KENYA'S TOP EXAMINERS' 2020

MOCK EXAMS SERIES 3

AMOBI SOFT COPY PUBLISHERS

Transparency, Honesty and Accountability Defined

Kenya's Top Examiners' 2020 Mock Exams SERIES 3

Prefer Calling Sir Obiero Amos @ 0706 851 439 for the Marking Schemes

SUBJECTES TESTED: Eng, Kisw, Maths, Chem, Bio, Phy, Geog, Hist, CRE, Agric, Bussiness Studies, Computer & Home Science.

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NAME………

INDEX NO………………………….. CANDIDATE'S SIGN: …………………….…………….…

AGRICULTURE

PAPER 1   DATE………………………………..

SEPTEMBER/OCTOBER

TIME: 2 HOURS

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2020 TOP EXAMINERS' MOCK SERIES 3

INSTRUCTIONS TO CANDIDATES:

(a)   Write your **name** and **index number** in the spaces provided above.
(b)   Sign and write the date of examination in the spaces provided above.
(c)   This paper consists of **THREE** Sections **A**, **B** and **C**.
(d)   Answer all questions in Section **A** and **B**
(e)   Answer any **Two** in Section **C**.
(f)   All answers must be written in the spaces provided.
(g)   This paper consists of **12** 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.

FOR EXAMINER'S USE ONLY

Section	Question	Maximum Score	Candidate's Score
A	1 - 19	30	
B	20 – 23	20	
C	24 - 26	20	
		20	
Total Score		90	

SECTION A: (30 MARKS)

Answer all questions in this section in the spaces provided.

1. (a) State **three** factors that determine the method used to harvest a crop. (1½ marks)

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    (b)   Give **four** ways in which cereals are stored in Kenya. (2 marks)

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2.   Outline **two** disadvantages of tenancy system in farming. (1 mark)

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3.   Give **three** reasons for sowing annual crops early.   (1½ marks)

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4.   Outline **two** control measures of downy mildew in onions.   (1 mark)

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5.   Name **two** pasture legumes grown in medium altitude zones.   (1 mark)

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6.   Give **three** effects of riverbank erosion.   (1½ marks)

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7. Give **two** reasons why root pruning is done in the nursery management in agroforestry.　(1 mark)

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8. State **four** sources of nitrogen in the soil.　(2 marks)

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9. State **four** factors that determine the choice of a crop enterprise. (2 marks)

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10. Give **three** properties of soil that are influenced by its texture.   (1½ marks)

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11. (i) Give **two** destructive effects of moles in crop production (1 mark)

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(ii) Apart from moles name two other rodent pests.   (1 mark)

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12. (a) Define the term joint products.   (1 mark)

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(b)   Outline **two** examples of joint products in crop production.   (1 mark)

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13.   Name the part planted for each of the following crops.   (1½ marks)

(a)   Sisal: ....

(b)   Irish potatoes: ....

(c)   Pyrethrum: ....

14.   Suppose a farmer has to apply 30kg of P_2O_5 per hectare and he had the fertilizer labelled 21: 15: 60 at his disposal, calculate the amount of the fertilizer 21: 15: 60

he will require for two hectares of land.   (2 marks)

15. State **four** financial documents used in the farm.   (2 marks)

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16. List **two** methods of plucking tea.   (1 mark)

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17. State **three** ways in which crop rotation can improve soil fertility.   (1½ marks)

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18. Outline **two** basic economic concepts of agriculture.   (1 mark)

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19. State **two** characteristics of plants used for green manure. (1 mark)

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SECTION B: (20 MARKS)

Answer all questions in this section in the spaces provided.

20. A farmer wishes to change her enterprise from vegetable production to dairy cattle rearing. The cost she incurs in growing of vegetables is as follows.

Weeding   Sh.200

Harvesting   Sh.300

Fertilizer   Sh.500

Seeds   Sh.400

When she changes her enterprise to dairy cattle she incurs the following:

Cost of buying cattle   Sh.5000

Disease control   Sh.200

Salary of milk person   Sh.2000

Fencing   Sh.500

The revenues she gets when growing vegetable is Sh.10,000. In dairy production,

the revenue she gets from milk sales is Sh.15,000 and manure sales Sh.1000.

Draw up the partial budget and indicate the effect of the change. (Show your working).   (5 marks)

21. The diagram below show practices carried out in the farm.
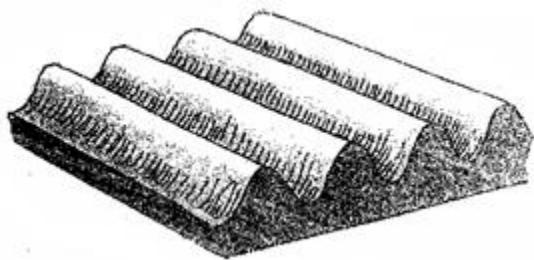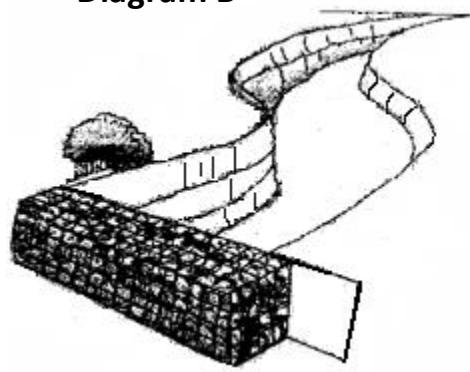
Diagram A   **Diagram B**

(a) Identify the practices.   (2 marks)

A ………………………….…...   **B**………………………………

(b) Give the reasons for carrying out the practices.
    A   (2 marks)

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    B   (1 mark)

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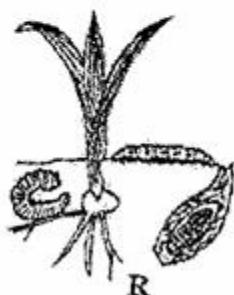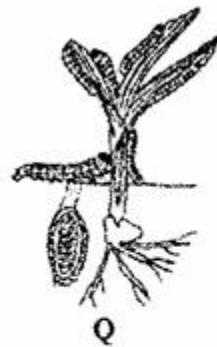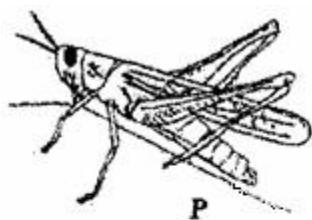
22. Below are the pests that commonly attack the crops. Study them carefully and answer questions that follow.

(a) Identify the pests labelled **P**, **Q**, **R** and **S**. (2 marks)

P: ……………………………………… **Q:** ……………………………………

R: ……………………………………… **S:** ……………………………………

(b) What kind of mouth parts do they possess? (1 mark)

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(c) Give **two** ways in which pests can be categorised depending on their habitat. (2 marks)

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23. (a) Give **three** reasons why it is difficult to control Sodom apple;
<u>Solanum</u> <u>incanum</u>.   (3 marks)

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(b) State **two** mechanical methods used in separating soil in soil analysis. (2 marks)

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SECTION C: (40 MARKS)

Answer any two questions from this section.

24. (a) Describe harvesting of pyrethrum under the following sub-headings.

(i) Procedure.   (5 marks)

(ii)   Precautions.   (5 marks)

(b)   Outline **five** measures taken to prevent water pollution. (5 marks)

(c)   Describe the effects of land fragmentation and subdivision. (5 marks)

25.   (a)   Explain **five** ways by which farmers minimize grain loses in store.
(5 marks)

(b)   Outline **eight** roles of a farm manager.   (8 marks)

(c)   Outline **seven** importances of agroforestry.   (7 marks)

26.   (a)   Describe production of napier grass under the following subheadings.

(i)   Land preparation.   (3 marks)

(ii)   Planting.   (6 marks)

(iii)   Utilisation.   (3 marks)

(b)   Outline **four** importance of banking services to a Kenyan farmer.
(4 marks)

(c)   State **two** effects of weeds on pastures.   (4 marks)

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NAME: …………………………………………………………………………………………………..

INDEX NO: …………………….. CANDIDATE'S SIGN: ………………….… DATE: …………………………...

AGRICULTURE   PAPER 2

SEPTEMBER/OCTOBER

TIME: 2 HOURS

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(i)   Write your **name** and **index number** in the spaces provided above.
(j)   Sign and write the date of examination in the spaces provided above.
(k)   This paper consists of **THREE** Sections **A**, **B** and **C**.
(l)   Answer all questions in Section **A** and **B**
(m)   Answer any **Two** in Section **C**.
(n)   All answers must be written in the spaces provided.
(o)   This paper consists of **12** printed pages.
(p)   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	Question	Maximum Score	Candidate's Score
A	1 - 18	30	
B	19 – 22	20	
C	23 – 25	20	
		20	
Total Score		90	

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SECTION A: (30 MARKS)

Answer all questions in this section in the spaces provided.

