagua maswali mengine matatu kutoka kwa sehemu zililosalia.
- Usijibu maswali mawili kutoka sehemu moja.
- Majibu yote yaandikwe kwa lugha ya Kiswahili.
- Kila swali ni alama ishirini.

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SEHEMU YA A ;
SWALI LA LAZIMA-FASIHI SIMULIZI

1.

a) Fafanua maana ya lakabu **(alm2)**

b) Sifa za lakabu ni zipi **(alm5)**

c) Kwa nini lakabu ni muhimu katika jamii? **(alm3)**

d) Jadili manufaa ya utafiti katika fasihi simulizi. **(alm10)**

Hadithi fupi

Mapambazuko ya machweo na Hadithi nyingine

2. Eleza nafasi ya vijana na wazee katika hadithi ya Mapambazuko ya machweo. (alama 20)
   Nafasi ya vijana

AU

3. 'Sasa ni saa ngapi? Si wajua mtoto angali anakusubiri? Mtoto analala!'
   a) Eleza muktadha wa dondoo hili **(alm4)**
   b) Bainisha mtindo katika dondoo hili **(alm3)**
   c) Eleza umuhimu wa msemaji katika kuendeleza maudhui katika hadithi ya Harubu ya maisha. **(alm10)**
   d) Kwa hoja tatu, eleza umuhimu wa msimulizi katika kuendeleza hadithi ya mzimu wa kipwerere **(alm3)**

TAMTHILIA YA BEMBEA YA MAISHA NA TIMOTHY AREGE

4. "…haikuwa mara moja mnavyofikiria. Ilianza pale chuoni. Wenzangu walinipa mvinyo kunirai kuonja ulevi."
   a) Eleza maudhui manne yanayojidokeza katika dondoo hili. **(alm4)**
   b) Eleza athari za mhusika anayerejelewa kujitosa katika suala linalooredheshwa kwenye dondoo. **(alm6)**
   c) Kwa kurejelewa mifano tano katika tamthilia ya Bembea ya maisha, eleza tofauti iliopo katika maisha ya ndoa ya zamani na sasa **(alm10)**

AU

5. Jadili sababu kumi zilizompeleka mwandishi T. Arege kuandika Tamthilia hii. **(alm20)**

RIWAYA YA NGUU ZA JADI NA PROFESA CLARA MOMANYI

6. "Samahani… Nina shida kidogo. Ninaomba usaidizi. Sikuwa nikilipa ushuru katika biashara zangu. Sasa wanataka kuzifunga na kunipeleka kotini."
   a) Eleza muktadha wa dondoo **(alm4)**
   b) Bainisha toni katika dondoo hili **(alm2)**
   c) Msemaji wa maneno haya na wengine ni adui ya wananchi wa Matuo. Eleza ukweli wa kauli hili. **(alm14)**

AU

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7. Matumizi mabaya ya mamlaka ni tatizo sugu sana katika mataifa mengi ya Afrika yanayoendelea kiuchumi. Kwa kutolea hoja mwafaka, tetea ukweli wa kauli kwa mujibu wa riwaya ya nguu za jadi. **(alm20)**

8. **Soma shairi lifuatalo kisha ujibu maswali**.

Jiulize ni kwa nini, uanzapo kuongea
Sana sana makundini, watu hukuondokea
Ndugu ujitathmini, hakika umepotea
Sisi twakuombea, mwenye damu ya kunguni!

Mwenye damu ya kunguni, nayo lugha ya ajuza
Wengi hawamtamani, maneno yake yaliza
Yeye ana walakini, dosari kuliko pweza
Kama wewe umefunza, sote hutuona duni!

Sote hutuona duni, na hilo tumezowea
Kazi zetu zote guni, yeye tu amebobea
Umewachokoza mbuni, mateke anapokea
Sisi twakuombea, upae hadi hewani!

Upae hadi hewani, ujione kama bingwa
Mewashinda gazetini, wandishi kwako wapingwa
Yeye kwetu mpinzani, metia mipaka tingwa
Twakuombea mtafiti, hesabu hadi mizani!

Hesabu hadi mizani, utunge kwa kukosoa
U hodari hesabuni, nasi tushakuzoea
We nduli kwa majirani, na waja mekutegea
Kurekebisha hujui, ywatanika peupeni!

Ywatanika peupeni, ywajisifu mjuaji
Amezidi zetu mboni, na amevijunjia mji
Twamwachia waamuzi, kesi wasome majaji
Sisi twakuombea, sirekebike kidogo!

a) Eleza ujumbe unaojitokeza katika shairi hili **(alm6)**
b) Tambua miundo wa shairi hili **(alm4)**
c) Tambua bahari ya shairi hili kwa kuzingatia mpangilio wa maneno. **(alm2)**
d) Andika ubeti wa tatu kwa lugha nathani **(alm4)**
e) Tambua aina tatu za takriri zinazojitokeza **(alm3)**
f) Onyesha toni ya shairi hili **(alm1)**

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EXCELLING STUDENTS FORM FOUR
MOCK SERIES ONE EXAMS

NAME: ……..……..……

SHOOOL: ……..……

ADM NO: ……..……. SIGN: ……..……..… DATE: ……..

MATHEMATICS (QUESTION PAPER)
FORM 4
TIME 2½ HOURS
PAPER 1

INSTRUCTIONS:

1. Write your name, Index number in the space provided at the top of the page.
2. Sign and write the date of examination in the spaces provided above.
3. This paper consists of **Two** sections 1 and II.
4. Answer all the questions in section **1** and only **five** questions from section II
5. All answers and working must be written on the question paper in the spaces provided below each question.
6. Show all the steps in your calculation, giving your answers at each stage in the space provided.
7. Marks may be given for correct working even if the answer is wrong.
8. Non programmable silent electronic calculator and KNEC Mathematical table may be used, except when stated otherwise.

FOR EXAMINER'S USE ONLY

SECTION 1

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

SECTION 2

17	18	19	20	21	22	23	24	Total

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SECTION 1 (50 MARKS) COMPULSORY

1. Without using calculators evaluate: **(3mks)**

$$\frac{\frac{1}{2}+2\frac{4}{5} \text{ of } 8\div 6(2\times 4\frac{2}{5})}{\frac{1}{2} \text{ of } 6\left(8\div 7\frac{1}{3}\right)}$$

2. Simplify the expression **(3mks)**

$$\frac{y^4 - x^4}{y^3 - yx^2}$$

3. Solve for x in the equation **(3mks)**

$$2^{(2x-1)} \times \left(\frac{1}{8}\right)^{(1-x)} = 4^{(3x+1)}$$

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4. The marked price of a modern camera is Ksh. 24,000. A trader sold it to a customer at a 10% discount. If the trader still made a profit of 20% on the cost price, what was its cost price. **(3mks)**

5. A two – digit number is such that the sum of the digit is 12. If the digits are interchanged the value of the new number formed is fifteen more than twice the value of the original number. Find the original number? **(4mks)**

6. Using reciprocal and square – root tables only. Evaluate. **(3mks)**

$$9.452^2 + \frac{1}{63.37}$$

7. Two similar container hold $2000cm^3$ and 6.75 litres respectively. If the smaller container has a diameter of 15.50cm. What is the radius of the larger container correct to 1 decimal place? **(3mks)**

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8. Given that **OA** = i + 3j - 4k and **OB** = 3i - j - k. **(3mks)**
Find /AB/

9. Three schools A, B, and C are such that B is 12km due south of A and C is 15km from A. C is on a bearing of $N30^0W$ from B. Calculate the bearing of C from A. **(3mks)**

10. Solve the inequality

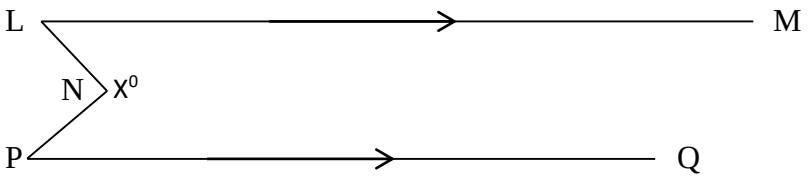
$$3 - 2x < x \leq \frac{2x + 5}{3}$$

State the integral values which satisfy these inequalities **(3mks)**

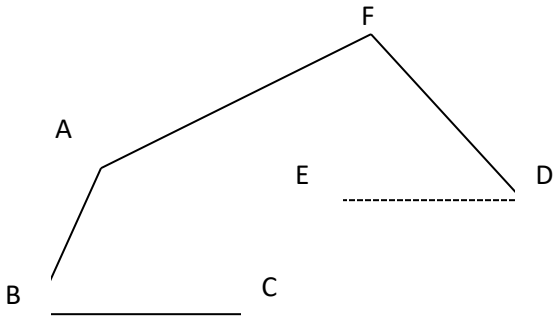
11. The gradient of a line L through A (2x, 4) and B (-1, x) is $^1/_7$. Find the equation of line perpendicular to L through B. **(3mks)**

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12. On the figure below LM is parallel to PQ. Angle MLN = 30^0 and Angle NPQ = 70^0. Find the value of X^0 **(3mks)**



13. Complete the sketch below for the prism, ABCDEF **(3mks)**



14. A Jua Kali artisan has 63000g of metal of density $7g/cm^3$. He intends to use it to make a rectangular pipe with external dimensions 120mm by 150mm and internal dimensions of 100mm by 120mm. Calculate the length of the pipe in metres. **(3mks)**

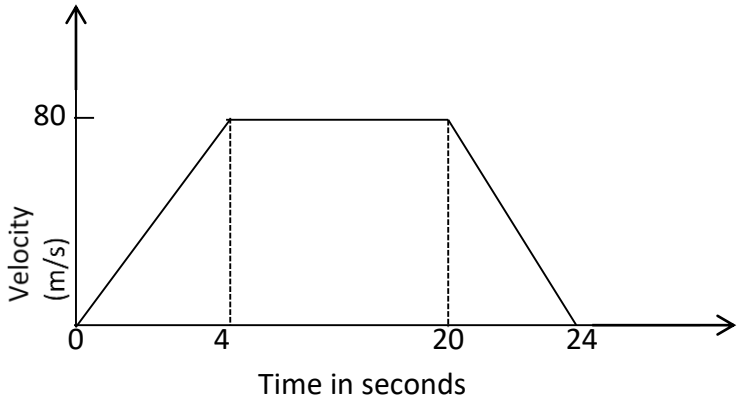
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15. Jane and Mary started a business whereby contributed Ksh. 25000 and 20000 respectively. At the end of the year a profit of Ksh. 8100 was realized. From the profit funds for development, dividends and reserves were set aside in the ration 4:5:6 respectively. If the dividends were shared in the ration of their contribution, determine:

(a) The amount set aside for development **(2mks)**

(b) The dividends Mary received **(2mks)**

16. The figure below is a velocity time - graph for car



(a) Find total distance traveled by the car **(2mks)**

(b) Calculate the deceleration of the car. **(1mk)**

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SECTION II (50 MARKS)

Answer any five questions in this section

17. Five members of a self-supporting enterprise Peter, John, Esther, Brian and Caro were given a certain amount of money to share amongst themselves. Peter got 3/8 of the total amount while John got 2/5 of the remainder. The remaining amount was shared equally among Esther, Brian and Caro each of which received Ksh. 6,000;