1.   Name **three** meat breeds of sheep.   (1½ marks)

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2.   Name **two** lubricants used in a tractor engine.   (1 mark)

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3.   Differentiate between oestrus cycle and heat period.   (1 mark)

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4.   Mention any **three** signs of heat in rabbits.   (1½ marks)

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5.   State **four** functions of harrows as farm implement.   (2 marks)

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6.   State **two** field conditions under which a fork jembe would be more
      suitable for use than a jembe.   (1 mark)

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7. (a) Give a reason why ruminant animals are able to digest napier grass.   (1 mark)

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(b)   List the **four** compartments of a ruminant stomach in an orderly sequence. (2 marks)

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8.   Give the meaning of the following terms as used in livestock health.

(a)   Quarantine.   (1 mark)

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(b)   Isolation.   (1 mark)

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(c)   Zoonotic disease.   (1 mark)

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9.   State **four** reasons why honey harvesting is discouraged at night. (2 marks)

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10. Differentiate between cropping and harvesting in fish keeping. (1 mark)

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11. Give the functions of the following farm tools and equipment.

    (a)   Center punch.   (½ mark)

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    (b)   Wire strainer.   (½ mark)

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12. State **four** reasons why piglets should be weighed immediately after birth and weaning.   (2 marks)

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13.   (a)   Name **two** categories of vaccines.   (1 mark)

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      (b)   Give **two** ways of administering vaccines in livestock.   (1 mark)

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14. Give **four** advantages of indigeneous cattle over the exotic cattle breeds. (2 marks)

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15. State **two** ways in which proper feeding contributes to disease control in livestock. (1 mark)

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16. (a) List down **four** farm operations that are powered by engines. (2 marks)

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(b) Name **two** common types of mowers. (1 mark)

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17. State **three** sources of water in the animal's body. (1½ marks)

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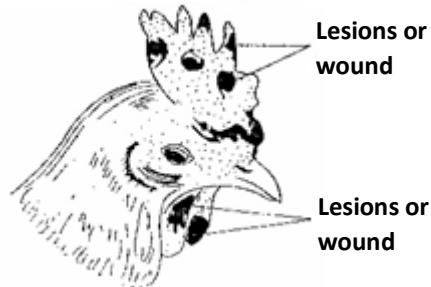
18.   Which camel breed has two humps?   (½ mark)

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SECTION B: (20 MARKS)

Answer all questions in this section in the spaces provided.

19.   The following diagram illustrate symptoms of a disease in poultry. Study it
       carefully and answer the question that follows.

       (a)   Identify:

(i)   The disease.   (½ mark)

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       (ii)   The causal organism.   (½ mark)

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(b)   State **two** other symptoms of the disease apart from lesion. (2 marks)

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(c)   State **two** control measures for the disease.   (2 marks)

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20.   The following illustration represents a certain practice carried out in sheep management. Study this illustration and answer the questions that follows:

(a)   Identify the practice illustrated above.   (1 mark)

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(b)   Name the tool being used in carrying out the practice illustrated
        above. (1 mark)

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(c)   State **two** precautions that should be taken when carried out the
        above practice.   (2 marks)

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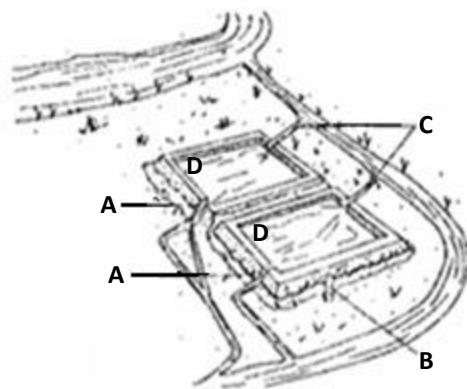
(d)   How often should the practice be carried out.   (1 mark)

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21.   Below is an illustration of a fish pond. Study it carefully and then answer
the questions that follow.

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(a) Give the reasons why part **D** is usually deeper than the rest of the pond. (1 mark)

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      (b)   Name the parts labelled. (1½ marks)

         A ....

         B ....

         C ....

(c)   Give **two** reasons why a fence should be constructed around the fish pond.
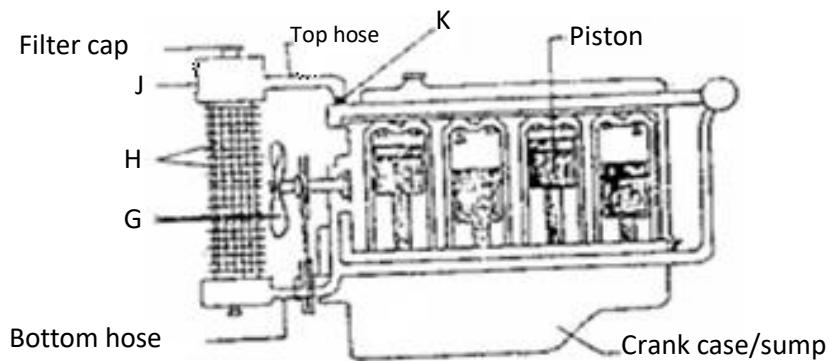
(1 mark)

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      (d)   State **three** maintenance practices that should be carried out on this fish pond apart from fencing. (1½ marks)

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22. The diagram below shows the cooling system of a tractor engine. Study it carefully and answer the questions that follow.

(a) Name the parts labelled. (2 marks)

G ……………………………………….. **H** ………………………………….

J ……………………………………. **K** ………………………………..

(b) State the functions of the parts labelled **G**, **J** and **K** in the cooling system. (3 marks)

G ……………………………………………………………………………..

J ……………………………………………………………………………

K …………………………………………………………………………..

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SECTION C: (40 MARKS)

Answer any two questions from the section.

23. (a) Describe the management of a sow during parturition.   (10 marks)

(b) Outline **five** control measures of cannibalism in poultry keeping. (5 marks)

(c) Explain the precautions observed in handling of bees.   (5 marks)

24. (a) Describe the lifecycle of a three host tick.   (5 marks)

(b) Give **six** importance of keeping animals healthy.   (6 marks)

(c) Explain **nine** factors considered when selecting livestock for

breeding.   (9 marks)

25.(a) Describe the procedure for establishing a barbed wire fence.   (7 marks)

(b) State **five** advantages of a spray race.   (5 marks)

(c) (i) Give **five** maintenance practices of a trailer.   (5 marks)

(ii) Mention **three** advantages of natural calf rearing. (3 marks)

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NAME: ……………………………………………………………………………………………...……..

INDEX NO: …………………...…. CANDIDATE'S SIGN……………...…… DATE………………………

231/1

BIOLOGY

PAPER 1   (THEORY)

SEPTEMBER/OCTOBER

TIME: 2 HOURS

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INSTRUCTIONS TO CANDIDATES:

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

2. **Sign** and write the **date** of examination in the spaces provided above.

3. Answer **all** the questions in the spaces provided.

4. Answers must be written in the spaces provided in the question paper.

5. Additional pages **must not** be inserted.

FOR EXAMINER'S USE ONLY:

Question	Maximum Score	Candidate's Score
1 - 23	80	

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1. (a) Define the term growth.   (1 mark)

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    (b) Name the tissue in plants responsible for:
         (i) Primary growth.   (1 mark)

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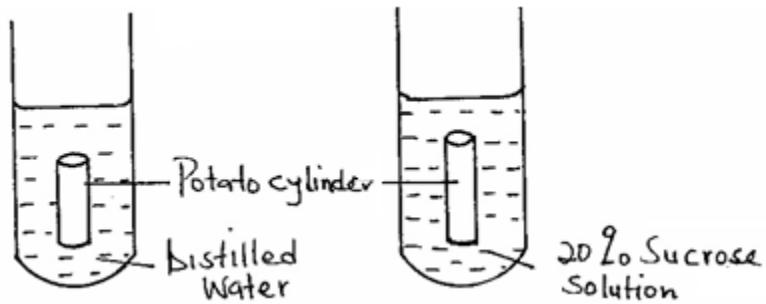
         (ii) Secondary growth.   (1 mark)

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2. Two potato cylinders were carefully dried on a blotting paper and weighed. Each

    piece weighed 2 grams. One was placed in each test tube as shown in the diagram below.

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(a)   After 48hrs, which potato cylinder will be heavier. Explain. (2 marks)

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 (b) Name the substance whose movement was responsible for the weight
      changes in the potato cylinder you identified in (a) above. (1 mark)

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(c)   Name the process which was responsible for the movement of the
        substance you identified in (b) above.   (1 mark)

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3.   Why are the following steps taken when preparing across section of a leaf
        for viewing under the microscope?