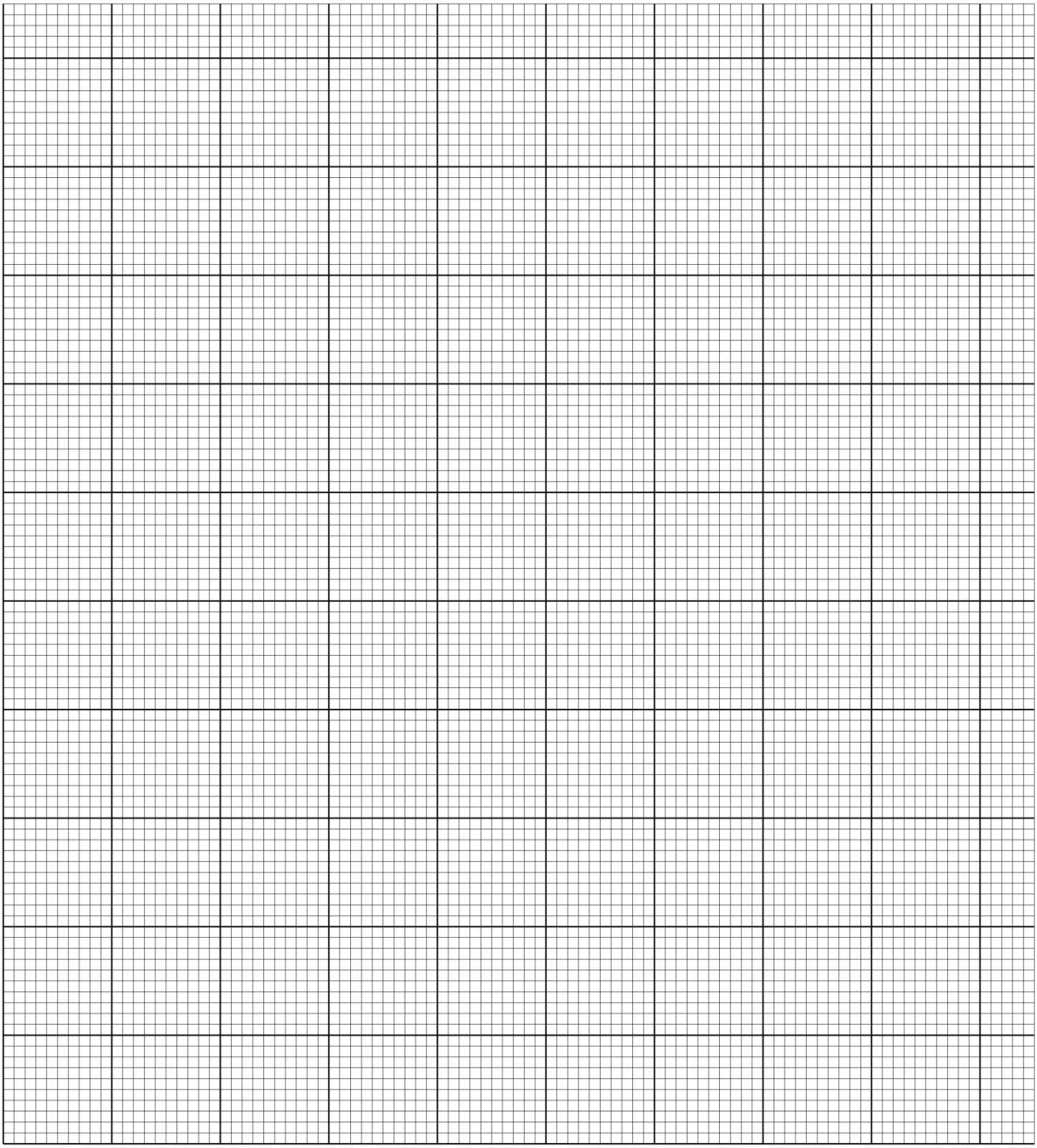
(a) How much was shared among the five business women? **(3mks)**

(b) How much did John get? **(2mks)**

(c) Peter, John and Caro invested their money and earned a profit of Ksh. 12,000. A third of the profit was left to maintain the business and the rest was shared according to their investments. Find how much each got. **(5mks)**

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18. (a) On the grid provided draw the square whose vertices are A(6, -2), B(7, -2), C(7, -1) and D(6, -1) **(1mk)**



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(b) On the same grid draw

(i) $A^1B^1C^1D^1$ the image of ABCD, under an enlargement scale factor 3, Centre (9, -4) **(3mks)**

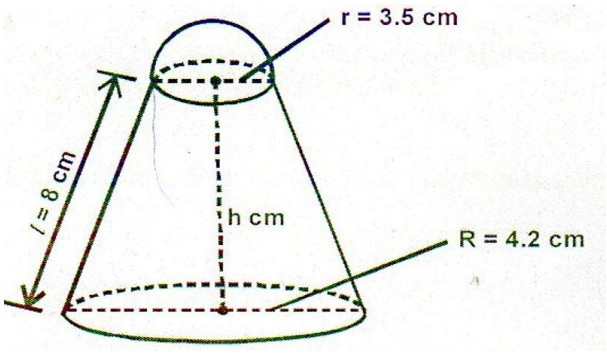
(ii) $A^{11}B^{11}C^{11}D^{11}$, the image $A^1B^1C^1D^1$ under a reflection in the line x = 0 **(2mks)**

(iii) $A^{111}B^{111}C^{111}D^{111}$, the image of $A^{11}B^{11}C^{11}D^{11}$ under a rotation of $+90^0$ about the origin.

(2mks)

(c) Describe a single transformation that maps $A^1B^1C^1D^1$ onto $A^{111}B^{111}C^{111}D^{111}$. **(2mks)**

19. The figure below shows a solid made up of a conical frustum and a hemispherical top. The dimensions are as indicated.



The top radius r = 3.5cm, bottom radius R = 4.2cm, slant height l = 8cm and the height of the frustum part is h cm.

(a) Find the surface area of the solid (Take $\pi = {}^{22}/_{7}$) **(5mks)**

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(b) If a similar solid has a total surface area of $81.51cm^2$, determine the radius of its base, to the nearest whole number **(1mk)**

(c) **(i)** Find the height h of the frustum. **(1mk)**

(ii) Hence determine the volume of the solid **(3mks)**

20. Two towns A and B are 80km apart. Juma started cycling from town A to town B at 10.00am at an average speed of 40km/h. Mutuku started his journey from town B to town A at 10.30am and traveled by car at an average speed of 60km/h

Calculate:

(i) The distance from town A when Juma and Mutuku met **(5mks)**

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(ii) The time of the day when the two met **(2mks)**

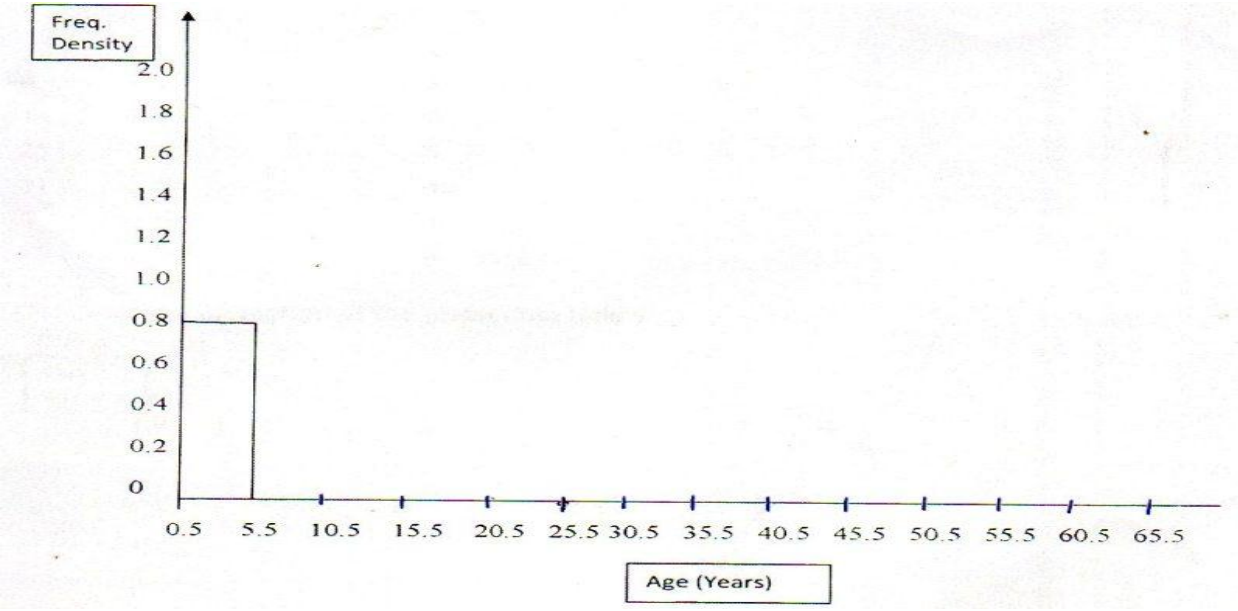
(b) Kamau started cycling from town A to town B at 10.20am. He met Mutuku at the same time as Juma did. Determine Kamau's average speed. **(3mks)**

21. The following data shows the sample of age distribution of the people who reside in a certain village in years, in Nandi County

Age group	Frequency
1 …….5	4
6 ……10	8
11 ……. .20	8
21 …….30	6
31 …….50	40
51 …….55	3
56 …….65	3

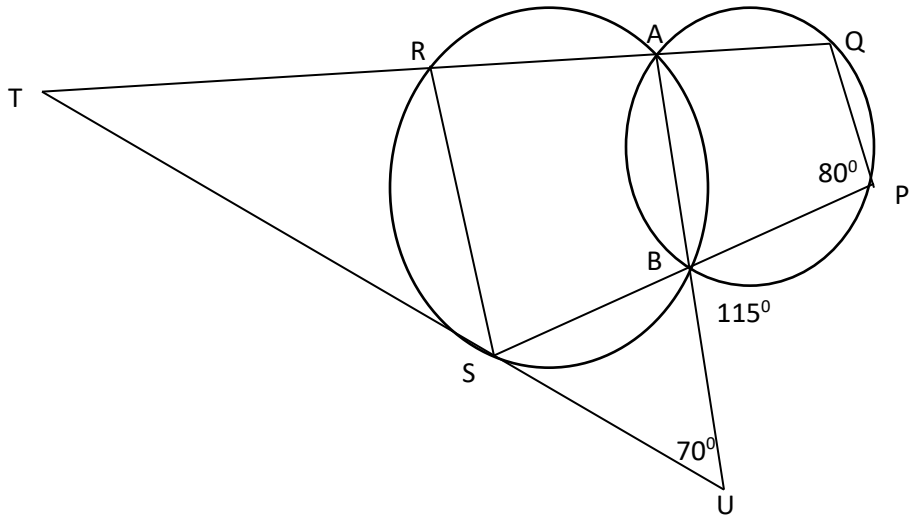
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(a) Complete the histogram of the given data below **(6mks)**



(b) Calculate the mean age of the given sample in the village **(4mks)**

22. The figure below shows two circles ABPQ and ABSR intersecting at A and B. PBS, QART and ABU are straight lines. The line UST is a tangent to the circle ABSR at S. Angle BPQ = 80^0, angle PBU = 115^0 and angle BUS = 70^0



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Find the values of the following angles, stating your reasons in each case.

(a) <BAR **(2mks)**

(b) <STR **(2mks)**

(c) <BSU **(2mks)**

(d) <BRS **(2mks)**

(e) <SBU **(2mks)**

23. Using a pair of compasses and ruler only,

(a) Construct triangle XYZ such that XY = 8cm, YZ = 6cm and angle XYZ = 30^0 **(3mks)**

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(b) Measure the length of XZ **(1mk)**

(c) Draw a circle that touches the vertices X, Y and Z. **(2mks)**

(d) Measure the radius of the circle **(1mk)**

(e) Calculate the area of the circle outside the trangle to 2 d.p. **(3mks)**

24. The function $y = x^3 + x^2 - 3x + 2$ represents a curve.

a) Find the gradient function of the curve **(1mk)**

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b) Find the turning points of the curve and distinguish between them. **(6mks)**

c) Hence sketch the curve $y = x^3 + x^2 - 3x + 2$ **(3mks)**

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EXCELLING STUDENTS FORM FOUR
MOCK SERIES ONE EXAMS

NAME: ……

SHOOOL: ……

ADM NO: ……..…. SIGN: ……..… DATE: ……..

MATHEMATICS (QUESTION PAPER)
FORM 4

TIME 2½ HOURS

PAPER 2

Instructions to Candidates

(a) Write your name, admission number and class in the spaces provided above.
(b) Sign and write the date of examination in the spaces provided above.
(c) This paper consists of **two** sections**; Section I** and **Section II.**
(d) Answer **all** the questions in **Section I** and any **five** questions from **Section II**
(e) Show all the steps in your calculations, giving your answers at each stage in the spaces provided below each question
(f) Marks may be given for correct working even if the answer is wrong.
(g) Non-programmable silent electronic calculators and KNEC Mathematical tables may be used, except where stated otherwise.
(h) This paper consists of 14 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.

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

17	18	19	20	21	22	23	24	Total

Grand Total

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SECTION I (50 Marks)

*Answer **all** the questions in this section in the spaces provided below each question*

1. A quadratic equation has roots as $x = -4$ and $x = \frac{2}{3}$. Write the equation in the form $ax^2 + bx + c = 0$, where a, b and c are integers. **(3mks)**

2. Given that $2 \leq p \leq 8$ and $3 \leq q \leq 10$, find the maximum value of: **(2mks)**

$$\frac{p-q}{q+p}$$

3. Without using a mathematical table or a calculator, write the expression below in the form $a\sqrt{3} + c$, where a and c are constants **(3mks)**

$$\frac{2}{\sin 90^0 + \tan 60^0}$$

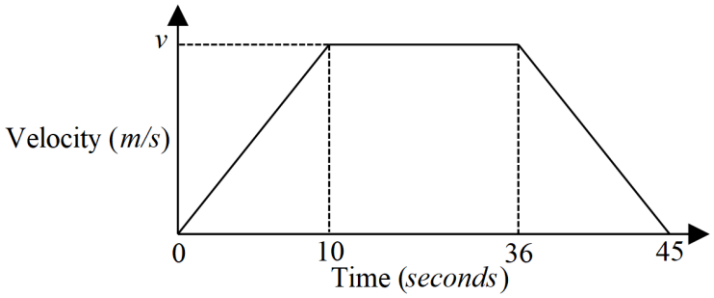
4. Solve for x in the equation $\log_2(x-3) + 2 = \log_2(8-x)$ **(3mks)**

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5. A truck is bought at Kshs. 1,800,000. It depreciates by 10% per annum in the first 2 years, thereafter its annual depreciation rate is 15%. Find the value of the truck after 5 years. **(4mks)**

6. The position vectors of points A and B are $4\boldsymbol{i} - 5\boldsymbol{j} + 6\boldsymbol{k}$ and $-2\boldsymbol{i} + 3\boldsymbol{j} + 8\boldsymbol{k}$ respectively. Calculate the magnitude of $\boldsymbol{AB}$ correct to 3 decimal places. **(3mks)**

7. The figure below shows the velocity-time graph of a particle that moves for 60 seconds and covered a distance of 852 metres.



Calculate the value of v **(2mks)**

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8. Make x the subject of the formula: **(3mks)**

$$px = \sqrt{x^2 + \frac{m}{Q}}$$

9. The equation of a circle is $x^2 + y^2 + 6x - 10y - 2 = 0$. Determine the co-ordinates of the centre and the area of the circle in terms of π **(3mks)**

10. (a) Expand $(1 + 3x)^6$ in ascending powers of x up to the term in x^3 **(1mk)**

(b) Use your expansion to evaluate $(0.997)^6$ correct to 5 decimal places. **(2mks)**

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11. (a) Complete the table below for the function $y = x^2 - 4x + 5$ for $1 \leq x \leq 5$ **(1mk)**

y	1	1.5	2	2.5	3	3.5	4	4.5	5
x	2				2		5		

(b) Use the mid-ordinate rule with 4 strips to find the area bound by the function, the x-axis and the lines $x = 1$ and $x = 5$. **(2mks)**

12. A town T lies on latitude 37^0N and longitude 50^0E. An airport is located on another town R whose longitude is 10^0W on the same latitude as T. An aeroplane leaves town T and flies westwards to R. Calculate the distance covered by the plane in km. (Take R = 6370km and $\pi = \frac{22}{7}$) **(3mks)**

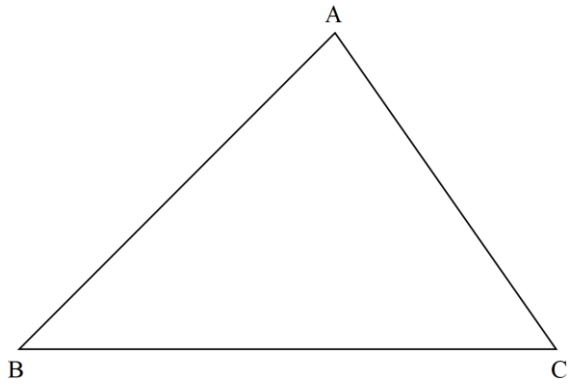
13. The diagram below shows a plot of land. Shade the region R enclosed under the following conditions:

(i) CR $\geq$ 1.5 cm

(ii) R is more than 2 cm from line AB

(iii) $\angle$CRA $\geq$ $\angle$CRB

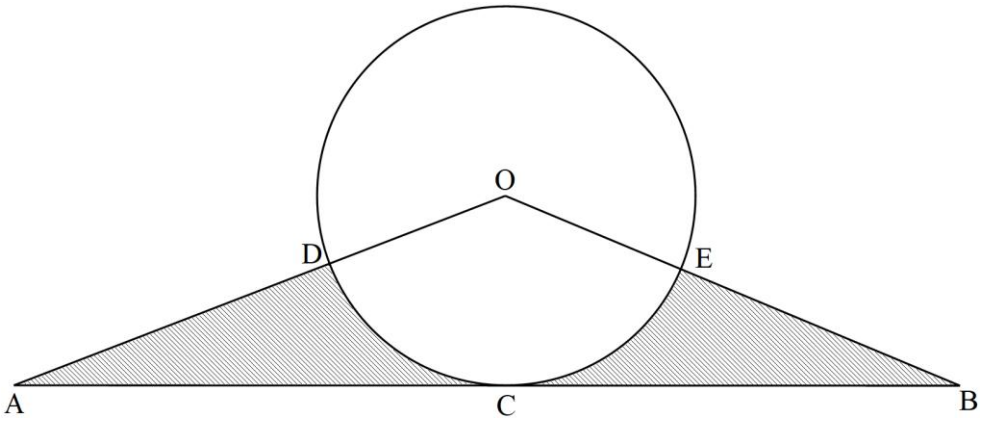
(iv) R is nearer to CB than CA



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By construction and using a scale of 1 cm to represent 10 metres, shade the region where the borehole lies.**(5mks)**

14. In the figure below, O is the centre of the circle. AB is a tangent to the circle at C. AD=17cm and AO=24cm



Calculate the shaded area correct to 4 significant figures. **(4mks)**

15. A trader makes two types of chairs; ordinary and special. The cost of each ordinary chair is Kshs. 300 while the cost of a special chair is Kshs. 700. He is prepared to spend not more than Kshs. 21, 000. It is not viable for him to make less than 20 chairs. Ordinary chairs must be less than twice the special chairs but more than 15. By taking the number of ordinary chairs as x and the special chairs as y; Write down all the inequalities representing the above information.
(4mks)

16. A construction firm has two tractors; P and Q. tractor P completes a job in 4 days while tractor Q completes the work in 6 days. The two tractors start working together and after 2 days, tractor P breaks down. How long does it take Q to complete the remaining work? **(3mks)**

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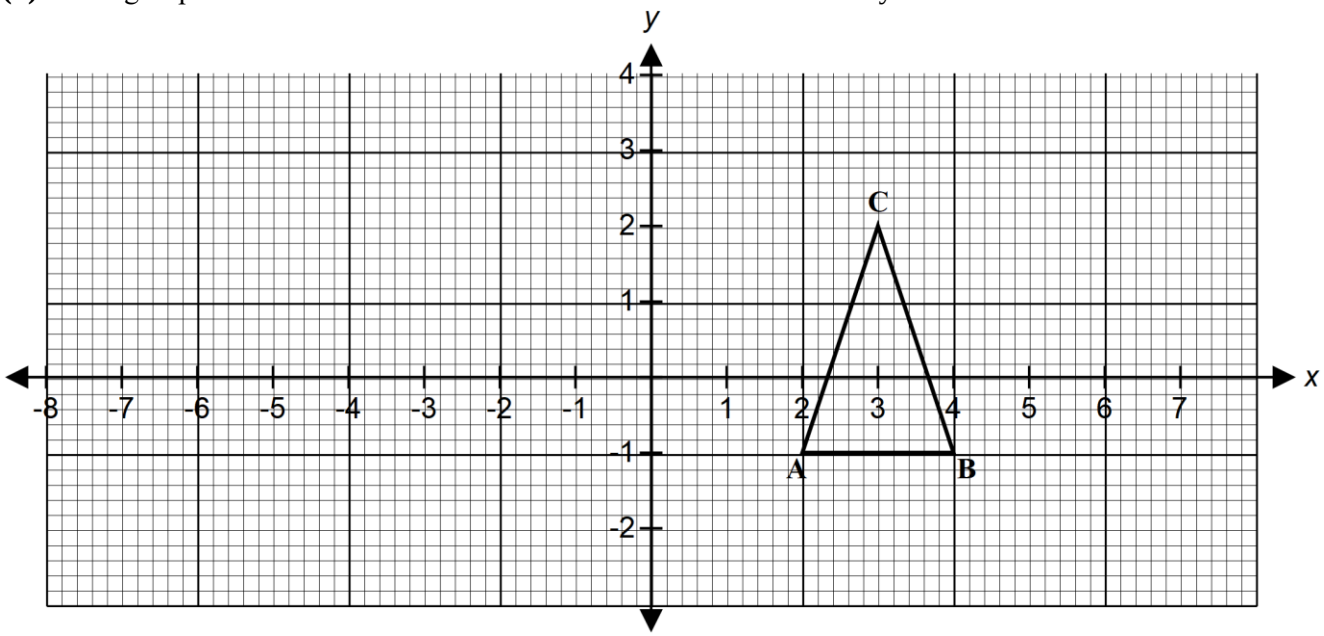
SECTION II (50 marks)

Answer any ***five*** questions in this section

17. The graph below shows a triangle ABC with vertices $A(2,-1), B(4,-1)$ and $C(3,2)$

(a) $\Delta A'B'C'$ is the image of ΔABC under a transformation given by the matrix $\begin{pmatrix}1 & 2\\ 0 & 1\end{pmatrix}$. Determine the coordinates of A', B' and C' **(2mks)**

(b) On the grid provided draw $\Delta A'B'C'$ and describe the transformation fully **(3mks)**



(c) $\Delta A''B''C''$ is the image of $\Delta A'B'C'$ under a reflection along the line $y = 0$. Draw $\Delta A''B''C''$ on the same pair of axes and state its coordinates **(2mks)**

(d) Determine the matrix representing a single transformation that maps ΔABC onto $\Delta\ A''B''C''$ (3mrks)

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18. (a) Write down the first three terms of the sequence whose nth term is given by $T_n = 5n - 2$ **(1mk)**

(b) The third and the sixth terms of a geometric sequence are 18 and 486 respectively. Find the first term and the common ratio of the sequence. **(3mks)**

(c) The first and the last terms of an arithmetic progression are 8 and -190 respectively. If the sum of the first n terms of this arithmetic progression is -3094, find the number of terms in the progression **(2mks)**

(d) The second, fourth and seventh terms of an arithmetic progression are the first three terms of a geometric progression. Find the common ratio of the geometric progression if the first term of the arithmetic progression is 2 **(4mks)**

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19. (a) Three variables P, Q and R are such that P varies partly as the square of Q and partly inversely as the square root of R. Determine:

(i) The relationship between P, Q and R given that when $P = 11\frac{1}{3}, Q = 2$ and $R = 9$ and also when $P = 14.75$, $Q = 5$ and $R = 64$ **(4mks)**

(ii) Q when $P = 145\frac{11}{18}$ and $R = 1.44$ **(2mks)**

(b) Four quantities A, B, C and D are such that A varies jointly with B, the square root of C and inversely as the square of D. Find the percentage change in A if B increases by 21%, C decreases by 36% and D increases by 10% **(4mks)**

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20. A particle moves along a straight line such that its displacement S metres from a given point $S = t^3 - 5t^2 + 4$ where t is time in seconds. Calculate:

(a) The displacement of the particle at $t = 5$ **(2mks)**

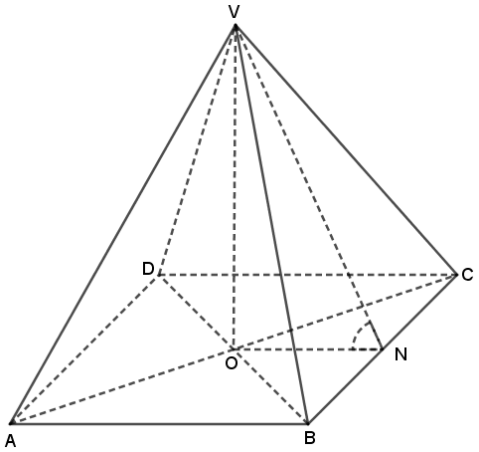
(b) The velocity of the particle when $t = 5$ **(3mks)**

(c) The values of t when the particle is momentarily at rest **(3mks)**

(d) The acceleration of the particle $t = 2$ **(2mks)**

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21. The figure below shows a right pyramid standing on a rectangular base ABCD. AB=8 cm, BC=15 cm and each slant edge is 12 cm long. N is the midpoint of BC



Calculate to two decimal places

(a) The vertical height of the pyramid **(3mks)**

(b) The volume of the pyramid. **(1mk)**

(c) The obtuse angle between the planes VBC and VAD of the pyramid **(4mks)**

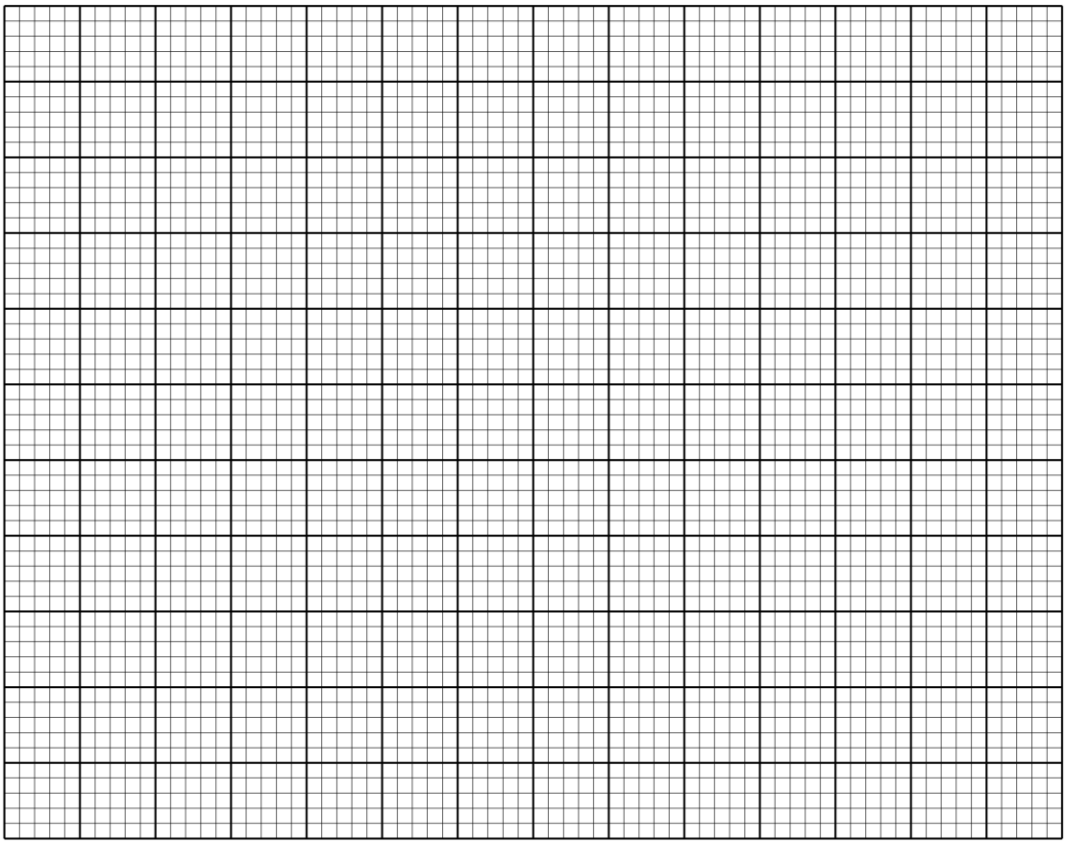
(d) The angle between line VD and the base **(2mks)**

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22. (a) Complete the table below giving the values correct to 2 decimal places. **(2mks)**

x	0^0	30^0	60^0	90^0	120^0	150^0	180^0	210^0	240^0	270^0	300^0	330^0	360^0
$y = \sin(x + 30^0)$	0.50			0.87		0.00		-0.87			-0.50		0.50
$y = 2\cos(x + 30^0)$	1.73		0.00		-1.73		-1.73		0.00			2.00	1.73

(b) On the same set of axes, draw the graphs of $y = \sin(x + 30^0)$ and $y = 2\cos(x + 30^0)$ for $0^0 \leq x \leq 360^0$. Use the scales *x*-axis; 1 cm to represent 30^0 and *y*-axis; 2 cm to represent 1 unit. **(5mks)**



(a) Use you graphs to solve the equation $2\cos(x + 30^0) - \sin(x + 30^0) = 0$ **(2mks)**

(b) State the amplitude of $y = 2\cos(x + 30^0)$ **(1mk)**

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23. A triangle OPQ, R and S are points on $\boldsymbol{OP}$ and $\boldsymbol{OQ}$ respectively, such that $\boldsymbol{OR}$: $\boldsymbol{RP} = 2:3$ and $\boldsymbol{OS}$: $\boldsymbol{SQ} = 2:1$. $\boldsymbol{PS}$ and $\boldsymbol{QR}$ intersect at T. Given that $\boldsymbol{OP} = \boldsymbol{p}$ and $\boldsymbol{OQ} = \boldsymbol{q}$.

(a) Express in terms $\boldsymbol{p}$ and $\boldsymbol{q}$

(i) $\boldsymbol{QR}$ **(1mk)**

(ii) $\boldsymbol{PS}$ **(1mk)**

(b) Given that $\boldsymbol{QT} = h\boldsymbol{QR}$ and $\boldsymbol{PT} = k\boldsymbol{PS}$, express $\boldsymbol{OT}$ in terms of

(i) $h, \boldsymbol{p}$ and $\boldsymbol{q}$ **(2mks)**

(ii) $k, \boldsymbol{p}$ and $\boldsymbol{q}$ **(2mks)**

(c) Find the values of h and k **(4mks)**

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24. The test scores obtained by 40 students were recorded as shown in the table below

Marks	No. of Students
61 – 65	4
66 – 70	5
71 – 75	9
76 – 80	8
81 – 85	8
86 – 90	6

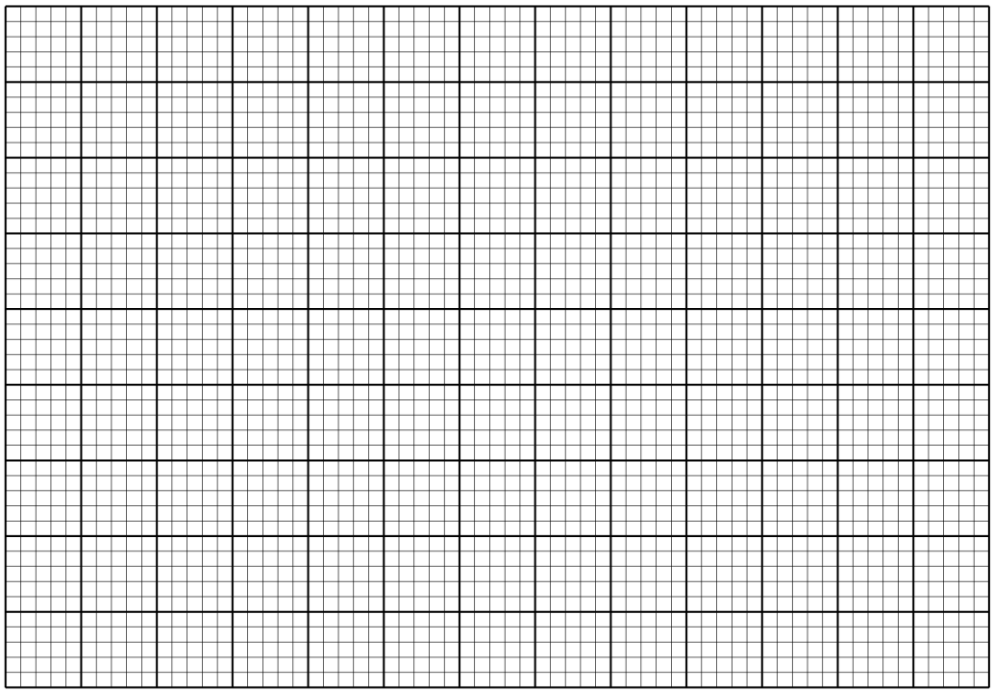
(a) Using a working mean of 73, calculate

(i) the mean mark **(4mks)**

(ii) the standard deviation **(3mks)**

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(b) (i) On the grid provided, draw an ogive to represent the information in the table **(3mks)**



(ii) Us the ogive to estimate the marks scored by the 25^{th} student. **(1mk)**

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EXCELLING STUDENTS FORM FOUR MOCK SERIES ONE EXAMS

NAME: ……..……

SHOOOL: ……

ADM NO: ……. SIGN: ……..……..… DATE: …….……..

PHYICS (232/1)

FORM FOUR (4)

PAPER 1

Time: 2 Hours

Instruction to candidates

- This paper consists of two sections: **A** and **B**
- Answer all questions in section **A** and **B** in the spaces provided
- All workings **must** be clearly shown, and Use the **CONSTANTS** given.

✓ **Gravitational acceleration, 'g' = 10m/s^2**
✓ **Atmospheric pressure = 76mmHg**
✓ **density of water = 1000kg/m^3**
✓ **density of mercury = 13600kg/m^3**

- Silent, non-programmable calculator may be used

FOR EXAMINER'S USE ONLY:

QUESTION	MARKS	CANDIDATES' SCORE
1-12	25	
13	13	
14	14	
15	15	
16	13	
TOTAL	80	

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SECTION A (25 MARKS)

1. Distinguish between density and relative density of a substance **(1mk)**

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2. Figure 1, below shows a wire loop with a string that has been dipped into soap solution.