(a)   Cutting thin section.   (2 marks)

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(b)   Placing the section in water.   (2 marks)

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4. Below is the dental formula of a mammal.

$$i\frac{0}{4}, \ c\frac{0}{0}, \ pm\frac{3}{3}, \ m\frac{2}{3}$$

(a) What is the total number of teeth?   (1 mark)

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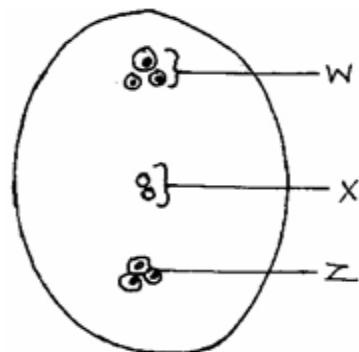
(b) (i) What is mode of feeding in the mammal?   (1 mark)

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(ii) Give **one** reason for your answer above.   (1 mark)

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5. Below is a diagram of a mature embryo sac.

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Identify the parts labelled.

        (i)   **W** ……………………………………………………….. (1 mark)

        (ii)   **Z** ……………………………………………………… (1 mark)

(a)   Give the name of the part of the seed formed when the part labelled **X** fuses with one of the male nucleus. (1 mark)

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6. The table below shows approximate numbers of organisms found in an ecosystem.

Type of organism	Numbers
Grasshoppers	Many
Hawks	3 – 4
Snakes	15 – 30
Green plants	Very many
Lizards	80 – 120

(a)   Using the information in the table draw a pyramid of numbers. (3 marks)

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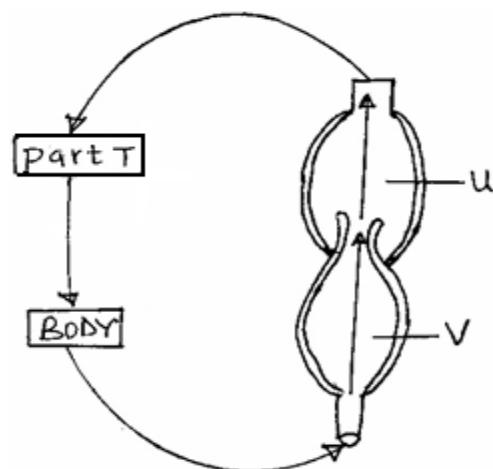
(b) Explain what would happen to the other organisms if all the lizards suddenly died off. (2 marks)

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7. The diagram below show single circulation a fish.

(a) Write down the names of the parts labelled **U** and **V**. (2 marks)

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(b) Explain the main disadvantage of this type of circulation. (1 mark)

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8. Mr. Juma has sued Serenity Hospital on grounds that their child was wrongly identified such that they got the wrong one. The child is blood group O. Mr. Juma is blood group AB while Mrs. Juma is heterozygous blood group A.

    (a) Work out the possible blood group of their offsprings.   (4 marks)

    (b) Is Mr. Juma justified in his claims?   (1 mark)

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9. (a) Name the bacteria found in the root nodules of leguminous plant. (1 mark)

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(b)   What is the role of the bacteria named in (a) above?   (1 mark)

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10. (a) Which substance in the cigarettes smoke may cause lung cancer. (1 mark)

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(b)   The table below shows differences in air breathed in and out.

Gas	Volume of air breathed in	Volume of air breathed out
Oxygen	21.00	16.00
Carbon (IV) oxide	0.04	4.00

What is the reason for there differences.   (2 marks)

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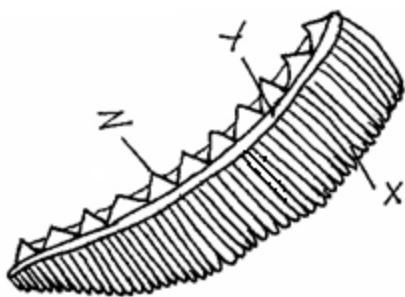
11. The diagram below represents an organ of gaseous exchange.

(a) What is the name of the organ? (1 mark)

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(b) Name the class to which the animals that have the organ you identified in (a) above belongs. (1 mark)

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(c)State **one** way in which structure **X** is adapted for gaseous exchange. (2 marks)

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12. In a prolonged drought period, forage was scarce. It made animals reach out for higher forage and this way the giraffes got the stretched long necks.

(a) What is the term used for a characteristic such as the long necks outlined? (1 mark)

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(b)   What is the name given to the theory that describes the evolution of such structures like the long necks?   (1 mark)

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(c) State and explain the limitation of the theory you named in (b) above. (2 marks)

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13.   (a)   A goat weighing 20kg requires 216KJ while a mouse weighing 54gms requires 2830KJ per day. Explain.   (2 marks)

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(b)   What is the end products of respiration in plants when there is insufficient oxygen supply?   (1 mark)

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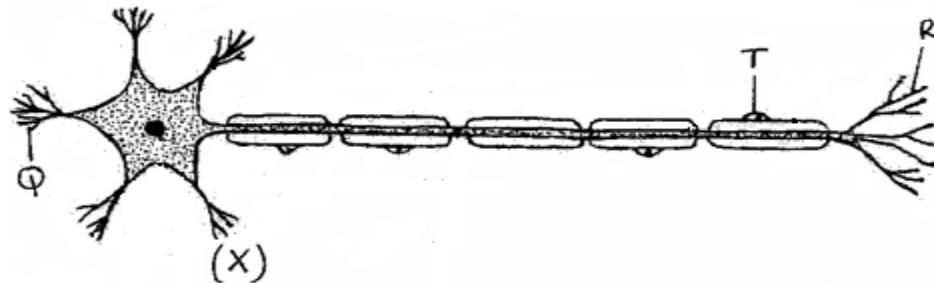
14.   State the functions of the following male hormones.

      (a)   Follicle stimulating hormone.   (1 mark)

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      (b)   Luteinizing hormone.   (1 mark)

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15.   The diagram below represents the structure of a nerve cell.

      (a)   Identify the nerve cell.   (1 mark)

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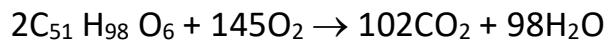
      (b)   Give a reason for your answer in (a) above.   (1 mark)

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(c) State the function of the part labelled **T**.(1mark)

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(d) Using an arrow show the direction of an impulse on the diagram. (1 mark)

16. A food substance called tripalmitin $C_{15} H_{98} O_6$ was oxidized fully and the following equation worked out.

$$2C_{51} H_{98} O_6 + 145O_2 \rightarrow 102CO_2 + 98H_2O$$
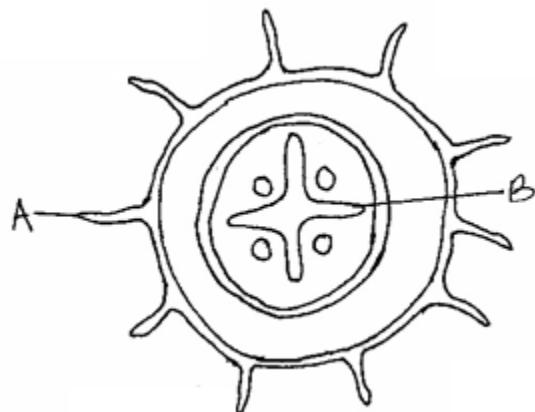
(a) Calculate the RQ of tripalmitin. (2 marks)

(b) From the RQ value obtained above, to what group of food substances does tripalmitin belong. (1 mark)

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17. The diagram below represents a cross section obtained from a plant. Use it to answer the questions that follow.

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(a) From which part of the plant was the section obtained from: (1 mark)

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....

(b) Give a reason for your answer in (a) above. (1 mark)

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(c) Name part **B**. (1 mark)

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(d) Name the material that strengthens the part you named in (c) above. (1 mark)

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18. (a)   Given a sample of urine, name one test you would carry out to determine if it was obtained from a person suffering from diabetes mellitus.   (1 mark)

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(b)   What results are expected if one is diabetic?   (2 marks)

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....

(c)   Explain why sugar appears in the urine of a diabetic.   (2 marks)

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19.   The diagram below represents a bone of a mammal.

(a)   Identify the bone.   (1 mark)

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(b)   Name the part marked **X**.   (1 mark)

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(c)   Name the bone that articulates at the part labelled **F**.   (1 mark)

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(d) Explain one way in which the bone is adapted to its function.   (1 mark)

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20.   (i)   Name the class in the phylum arthropoda with the largest number of individuals. (1 mark)

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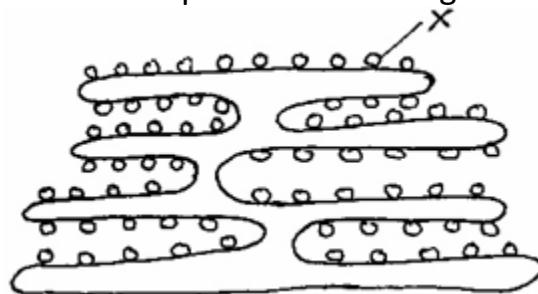
(ii)   State **three** adaptations that makes this class very successful.   (3 marks)

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21.   The diagram below represents a cell organelle.