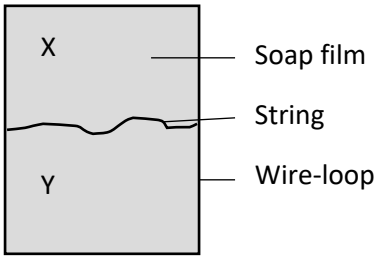


Figure 1

(i) On the space alongside figure 1, Sketch a similar diagram to show the observed effect if the soap film is punctured at X **(1mk)**

(ii) Explain the observations made in **(i)** above **(2mks)**

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3. State **two** reasons why gas particles diffuse faster than liquid particles **(2mks)**

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4. A ball-bearing of mass 0.250 kg is held between the anvil and spindle of a micrometer screw gauge as shown in figure 2. The reading on the gauge when the jaws are closed without anything in between is 0.011cm. Use this information to answer the questions **(a)** and **(b)** below:

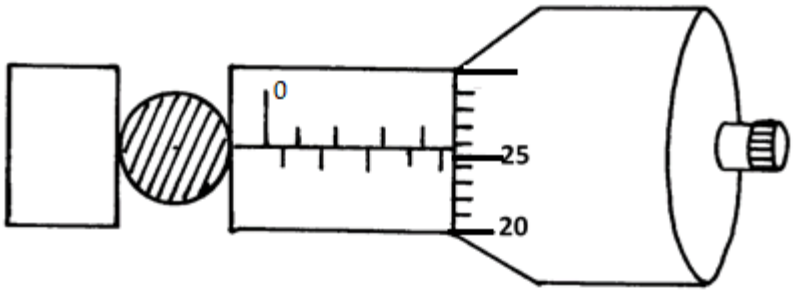


Figure 2

(a) What is the diameter of the ball bearing? **(2mks)**

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(b) Determine the density of the ball bearing **(3mks)**

5. The diagram in figure 3, shows a system in equilibrium and at room temperature.

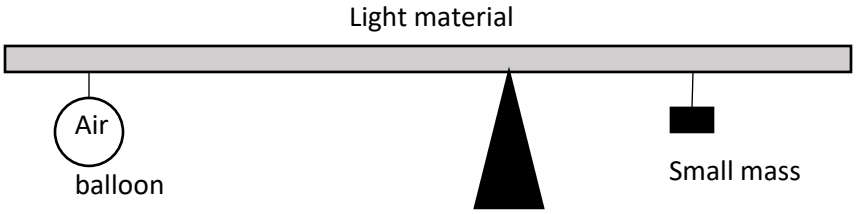


Figure 3

State and explain what is observed when the temperature of the room is raised by 25^0c. **(2mks)**

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6. ***Figure 4,*** shows two glass tubes of different diameters, dipped in a glass beaker half full of water

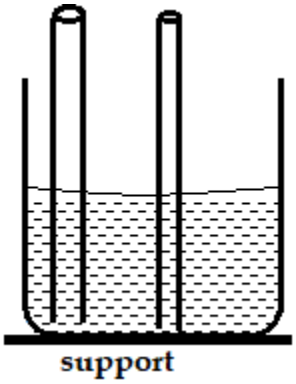


Figure 4

Complete the diagram to show how water will rise up in the two glass tubes **(1mk)**

7. State the conditions necessary for the law of conservation of linear momentum to hold **(1mk)**

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8. The diagram in ***figure 5,*** below shows a steel ball bearing gently falling down through a viscous liquid contained in a tall cylinder

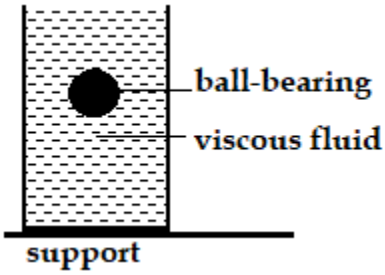


Figure 5

Label on the diagram (giving direction), the forces acting on the ball bearing as it moves down the cylinder **(3mks)**

9. A string vest keeps a person warm though it is a collection of holes bounded by strings. Explain **(2mks)**

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10. The figure 6, below represents a bimetallic strip of metals **X** and **Y** at room temperature (a) and when dipped into crushed ice (b) respectively. Sketch a diagram in the space alongside, to show the shape when the strip is heated to a temperature above the room temperature **(1mk)**

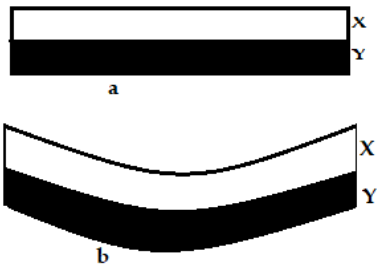


Figure 6

11. Figure 7, below shows the cross-section of an aero-foil, with the aero-plane moving in the direction shown by the arrow.

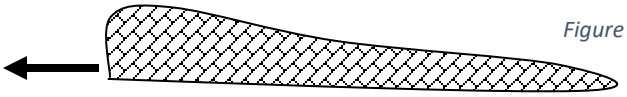


Figure 7

Using a sketch of the streamlines showing how air flows past the wing as the aero-plane moves, explain how the aero-plane achieves the dynamic lift **(3mks)**

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12. The diagram in figure 8, below shows a ball being whirled in a vertical plane at a uniform speed of 20m/s. If the maximum tension on the string is exceeded, suggest, by drawing on the diagram, the path which is likely to be taken by the ball. **(1mk)**

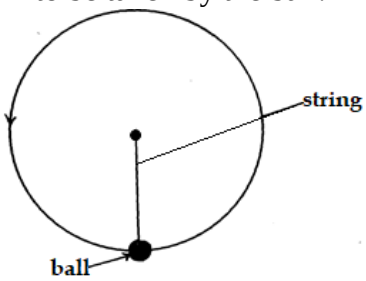


Figure 8

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SECTION B (55 MARKS)

13. The diagram below represents a u-shaped glass tube sealed at one end and containing mercury.

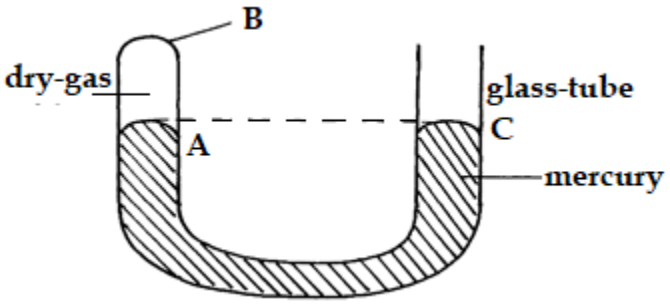


Figure 9

(a) Determine the pressure (in N/m^2) of the dry gas as shown in the diagram above **(2mks)**

(b) Explain why the gas should be dry if it is to be used to verify a gas law **(1mk)**

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(c) Describe how the arrangement can be used to verify Boyle's law. **(4mks)**

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(d) Using the kinetic theory of gases, explain why the pressure of a gas increases with temperature increase **(3mks)**

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(e) Figure 10 below shows a measuring cylinder of height 30cm filled to a height of 20cm with water and the rest occupied by kerosene.

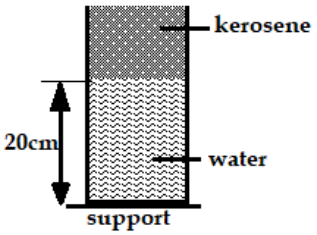


Figure 10

Given that density of water = $1000Kgm^{-3}$, density of kerosene = $800Kgm^{-3}$ and atmospheric pressure = $1.03x10^5$ Pascal, determine the total pressure acting on the base of the container **(3mks)**

14.

(a) Distinguish between uniform velocity and instantaneous velocity **(1mk)**

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(b) The velocity-time graph in the figure 11, below illustrates the motion of a ball which has been projected vertically upwards from the surface of the moon. The weight of the object on earth's surface is 20N.

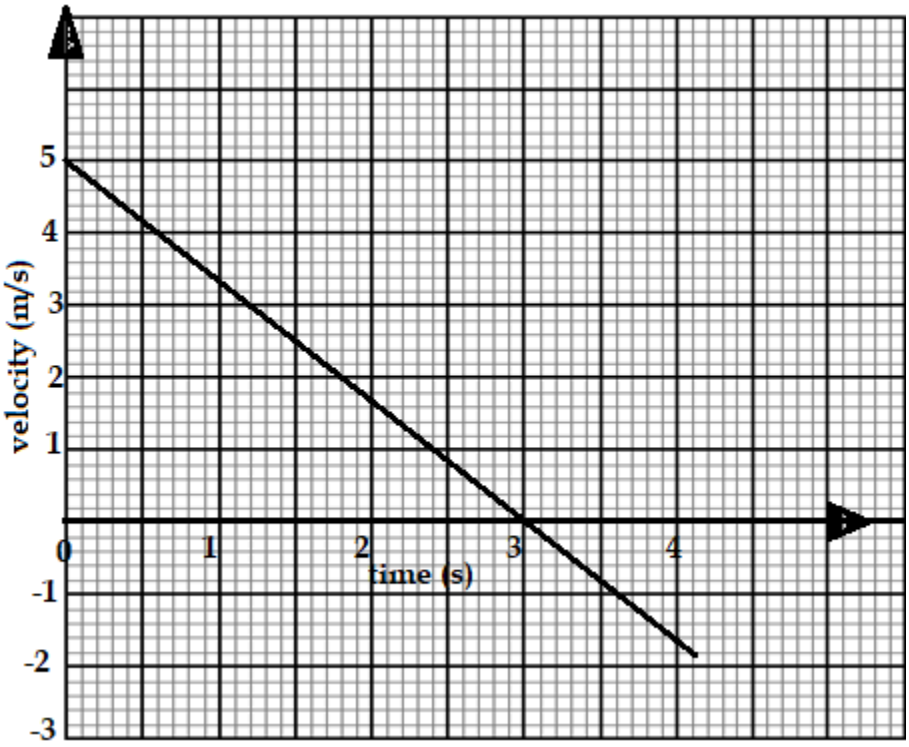


Figure 11

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i. State why the velocity becomes negative after 3seconds. **(1mk)**

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ii. Determine the acceleration of gravity on the moon showing clearly your work **(3mks)**

iii. Determine the total distance travelled by the ball in 4.0seconds **(3mks)**

iv. Find the weight of the ball on the moon **(2mks)**

(c) A body starts from rest and attains a velocity of 10m/s after 4 seconds. Use the axes provided below to represent this motion **(2mks)**

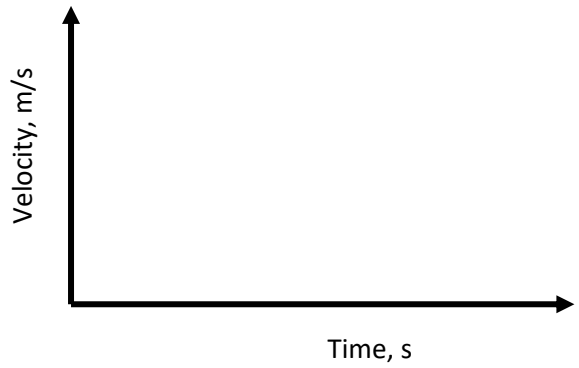


Figure 12

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(d) Define angular velocity and state its SI unit **(2mks)**

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15.

(a) Define the term "velocity ratio" as used in the working of machines (1 mark)

(b) A civil engineer wanted to raise sand from the ground to the third floor of a house he was working on. He began by assembling the following pulley system in figure 13.

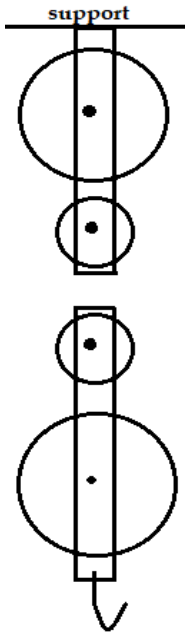


Figure 13

i. Complete the diagram in figure 13, by threading the pulley so that it can be used to raise the load **L** by applying an effort **E** from the third floor. **(2mks)**

ii. The pulley system has a mechanical advantage of 3. Calculate the total work done when a load of 600N is raised through a height of 9m **(3mks)**

(c) On the axes provided, sketch a graph of mechanical advantage against load for the pulley system **(2mks)**



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(d) The graph below shows the potential energy against displacements for a body of mass 80g.