(i)   Name the organelle above.   (1 mark)

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(ii)   State it's function.   (1 mark)

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(iii)   Identify the structures labelled **X** and state it's functions. (2 marks)

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22. (a) In which organ is cardiac muscle found. (1 mark)

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(b) What is the function of the cardiac muscle in the organ you have named in (a) above. (1 mark)

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23. How does carboxyhaemoglobin lead to death? (2 marks)

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NAME: ……….

INDEX NO……………………….... **CANDIDATE'S SIGN**…………………..… **DATE**……………………..

BIOLOGY PAPER 2   **(THEORY)**

SEPTEMBER/OCTOBER. TIME: 2 HOURS

AMOBI SOFT COPY PUBLISHERS

2020 TOP EXAMINERS' MOCK SERIES 3

INSTRUCTIONS TO CANDIDATES:

- Write your **name** and **index number** in the spaces provided above.
- **Sign** and write the **date** of examination in the spaces provided above.
- This paper consists of **Two** Sections; **A** and **B**.
- Answer all the questions in Section **A** in the spaces provided.
- Answer question **6** in Section **B (Compulsory)** and either question
  7 or **8** in the spaces provided after question **8**.

- Check to ascertain that all pages are printed and that no questions are missing.
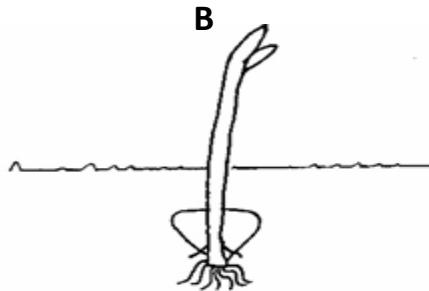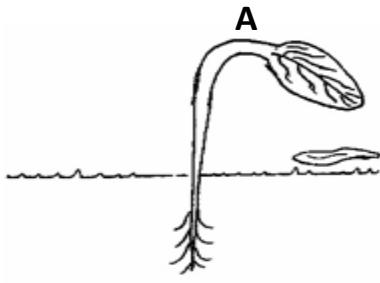
FOR EXAMINER'S USE ONLY:

Section	Question	Maximum Score	Candidate's Score
A	1	8	
	2	8	
	3	8	
	4	8	
	5	8	
B	6	20	
	7	20	
	8	20	
Total Score		80	

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SECTION A: (40 MARKS)

Answer all the questions in this section in the spaces provided:

1. The diagrams below represents germination in plants.

(a) Name the type of germination in A and B above.   (1 mark)

   A: ……………………………………….   **B:** ………………………………………

(b) In seed germination, the radicle grows before the shoot. Explain. (2 marks)

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(c) Define the term seed dormancy.   (1 mark)

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(d)   State **two** causes of seed dormancy.   (2 marks)

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(e)   State **two** roles of water in seed germination.   (2 marks)

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2.   During a strenuous exercise, the chemical process represented by the equation below takes place in human muscles.

$$C_6 H_{12} O_6 \rightarrow 2CH_3 CH (OH) COOH + 150kJ$$

                    (Substance X)

(a)   Name the process.   (1 mark)

....

....

(b)   Name substance **X**.   (1 mark)

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(c)   State **two** economic importance of the above process.   (2 marks)

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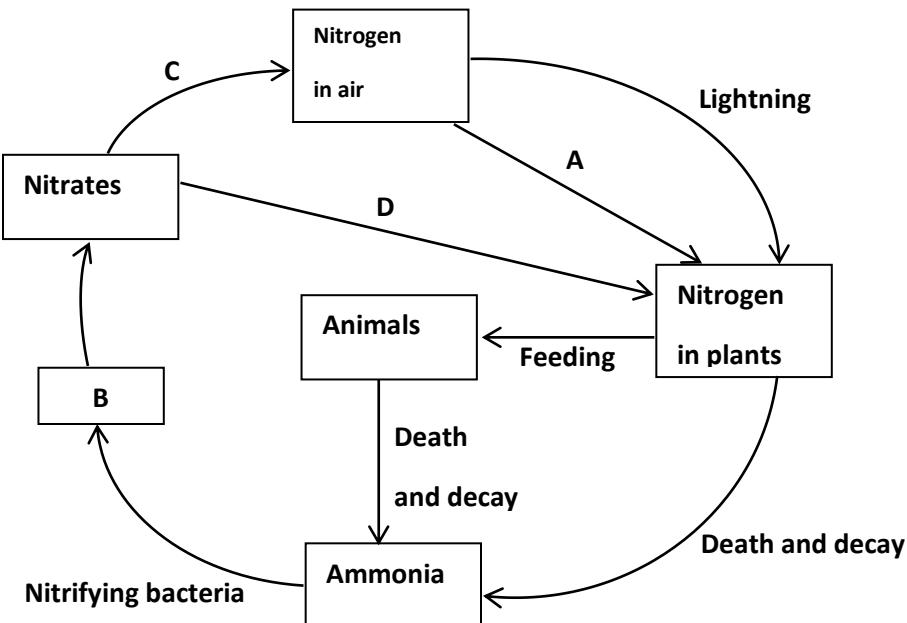
(d)   Explain what happens to X after the exercise.   (2 marks)

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(e) State **two** differences between aerobic respiration and photosynthesis.(2 marks)

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3.   The diagram below represents the nitrogen cycle.

(a)   Identify the processes labelled **A** and **D**.   (2 marks)

A: …………………………………………………….   **D**: ……………………………………………………………….

(b)   Name the compound represented by **B**.   (1 mark)

………

……..

(c)   Name the group of organisms labelled **C**.   (1 mark)

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(d)   (i)   Name the group of plants that promote process **A**. (1 mark)

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(ii)   In which part of the plant does process **A** take place?   (1 mark)

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(e)   How would excess pesticides in the soil interfere with process **A**? (2 marks)

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4. (a)Explain what happens when a wilting young plant is well watered. (3 marks)

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Prefer Calling Sir Obiero Amos @ 0706 851 439 for the Marking Schemes

(b)   Name a support tissue in plants thickened with:
        (i)   Cellulose.   (1 mark)

....

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        (ii)   Lignin.   (1 mark)

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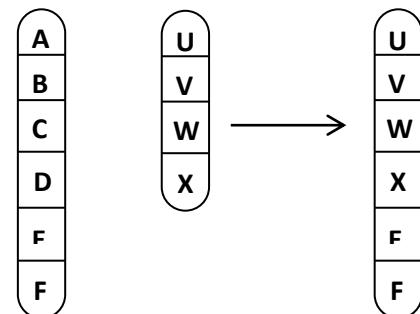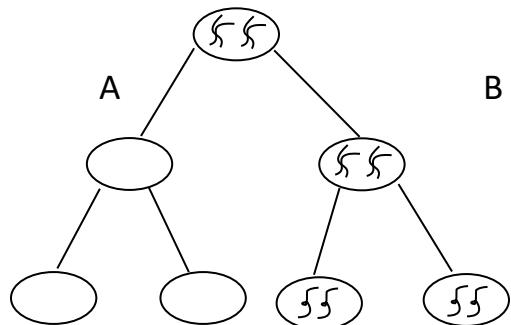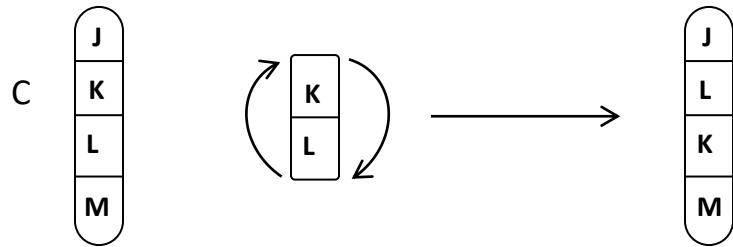
(c)   Describe the role of the liver in deamination.   (3 marks)

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5.   The diagrams below illustrate some chromosome mutations.

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(a) Identify the mutations illustrated above.   (3 marks)

A: ………………………………………………………………………………….

B: ………………………………………………………………………………….

C: ………………………………………………………………………………….