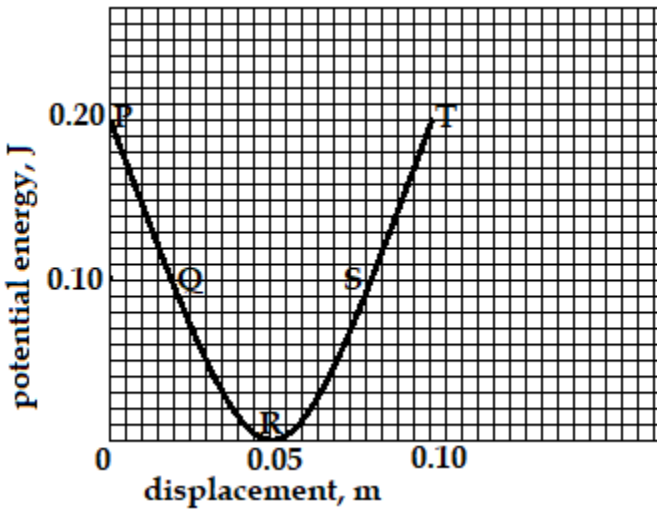


Figure 14

The body oscillates about point **R**. Calculate the velocity of the body at:

i. **P** and **T** **(3mks)**

ii. **Q** and **S** **(2mks)**

iii. at **R** **(2mks)**

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16.

(a) State Archimedes' principle **(1mk)**

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(b) A rectangular brick of mass 10kg is suspended from the lower end of a spring balance and gradually lowered into water until its upper end is some distance below the surface.

i.State and explain the changes observed in the reading of the spring balance during the process **(2mks)**

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ii. If the spring reads 80N when the brick is totally immersed, determine the volume of the brick. **(3mks)**

(c) The figure below shows a hydrometer.

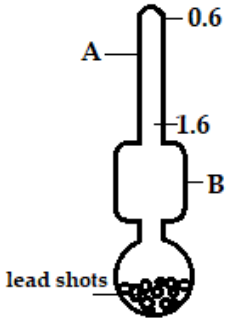


Figure 15

i. Identify the parts labelled A and B **(2mks)**

A ……

B ……

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ii.Explain why the bulb should be made wide **(2mks)**

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iii.State the function of the lead-shots **(1mk)**

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(d) The diagram, ***figure 16,*** shows a block of wood floating on water in a beaker. The set-up is at room temperature before the Bunsen burner is lit. State and explain the changes that are likely to occur in depth **X** when the Bunsen burner is lit. **(2mks)**

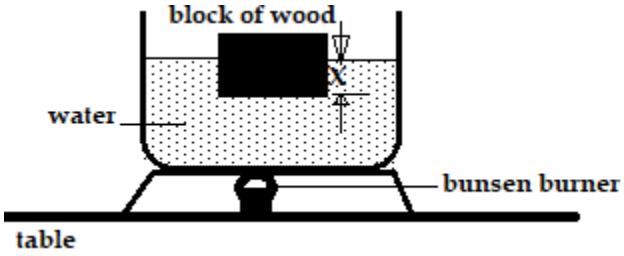


Figure 16

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EXCELLING STUDENTS FORM FOUR
MOCK SERIES ONE EXAMS

NAME: ……

SHOOOL: ……..

ADM NO: ……..…… SIGN: ……..…….… DATE: ……..……..

PHYSICS (232/2)

FORM FOUR (4)

PAPER 2

Time: 2 Hours

Instructions to candidates

(a) Write your name, index number in the spaces provided above.
(b) Sign and write the date of the examination in the spaces provided
(c) This paper consists of **TWO** Sections: **A** and **B**.
(d) Answer **ALL** the questions in section **A** and **B** in the spaces provided.
(e) All working **MUST** be clearly shown.
(f) KNEC mathematical tables and silent non-programmable electronic calculators may be used.
(g) This paper consists of 13 printed pages
(h) Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing
(i) Candidates should answer the questions in English

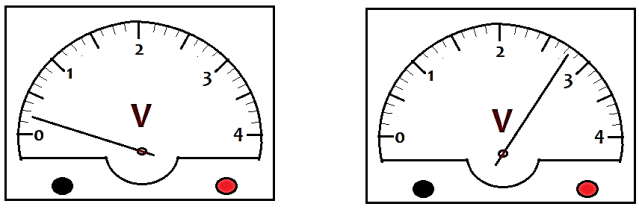
For examiners use only

Section	Question	Maximum score	Candidates score
A	1-15	25	
B	16	11	
	17	11	
	18	10	
	19	11	
	20	12	
TOTAL SCORE		80	

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Section A (25 marks)

1. The fig. 1 below shows a voltmeter before and after use to take the emf of a cell.



Record the value of emf of the cell. **(2mks)**

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2. The chart below shows an arrangement of different parts of the electromagnetic spectrum.

Radio wave	**A**	**B**	Visible light	**C**	**D**	Gamma Rays

(i) Name the radiation represented by **C**. **(1mk)**

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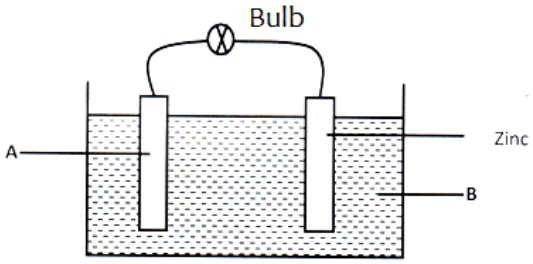
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(ii) Name a device that can be used to detect radiation **A**. **(1mk)**

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3. Figure 2 below shows a set-up of a simple cell.



(a) Name the material used in part A **(1mks)**

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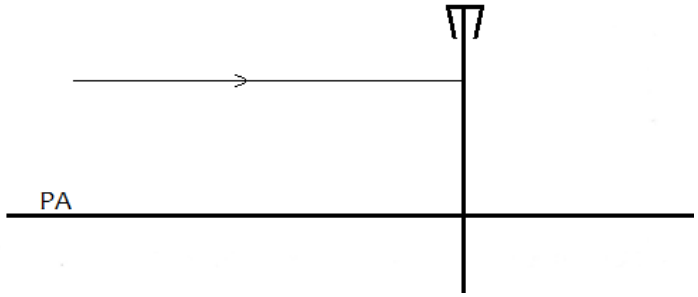
(b) Name the electrolyte B. **(1mk)**

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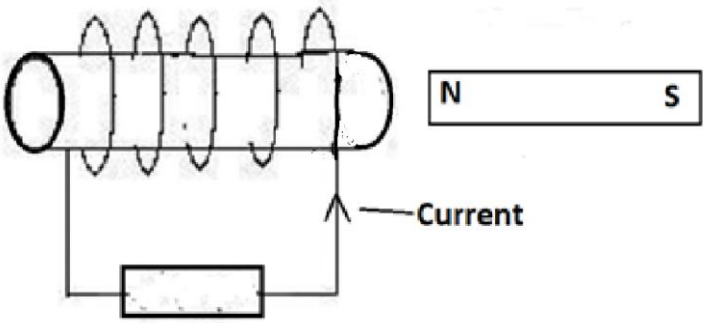
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4. The fig. 3 below shows a ray incident to a concave lens.



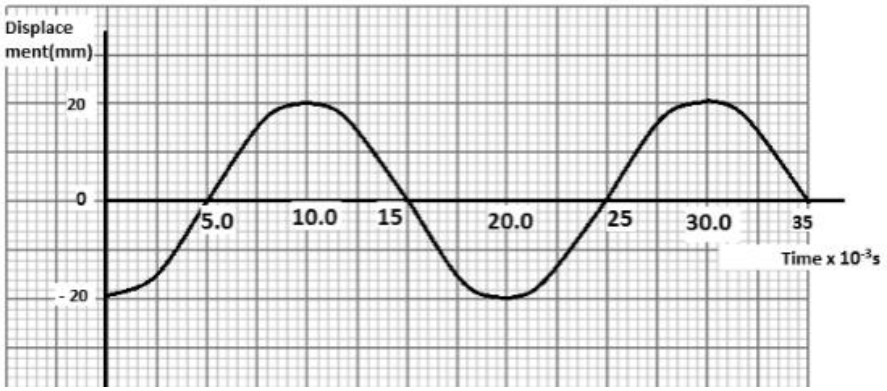
Draw on the diagram to show the resulting ray. **(1mk)**

5. The figure 4 below shows a magnet and a solenoid in relative motion.



If the current shown was induced current indicate the motion of the magnet. **(1mk)**

6. Figure 5 represents a displacement – time graph for a wave.



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Determined the frequency of the wave. **(2mks)**

7. State the reasons for the following in the filament bulb:

a) Inside is filled with inert gas at low pressure. **(1mk)**

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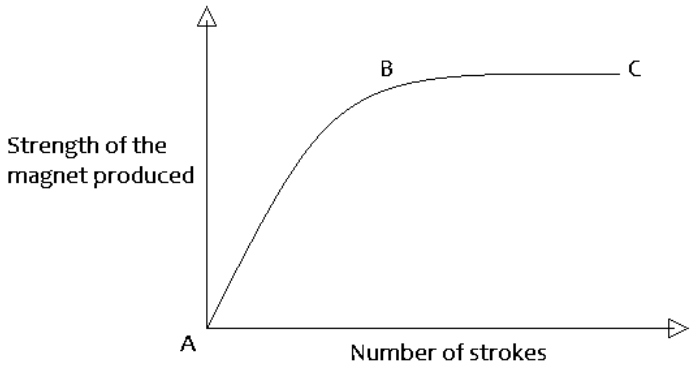
b) The filament is coiled. **(1mk)**

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8. A girl standing at a distance claps her hands and hears an echo from a tall building 2 seconds later. If the speed of sound in air is 340m/s, determine how far the building is. **(3mks)**

9. In an experiment to magnetize an iron bar by single stroke method, the graph below was plotted.



Explain what is happening between points AB and BC. **(2mks)**

AB

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BC

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10. State two ways of confirming that an accumulator is fully charged. **(2mks)**

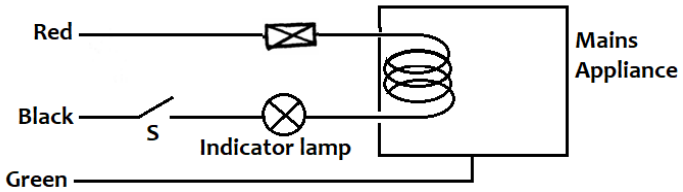
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11. The fig. 6 below shows an electrical appliance with leads labelled Red, Black and Green.



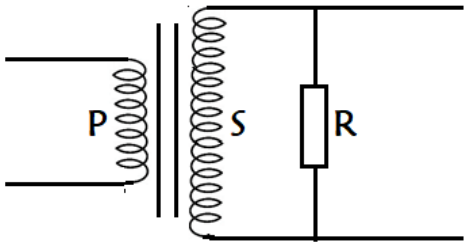
Identify one mistake in the connection. **(1mk)**

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12. Figure 7 below shows a perfectly efficient transformer. The number of turns in the secondary coil S is six times that of the primary coil P.



If a supply voltage of 4V d.c is connected across P, state with reason what happens to the voltage across R **(2mks)**

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13. Explain what is meant by radioactive decay**.** **(1mk)**

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14. A part from the field, state two ways of increasing the magnitude of current generated. **(2mks)**

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15. State one structural difference between a.c and d.c generators. **(1mk)**

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Section B (55 marks)

16. a. State one application of each of the following. **(2mks)**

i. Convex mirror

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ii. Parabolic mirror

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b. Fig. 9, which is drawn to a scale of 1:5, represents an object O and its image 'I' formed by a concave mirror.