(b) Give an example of a disorder in humans caused by mutation **A** above. (1 mark)

………

………

(c) Name a disorder of blood caused by gene mutation.   (1 mark)

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(d) Name **two** mutagens.   (2 marks)

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(e) Give an example of a beneficial mutation in plants. (1 mark)

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SECTION B: (40 MARKS)

Answer question **6** in Section **B (Compulsory)** and either question **7** or **8** in the spaces provided after question **8**.
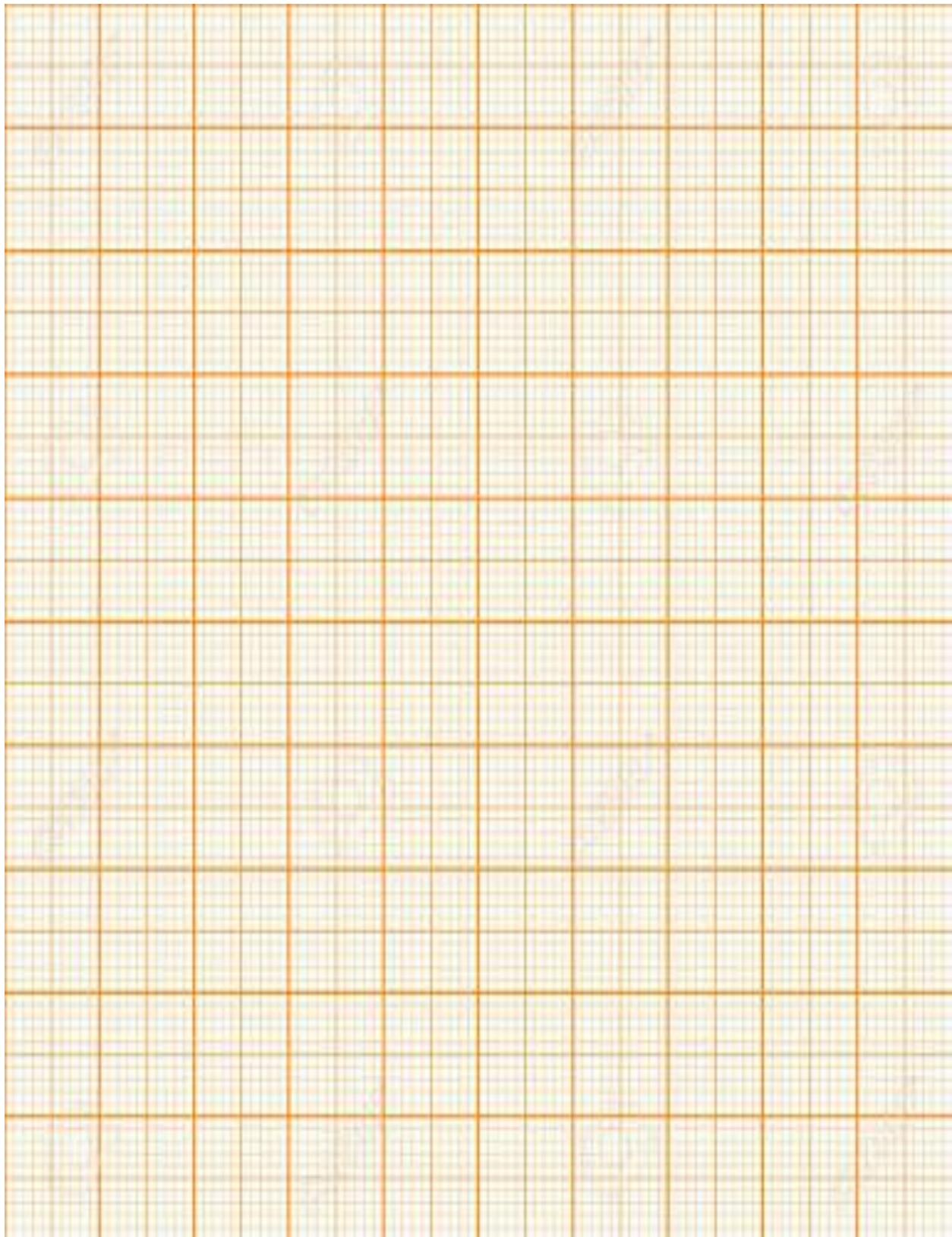
6. The hormone Human Chorionic Gonadotrophin (HCG) is released from embryonic tissues. The effects of HCG is to prevent the degeneration of corpus luteum.

Study the table below, which shows changes in concentration in the blood of

HCG and progesterone during the first 36 weeks of pregnancy.

Time in weeks	Concentration of HCG (arbitrary units)	Concentration of progesterone (arbitrary units)
0	0	7
2	3	7
4	15	8
8	60	9
12	45	10
16	24	11
20	12	13
24	10	15
28	10	20
32	14	30
36	12	55

(a) Using the grid provided, plot graphs of concentration of HCG and progesterone produced against time. (8 marks)

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(b)   (i) What is the concentration of HCG progesterone in week 11?   (2 marks)

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....

(ii)   When are the two hormones equal in concentration?   (2 marks)

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(iii)   Account for the changes in HCG concentration during the first 20 weeks

of pregnancy.   (4 marks)

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(c)   State **three** functions of progesterone.   (3 marks)

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(d)   What is the role of testosterone in a human male?   (1 mark)

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7.   (a)   State **three** processes by which flowering plants excrete waste products and for each process name **two** waste products that are eliminated.

(6 marks)

        (b)   Describe the functions of the various components of the mammalian blood.   (14 marks)

8.   Describe the movement of water from the soil to the leaves of a tall plant. (20 marks)

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231/3

BIOLOGY

PAPER 3

(PRACTICAL)

SEPTEMBER/OCTOBER

TIME: 1¾ HOURS

<u>**CONFIDENTIAL**</u>

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Each candidate should be provided with the following items:

- ➢ 80ml of iodine solution, in a 100ml beaker.
- ➢ 8cm visking tubing.
- ➢ 2 pieces of strong cotton thread 20cm long.
- ➢ Means of timing/wall clock.
- ➢ 10ml measuring cylinder.
- ➢ 100ml water in 250ml beaker.
- ➢ 10ml of 10% starch solution labelled X.
- ➢ Specimen A – a twig of hibiscus with a flower.
- ➢ Specimen B – a twig of grass.

Biology Paper 3 (Practical) Confidential

NAME: ……

 INDEX NO: …………………….. CANDIDATE'S SIGN: ………………….. DATE: …………………………….

BIOLOGY

PAPER 3   (PRACTICAL)

SEPTEMBER/OCTOBER

TIME: 1¾ HOURS

AMOBI SOFT COPY PUBLISHERS

2020 TOP EXAMINERS' MOCK SERIES 3

INSTRUCTIONS TO CANDIDATES:

(a)   Write your **name** and **index number** in the spaces provided above.

(b)   **Sign** and write the **date** of examination in the spaces provided above.

(c)   Answer all the questions in the spaces provided.

(d)   Use the first 15 minutes to read through your paper and ensure you have

         all the chemicals and apparatus needed.

(e)   Students should check the question paper to ascertain that all the papers

         are printed as indicated and that no questions are missing.

FOR EXAMINER'S USE ONLY:

Question	Maximum Score	Candidate's Score
1	13	
2	15	
3	12	
Total Score	**40**	

1.   You are provided with iodine solution, visking tubing, a beaker and a solution

labelled X. Tie one end of the tubing tightly using the thread provided. Measure

5ml of solution X and pour it into the visiking tubing. Tie the other end of the

tubing tightly. Ensure there is no leakage. Rinse the outside of the tubing with

distilled water and immerse it with its contents in a beaker containing iodine

solution. Allow it to stand for 15 minutes.

(a)   (i)   Record your observation at the beginning and end of the experiment in the table below.   (4 marks)

Experimental set up	Solution X inside the tubing	Iodine solution outside the tubing
Beginning of experiment		
End of experiment		

(ii)   What was the identity of solution X?   (1 mark)

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(iii)   Suggest the nature of visking tube.   (1 mark)

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(iv)   Account for the results obtained in a (i) above.   (4 marks)

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(b)   (i)   Which physiological process was being investigated in this
experiment?   (1 mark)

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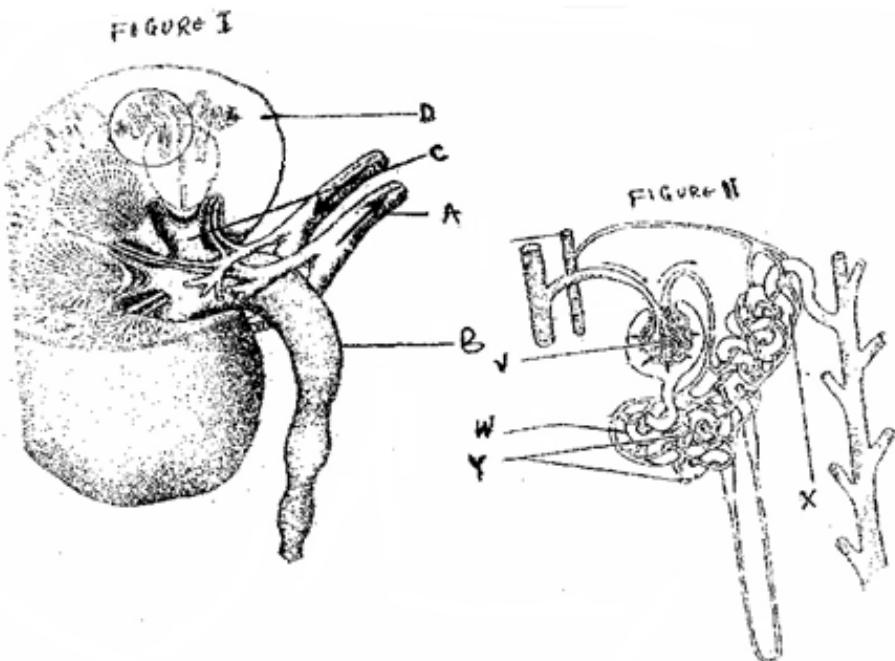
(ii)   State **two** factors which affect the process being investigated.   (2 marks)

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2. Study the kidney diagrams below.