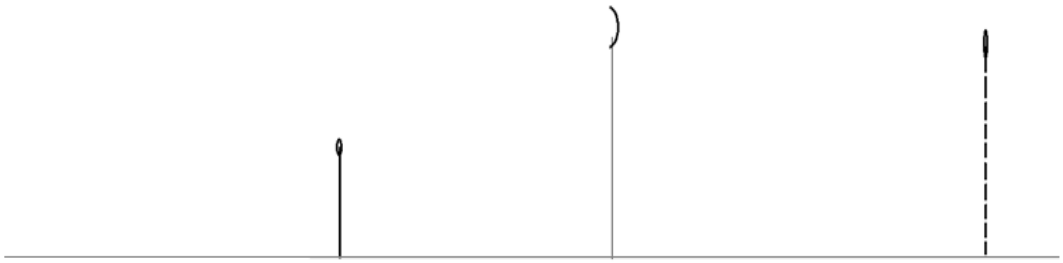
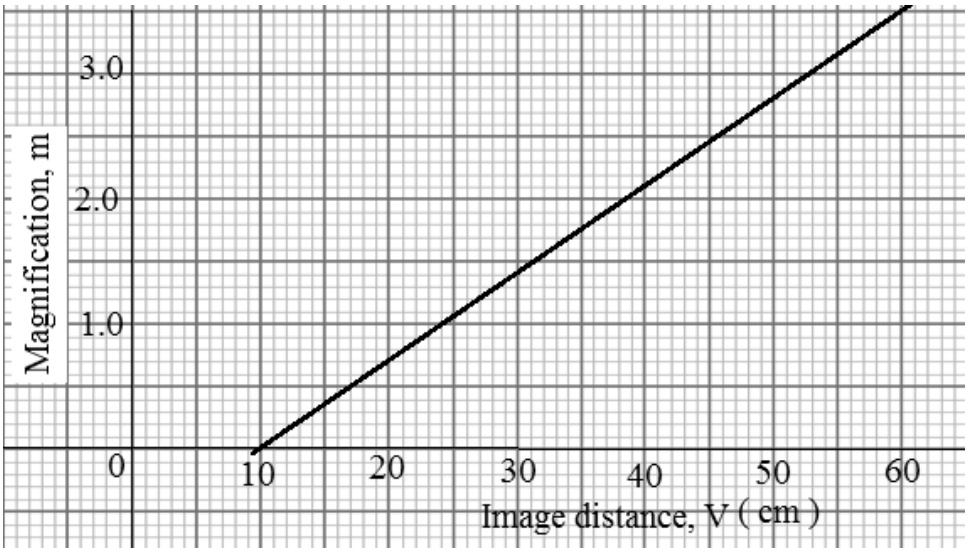


Fig. 1

By drawing suitable rays, locate and mark on the figure the position of the principal focus 'F' of the mirror. Determine the focal length f. **(3mks)**

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c. The graph in Fig. 10 shows the variation of magnification, M with image distance, V for a concave mirror.



Determine:

I.The object position when the image position is 45cm. **(3mks)**

II. The focal length of the mirror. **(1mk)**

d) state two reasons why a concave mirror is used as a doctor's dental mirror**.** **(2mks)**

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17. (a) State **two** factors that determine the capacitance of a parallel place capacitor. **(2mks)**

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(b) A 5μF capacitor is charged to a potential difference of 200V and isolated. It is then connected to a 10μf capacitor.

Find ;

(i) The resultant potential difference across the combination **(3mks)**

(ii) Energy stored before connection **(3mks)**

(iii) Total energy in the capacitors after connection. **(2mks)**

(c) Give two applications of capacitors **(2mks)**

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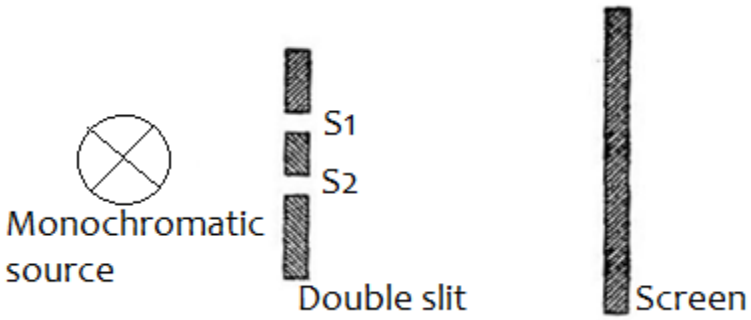
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18. a) In an experiment to observe interference of light waves a double slit is placed close to the source. See figure 12



(i) What is a monochromatic source of light. **(1mk)**

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(ii) State the function of the double slit **(1mk)**

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.....

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(iii) Describe what is observed on the screen **(1mks)**

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(iii) State what is observed on the screen when

I. The slit separation S_1S_2 is reduced **(1mk)**

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.....

.....

II. White light source is used in place of monochromatic source **(1mk)**

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b) During physics lesson, the teacher noticed that Joe had to sit behind in order to see the writings on the board clearly.

I.Name the eye defect experienced by Joe. **(1mk)**

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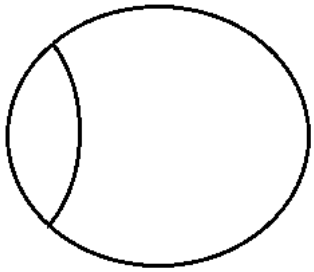
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II. State one possible cause of the defect. **(1mk)**

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III. On the diagram in fig 11 below, draw to show how the defect can be corrected by use of a lens. **(3mks)**



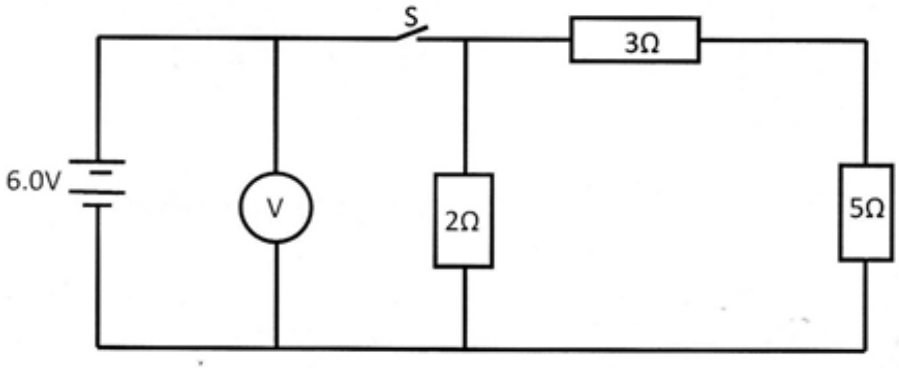
19. (a) Distinguish between an ohmic and non-ohmic conductors. **(1mk)**

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(b) Figure 16 shows a circuit with resistors and voltmeter connected to a battery



i). If each cell has an internal resistance of 0.7Ω, determine the total resistance in the circuit. **(3mks)**

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ii). Calculate the value of current flowing through the 3Ω resistor when the switch is closed? **(2mks)**

iii). What is the reading of the voltmeter when the switch S is

I. Open **(1mk)**

II. Closed **(3mk)**

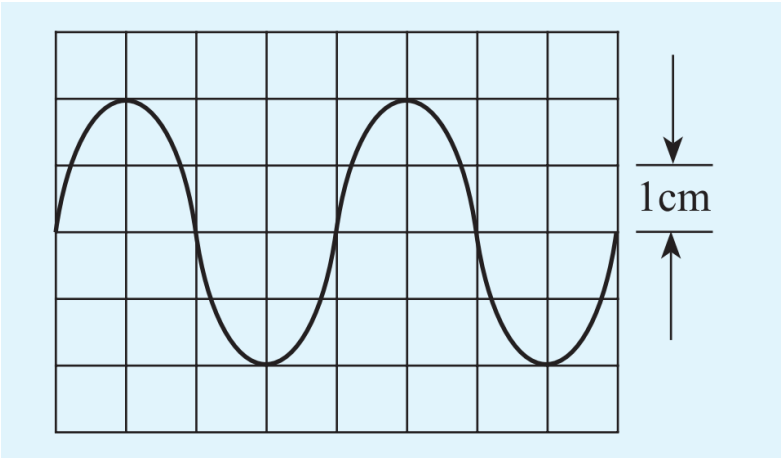
iv). Account for the difference between the answers in (I) and (II) above **(1mk)**

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20. (a) The figure below shows a waveform on a CRO screen: Given that the Y-gain control is set at 20 V/cm and the time-base set to 10 ms/ cm,



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Calculate the:

(i) Periodic time of the wave**.** **(2mks)**

(ii) Frequency of the wave**.** **(2mks)**

(iii) Peak voltage **(2mks)**

(b) Calculate the frequency of X-rays produced by an X-ray tube operating at 20 kV, assuming that no energy is dissipated as heat. (Planck's constant h = 6.63 $x10^{-34}$ Js, and the electronic charge is 1.6 $x10^{-19}$ C) **(3mks)**

(c) Calculate the energy of photons associated with radiation of frequency 4.8×10^{14} Hz, stating your answer in eV **(3mks)**

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PHYICS (232/3)

FORM FOUR (4)

PAPER 3 (PRACTICAL)

Time: 2 ½ Hours

INSTRUCTIONS TO CANDIDATES

a) Answer all questions in the spaces provided in the question paper.

b) You are supposed to spend the first 15 minutes reading the whole paper carefully before commencing your work.

c) Candidates are advised to record their observations as soon as they are made.

d) Marks are given for observation actually made, their suitability, accuracy and the use made of them.

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QUESTION	MAXIMUM SCORE	CANDIDATE'S SCORE
1	20	
2	20	
TOTAL	40	

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QUESTION ONE

PART A

You are provided with the following:

- Copper wire
- A retort-stand, boss and clamp
- An optical pin mounted on a cork
- A stop watch
- Wire cutters (to be shared)
- A metre-rule or half-metre rule

(a) Clamp the cork so that the optical pin is horizontal. Hang the copper wire from the pin by the loop as shown in figure 1. Ensure the wire is straight and the length X between the lower tip and the optical pin is 32 cm. If the length exceeds 32 cm reduce by cutting at the lower tip using the wire cutters provided.

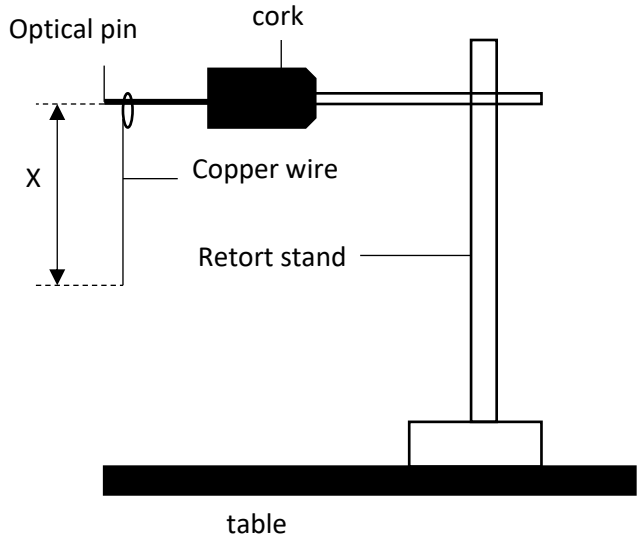


Figure 17

(b) Displace the lower tip of the wire slightly in a plane perpendicular to the optical pin and then release it. Measure the time t for 20 oscillations of the wire and record the value in table.

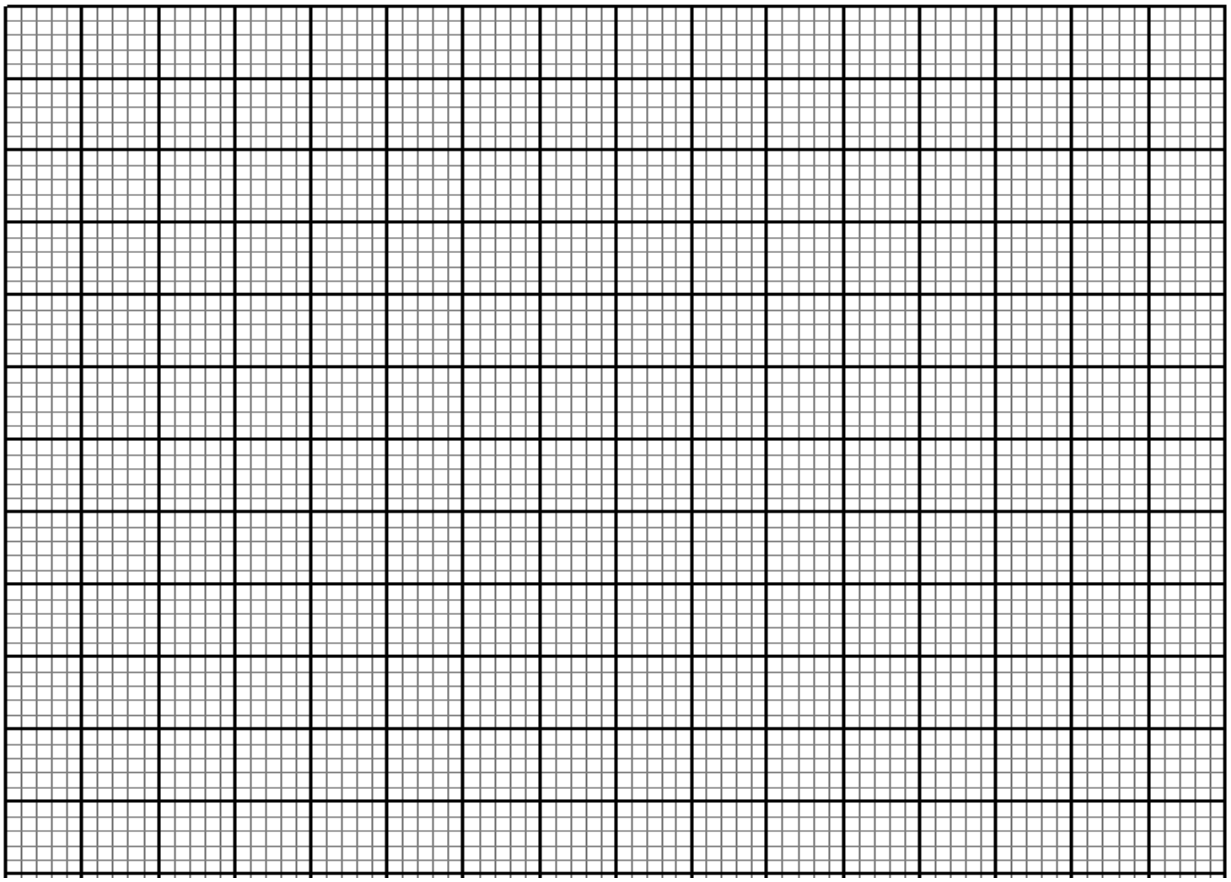
(c) Repeat the procedure in (b) above for other values of X shown in the table. (Note that each length X is obtained by cutting off an appropriate length from the lower tip of the wire. For example, to get X= 28cm cut off 4 cm from the lower end). Complete the table. **(6mks)**

Table 1

Length X (cm)	32	28	24	20	16	12
Time t for 20 oscillations (S)						
Period ($T = \frac{t}{20}$ (S)						
T^2 (S^2)						

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(d) Plot a graph of T^2 (y- axis) against X **(5mks)**



(e)(i) Determine the slope, S, of the graph **(3mks)**

(ii) Obtain the value of k in the equation: $S = \frac{8\pi}{3K}$ **(2mks)**

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PART B

You are provided with the following:

- A cylindrical container
- Some water
- A stop watch
- A metre ruler or half metre rule
- A boiling tube
- Some sand
- A rubber band

Proceed as follows:

(f) Tie the rubber band round the boiling tube so that it is at a distance L= 12 cm from the bottom of the tube (see fig 2. a). Pour water into cylindrical container until the level is about 2.0 cm from the top of the beaker. Float the boiling tube in the water in the container. Add sand gradually into the boiling tube until the tube sinks to the 12 cm mark. See figure 2 (b)

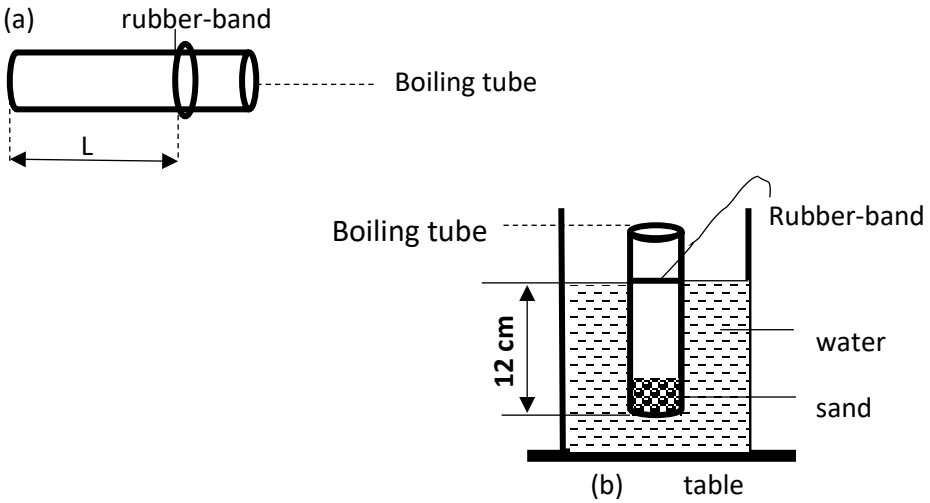


Figure 18

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(g) Depress the boiling tube slightly and release so that is oscillates vertically without touching the sides of the container. Measure and record in table 2 the time t_1, for five oscillations of the boiling tube, Repeat the procedure two more times to obtain t_2, and t_3 and record the values in table 2. Complete the table. **(3mks)**

Table 2

t_1 (S)	t_2 (S)	t_3 (S)	Average, t (S) $t = \frac{t_1+t_2+t_3}{3}$	$T = \frac{t}{5}\ (s)$

(h) Evaluate PT = 40L given that L is the length of the tube up to the rubber band in (f) and T is the value obtained in (g) above. **(1mk)**

P = _____

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QUESTION TWO

You are provided with the following apparatus:

PART A

- Constantan wire SWG 28 mounted on a mm scale
- Ammeter (0 – 1) A
- Voltmeter (0 –2.5) V
- A jockey
- 6 connecting wires with crocodile clips
- A switch
- A new dry cell and a cell holder
- Micrometer screw gauge to be shared

Proceed as follows:

(a) Connect the apparatus provided as shown in the circuit below. Measure the voltmeter reading, E when the switch is open.

E = …… **(1mk)**

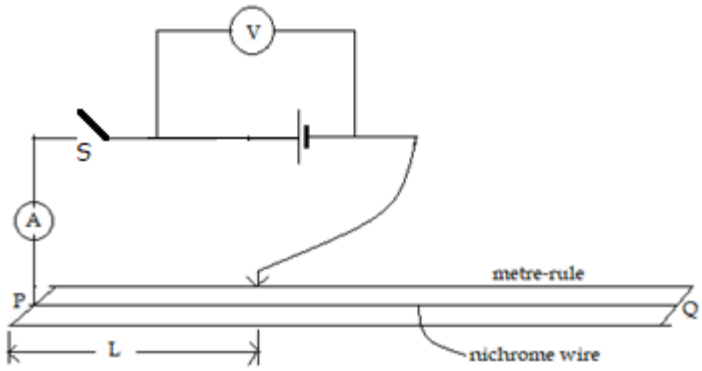


Figure 19

(b) With the crocodile clip at L = 10 cm, close the switch S and record the ammeter and voltmeter reading.

A = ……. **(1mk)**

V = ……. **(1mk)**

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(c) Repeat the procedure in (b) for other values of l = 15cm, 20cm, 25cm, 30cm, 35cm and record the readings in the table below. **(5mks)**

Table 3

Length. L. (cm)	10	15	20	25	30	35
Voltmeter reading, V (volts)						
Ammeter reading, I(A)						

(d) Given that V = X – 0.3.I, determine the value of X when L is 20cm **(2mks)**

(e) Measure the diameter d of the wire x using the micrometer screw gauge.

d = _____m **(1mk)**

(f) Dismantle the apparatus and set up the circuit as shown below

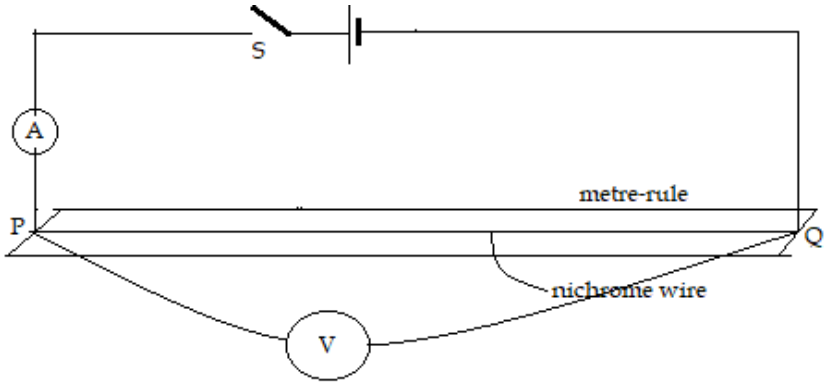


Figure 20

(i) Close the switch S and record the ammeter and the voltmeter readings

I = _____ A **(1mk)**

V = _____ V **(1mk)**

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Hence find R, the resistance of the wire.

R = _____ **(1mk)**

(ii)Given that: R = $\frac{4\rho}{\pi d^2}$, determine ρ **(2mks)**

PART B

You are provided with the following apparatus.

- Rectangular glass block
- 3 optical pins
- A soft board.
- A plane paper
- 4 paper pins.
- Four tuck pins

Proceed as follows:

(g) Using the tuck pins, fix the plane paper on the soft board.

Place the rectangular glass block in the middle of the plane paper and trace its outline (as shown in figure 5). Using a pencil. Remove the block.

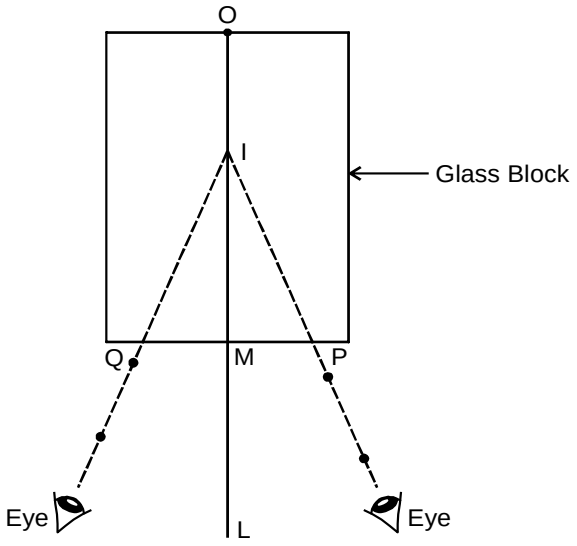


Figure 21

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(h) Construct a perpendicular line LMO bisecting the shorter sides of M and O.
Mark points P and Q such that PM = MQ = 2cm.

Measure OM**.....** **($\frac{1}{2}$ mk)**

(i) Place the plane paper on the soft board and carefully replace the glass block so that it fit the outline. Press the object pin on O such that it is upright and touching glass block and the second pin on P also upright and touching the block.

(j) Press the third pin P_1 a short distance from the block such that P_1, P and I lie on a straight line when viewed through the block with one eye. I is the image of the object pin O.

(k) Repeat the experiment with now on Q. Press the third pin P_2 a short distance from the block such that when viewed P_2, Q and I lie in a straight line.

(l) Remove the pins and glass block; draw the lines P_1PI (PI dotted) and P_2 QI (QI) doted meeting OM at I.

IM = **.....**cm **($\frac{1}{2}$ mk)**

(m) Using the above information, determine, k, given that: $A = \frac{l}{k}$, where l *is the length OM* and A is the length IM **(1mk)**

(n) State the significance of k **(1mk)**

NB - Hand in your work on the plane paper as proof of having done the experiment.
(1 mark)

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