FIGURE I

FIGURE II

(a) (i) Name the parts labelled **A**, **B**, **C** and **D** in figure **1**.   (4 marks)

A ....

B ....

C ....

D ....

(ii)   Name the processes that take place in the parts labelled.   (2 marks)

V ....

X ....

(b)   State **two** adaptations of the part labelled **W**.   (2 marks)

....

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(c)   On the diagram name the part where counter current flow occurs. (1 mark)

....

....

(d)   State **two** homeostatic functions of the diagram above.   (2 marks)

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(e)   Explain what will happen to the process of urine formation in
       absence of vasopressin hormone.   (4 marks)

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3.   You are provided with the following plants: A twig of plant A and plant B.

(a)   (i)   Name the sub-division to which specimen A belong. (1 mark)

....

....

(ii)   Using an observable characteristic only give a reason for your answer in (a)(i) above.   (1 mark)

....

....

(b)   Name the class to which the two specimens belong.   (2 marks)

A ....
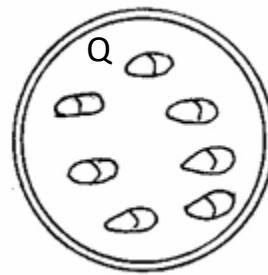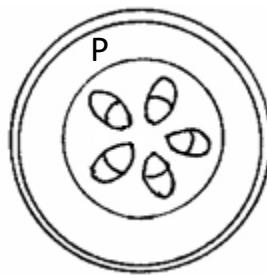
B ....

(c)   State **two** observable differences between the leaves of specimen **A** and **B**. (2 marks)

Leaves of A	Leaves of B

(d)   The diagrams below shows the cross-section of stems obtained from specimens

A and B.

(i)   Which diagram represents the stem of each of the specimen?   (2 marks)

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(ii)   Outline two differences between the two transverse sections.   (2 marks)

P	Q

(e)   Suggest the agent of pollination of the flowers of specimen A.   (1 mark)

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        Give a reason for your answer.   (1 mark)

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NAME: …………………………………………………………………………………..

INDEX NO: …………… CANDIDATE'S SIGN: …….....…..... DATE: ………….

BUSINESS STUDIES
PAPER 1
SEPTEMBER/OCTOBER
TIME: 2 HOURS

AMOBI SOFT COPY PUBLISHERS

2020 TOP EXAMINERS' MOCK SERIES 3

INSTRUCTIONS TO CANDIDATE'S
(a) Write your name and index number in the space provided above.
(b) Sign and write the date of the examination in the spaces provided above.
(c) Answer **ALL** the questions
(d) All answers should be written in the spaces provided in this booklet.
(e) Candidates should answer all the questions in **English**.

FOR EXAMINER'S USE ONLY:

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Marks														

Question	15	16	17	18	19	20	21	22	23	24	25
Marks											

TOTAL
MARKS

Prefer Calling Sir Obiero Amos @ 0706 851 439 for the Marking Schemes

1.   Outline **four** types of business activities.   (4 marks)

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2.   Highlight **four** disadvantages of specialization.   (4 marks)

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3.   Outline four circumstances that would make an office manager to replace an
      existing machine with a modern one.   (4 marks)

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4.   Outline **four** qualities of an office worker.   (4 marks)

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5.   Give **four** benefits of operating a small scale retail business over a large
        scale retail business.   (4 marks)

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6.   Ndovu bought 200 blankets at Sh.500 each on credit. The terms of sale were
        20%
        trade discount, 10% quantity discount and 5% cash discount if payment is
        made
        within two weeks. Calculate the amount paid if payment is made after one
        week.
                                                                          (4 marks)

7.   Outline **four** circumstances under which a sole proprietorship may be dissolved. (4 marks)

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8.   State **four** functions of commercial attachees.   (4 marks)

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9.State the unit of carriage for each of the following modes of transport. (3 marks)

Mode of transport	Units of carriage
(a) Sea	
(b) Portage	
(c) Road	

10.   State **four** reasons why short message services (SMS) is replacing letters as a way of communication.   (4 marks)

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11.   Outline **four** reasons why an ageing population may not be desirable to a country. (4 marks)

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12. List **four** reasons why a producer would not need a lot of warehousing facilities.   (4 marks)

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13. Highlight **four** insurance policies that a business person may find useful for his/her business.   (4 marks)

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14. Highlight **four** circumstances under which it may be appropriate to use personal selling to promote products.

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Prefer Calling Sir Obiero Amos @ 0706 851 439 for the Marking Schemes

15. Indicate whether each of the following factors influence demand or supply of a commodity. (3 marks)

Factor	Demand or Supply
(a) Changes in the prices of inputs.	
(b) Change in tastes and preferences.	
(c) Changes in technology.	

16. Highlight **four** characteristics of a perfect competitive market. (4 marks)

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17. Highlight **four** problems which may be encountered when measuring national income using output approach. (4 marks)

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Prefer Calling Sir Obiero Amos @ 0706 851 439 for the Marking Schemes

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18. On 1st July 2012, Mara traders had Sh.6,000 cash in hand and bank overdraft of Sh.2,000. During the month the following transactions took place:

2012

July 2:   Received cheques from debtors totaling to Sh.50,000
July 5:   Paid rent Sh.2,000 cash.
July 15:   Withdrew Sh.5,000 from the bank for personal use.
July 25:   Banked all the cash except Sh.1000

Prepare a Two-column Cash Book for the month.   (5 marks)

19. The following is an extract of a bank account of Komu traders for the month of June 2015.

Bank account

2015		Shs	2015		Shs
June 1	Balance b/d	200,000	June 5	Salim traders	50,000
June 10	Kombo	10,000	June 20	Electricity	5,000
			June 25	Cash	20,000
			June 30	Balance c/d	135,000
		210,000			210,000

Prefer Calling Sir Obiero Amos @ 0706 851 439 for the Marking Schemes

State the transactions that took place on the following dates:

(a) June 5:

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(b) June 10:

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(c) June 20:

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(d) June 25:

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20. State **four** advantages of using subsidiary books of accounts.　　(4 marks)

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21. State **four** banking services that the Central Bank of Kenya provides to the government. (4 marks)

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22. The average consumer price for a 90kg bag of maize for the year 2012 and 2013 is shown below.

Year   2012   2013
Prices   Ksh.3000   Ksh.4000

Calculate the increase in Consumer Price Index using 2012 as the base year.(4 marks)

23. Outline **four** causes of balance of payments disequilibrium.   (4 marks)

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24. Highlight **four** ways in which Kenya is likely to benefit from preparing a proper development plan. (4 marks)

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25. The following information was extracted from the books of Amani traders on
31st December 2014.

	Shs
Commission received	22,000
Sales	763,500
Loan interest	52,500
Purchases	474,000
General expenses	30,000
Drawings	96,000
Rent	120,000
Salaries owing	72,000
Electricity pre-paid	85,000

Prepare Trial Balance of Amani traders for the month ended 31st December 2014. (5 marks)

565/2
BUSINESS STUDIES
PAPER 2
SEPTEMBER/OCTOBER
TIME: 2½ HOURS

AMOBI SOFT COPY PUBLISHERS

2020 TOP EXAMINERS' MOCK SERIES 3

Kenya Certificate of Secondary Education
BUSINESS STUDIES
PAPER 2
TIME: 2½ HOURS

INSTRUCTIONS TO CANDIDATE'S
1. This paper consists of **SIX** questions.
2. Answer **ANY FIVE** questions.
3. All questions carry equal marks.
4. All answers must be written in **English**.
5. All questions to be answered in the answer booklet provided.

1. (a) Kibugi Wholesalers intends to construct a warehouse. Explain **five** measures that Kibugi wholesalers should take to ensure smooth functioning of the warehouse. (10 marks)

   (b) Explain **five** ways in which commercial banks facilitate payment on behalf of their customers. (10 marks)

2. (a) Your school intends to place an order with Elimu Company limited for the supply of some urgently required laboratory equipment. Explain **five** reasons why it would be advisable for the school to use e-mail instead of telephone when placing the order. (10 marks)

   (b) Most third world countries have been experiencing inflation. Explain **five** negative effects of inflation in the countries. (10 marks)

3. (a) Country X is experiencing high levels of unemployment. Explain **five** measures that she may take to solve the unemployment problems. (10 marks)

   (b) Explain **five** advantages of buying goods on hire purchase terms. (10 marks)

4. (a) Karoki a newly employed Clerk has been assigned the task of filing documents. Explain to him **five** characteristics he should consider when choosing a filing system. (10 marks)

   (b) Using a diagram illustrate the effects of a positive shift of a demand curve on the equilibrium point, price and quantity. (10 marks)

5. (a) Explain **five** circumstances under which a manufacturer would prefer to sell his products direct to consumers instead of selling through middlemen. (10 marks)

   (b) The headline for yesterday's newspaper was "Mwangaza company limited has been dissolved!" Explain **five** circumstances that could have led to the dissolution. (10 marks)

6. (a) Explain any **five** reasons why the government and other organizations are engaged in consumer protection. (10 marks)

(b) The following trial balance was extracted from the books Mzalendo traders on 30th April 2005.

	Dr(shs)	Cr(shs)
Sales		115,560
Stock 1/5/2004	37,760	
Carriage outwards	3,260	
Carriage inwards	2,340	
Return inwards	4,400	
Return outwards		3,550
Salaries	24,470	
Electricity	6,640	
Rent	5,760	
Sundry expenses	12,020	
Equipment	24,000	
Furniture	6,000	
Debtors	45,770	
Creditors		30,450
Bank	38,760	
Cash	1,200	
Drawings	20,500	
Capital		128,440
	348,440	**348,440**

Stock at 30th April 2005 was 19,980

Required:
Prepare: (a) Trading, profit and loss account for the year ended 30th April 2005. (10 marks)

Prefer Calling Sir Obiero Amos @ 0706 851 439 for the Marking Schemes

NAME: …………………………………………………………………………………………..

INDEX NO: ……………….. CANDIDATE'S SIGN: …………………. DATE: ……………………

233/1

CHEMISTRY   PAPER (THEORY)

SEPTEMBER/OCTOBEER

TIME: 2 HOURS

AMOBI SOFT COPY PUBLISHERS

2020 TOP EXAMINERS' MOCK SERIES 3

INSTRUCTIONS TO CANDIDATES:

(i)   Write your **name** and **index number** in the spaces provided **above**.
(ii)   **Sign** and write the **date** of examination in the spaces provided **above**.
(iii)   Answer **ALL** the questions in the spaces provided.

(iv)   Mathematical tables and silent electronic calculators **may be** used.

(v)   All working **must be** clearly shown where necessary.

(vi)   Candidates should check the question paper to ascertain that all the

pages are printed as indicated and that no questions are missing

For Examiner's Use Only

Questions	Maximum Score	Candidate's Score
1 – 29	80	

*This paper consists of **12** printed pages. Candidates should check to ascertain that*

all the pages are printed as indicated and that no questions are missing.

1. Name the most suitable method you can use to separate;

    (a)   Xanthophyll and chlorophyll in green leaves.   (1 mark)

    ....

    ....

    (b)   Oil from simsim seeds.   (1 mark)

    ....

    ....

2. The table below shows atomic numbers of four elements **W**, **X**, **Y** and **Z**.

Element	W	X	Y	Z
Atomic number	20	17	19	9

(a)   Write electron arrangement of the ion of **Z**.   (1 mark)

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(b)   (i) Write the formula of the compound formed between **W** and **X**. (1 mark)

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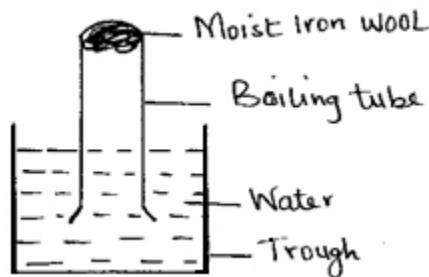
(ii)   Name the bond(s) and structure of the compound in (i) above. (1 mark)

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3. A student set-up an experiment as shown below. Moist iron wool was placed in a boiling tube and inverted over water.

(a) What was observed after two days? (1 mark)

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....

(b) Explain the observations. (1 mark)

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(c) What would be observed if a large piece of iron wool was used? (1 mark)

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4.   Element X is found in period 3 group (IV) it consists of two isotopes 28_X and Q_X.   A sample of X was found to consist of 90% of 28_X if the relative atomic mass of X is 28.3, work out the number of neutrons in Q_X.   (3 marks)

5.   Study the table below and answer the questions that follow:

Element	Atomic radius (nm)	Ionic radius (nm)
P	0.168	0.095
Q	0.094	0.133
R	0.124	0.156
S	0.146	0.086

(i)   State the elements which are metals.   (1 mark)

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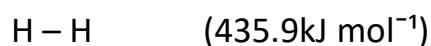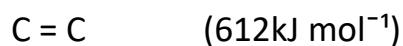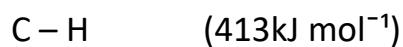
(ii) Identify the strongest reducing agent. Give a reason. (2 marks)

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6. The diagram below represents an apparatus found in a chemistry laboratory. Give its name. (1 mark)

....

....

7. Given the following bond energies.

$C - C$ (347kJ mol^{-1})

$C - H$ (413kJ mol^{-1})

$C = C$ (612kJ mol^{-1})

$H - H$ (435.9kJ mol^{-1})

Calculate the enthalpy change of hydrogenation of ethene.   (3 marks)

8.   When hydrogen gas was passed over heated lead (II) oxide in a combustion tube and the gaseous products cooled, a colourless liquid was obtained.

   (i)   Which chemical test would you use to confirm the colourless liquid above? (1 mark)

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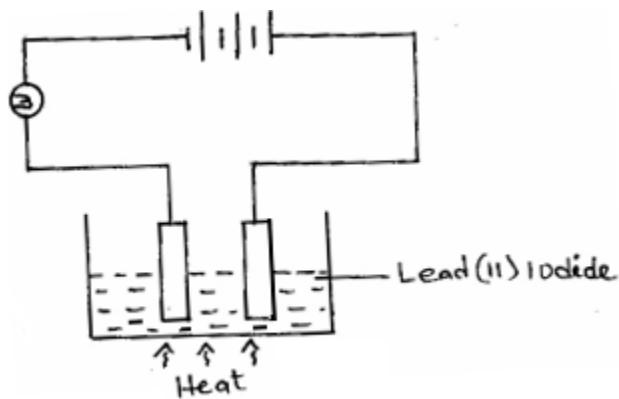
   (ii)   What observations were made in the combustion tube? (1 mark)

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(iii) Write an equation for the reaction between hydrogen and lead (II) oxide. (1 mark)

....

....

9. The diagram below shows an experiment for investigating electrical conductivity in lead (II) iodide. Study it and answer the questions that follow.

(a) On the diagram;
   (i) Label the cathode. (1 mark)

   (ii) Show the direction of movement of electrons. (1 mark)

(b) Write an equation for the reaction that takes place at the anode. (1 mark)

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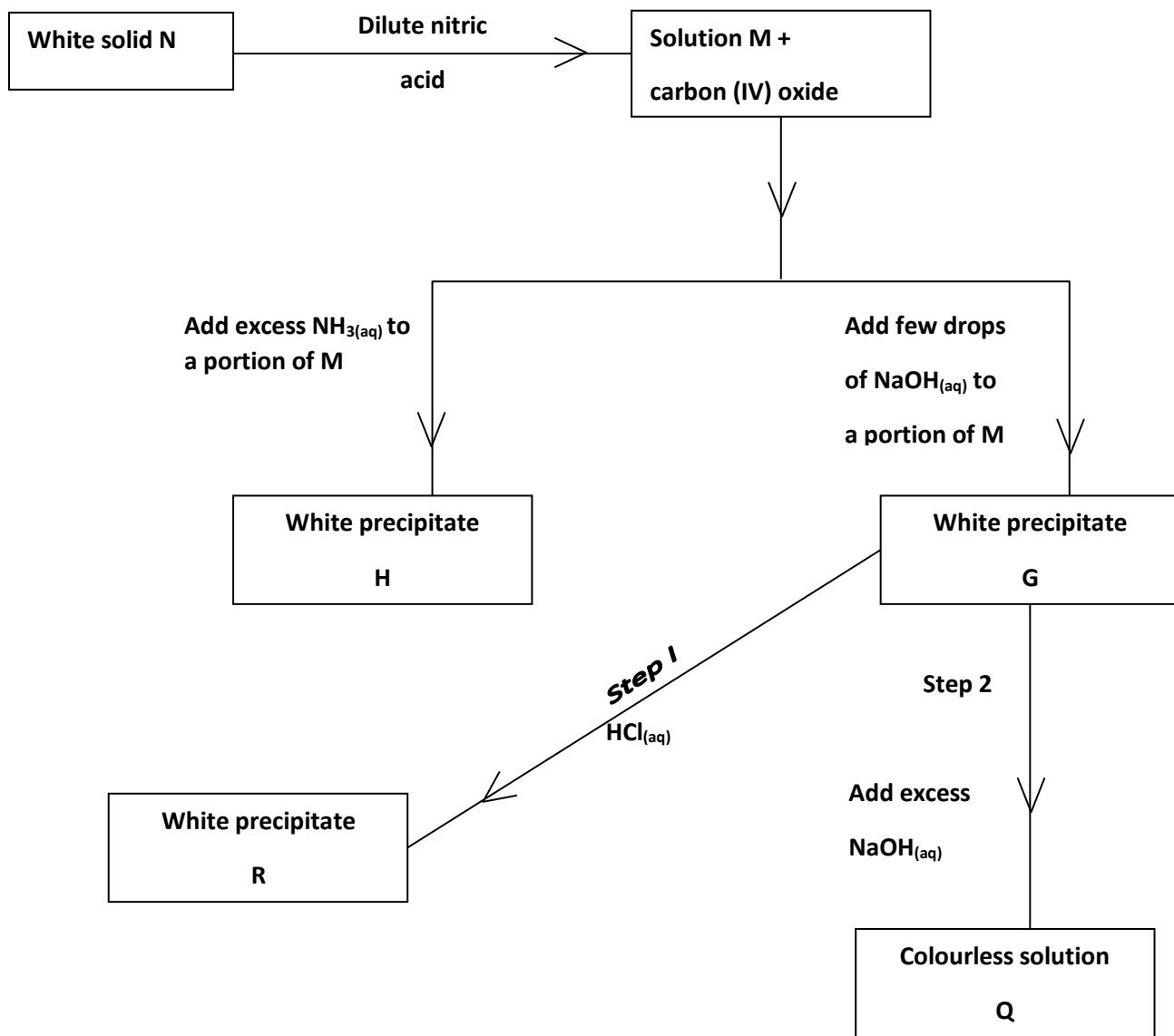
10. (a) State the Graham's law of diffusion. (1 mark)

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(b)   Two gases A and B diffuse in the ratio 2: 1 if the molecular mass of gas A is 16g, find the molecular mass of B.   (2 marks)

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

```
┌──────────────┐   Dilute nitric    ┌──────────────────┐
│ White solid N │ ─────────────────▶ │ Solution M +      │
└──────────────┘      acid          │ carbon (IV) oxide │
                                     └──────────────────┘
                                              │
                                              ▼
```

Add excess $NH_{3(aq)}$ to a portion of M

Add few drops of $NaOH_{(aq)}$ to a portion of M

```
┌──────────────────┐                 ┌──────────────────┐
│ White precipitate │                 │ White precipitate │
│        H          │                 │        G          │
└──────────────────┘                 └──────────────────┘
```

Step 1

$HCl_{(aq)}$

Step 2

Add excess $NaOH_{(aq)}$

```
┌──────────────────┐                 ┌──────────────────┐
│ White precipitate │                 │ Colourless solution │
│        R          │                 │        Q          │
└──────────────────┘                 └──────────────────┘
```

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(a)   Identify solid **N**.   (1 mark)

....

....

(b)   Write down the equation for the reaction that leads to the formation of solution **Q** from the white precipitate **G**.   (1 mark)

....

....

(c) State the property of precipitate **G** that is demonstrated by Step **1** and **2**. (1 mark)

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12.   The basic raw material for extraction of aluminium is bauxite.

(a)   Name the method that is used to extract aluminium from bauxite. (1 mark)

....

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(b)   Cryolite is used in the extraction of aluminium from bauxite. State its role. (1 mark)

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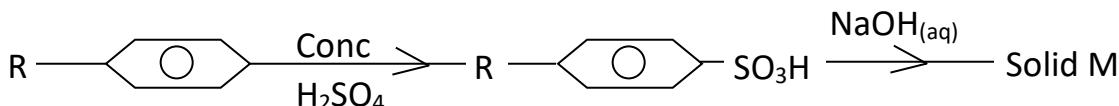
(c)   Aluminium is a reactive metal yet utensils made of aluminium do not corrode easily. Explain this observation.   (1 mark)

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13.   The scheme below represents the manufacture of a cleansing agent M.

$$R - \langle \bigcirc \rangle \xrightarrow[H_2SO_4]{Conc} R - \langle \bigcirc \rangle - SO_3H \xrightarrow{NaOH_{(aq)}} \text{Solid M}$$

(a)   (i)   Draw the structure of **M**.   (1 mark)

(ii)   To which type of cleansing agent does **M** belong? (1 mark)

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....

14.   If chlorine gas is passed over heated iron fillings and the product dissolved in water, a yellow solution is formed.

(i)   Identify the yellow solution.   (1 mark)

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....

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(ii)   What would be observed if aqueous sodium hydroxide solution was added to the yellow solution?   (1 mark)

....

....

(iii)   Write an ionic equation for the reaction between the yellow solution and sodium hydroxide.   (1 mark)

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15.   Using excess zinc powder and dilute sulphuric (VI) acid describe how a sample of dry zinc sulphate crystals can be prepared.   (3 marks)

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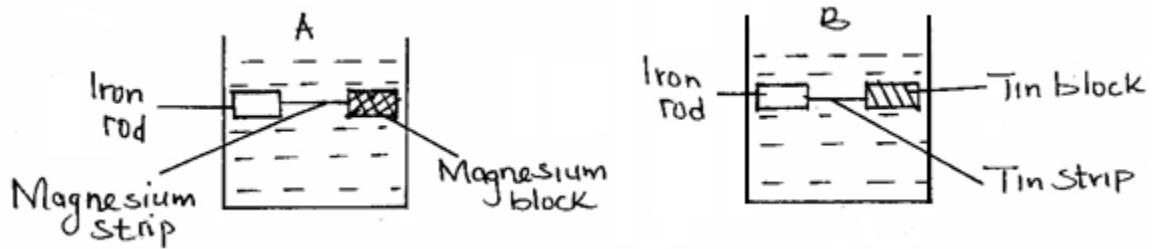
16.   An organic compound Y was analysed and found to contain carbon, hydrogen and oxygen only. 1.29g of Y on complete combustion gave 2.64g of carbon (IV) oxide and 0.81g of water. Find the empricial formula of Y.

(C = 12, H = 1, O = 16). (3 marks)

17. The diagrams below were set up by form 4 students to investigate methods of preventing rusting.

(i) It was observed that rusting occurred in set up B and not in set up A. Explain. (2 marks)

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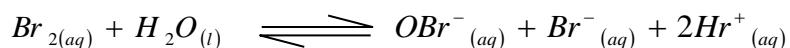
(ii) State **one** other method of preventing rusting in iron. (1 mark)

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18. An equilibrium exists between the reactants and products as shown in the equation below.

$$Br_{2(aq)} + H_2O_{(l)} \rightleftharpoons OBr^-_{(aq)} + Br^-_{(aq)} + 2Hr^+_{(aq)}$$

(Orange + yellow)   (Colourless)

(i) Select the species that acts as an acid. Explain.   (1 mark)

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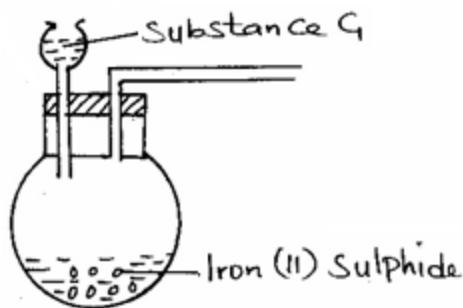
(ii) State and explain the observations made when aqueous sodium hydroxide solution is added to the above equilibrium.   (1 mark)

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19. The apparatus shown below were set-up to prepare and collect hydrogen sulphide gas.

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(a)   Name substance **G**.   (1 mark)

....

....

(b)   Complete the set up to show how a dry sample of hydrogen sulphide gas is collected.   (2 marks)

20.   The boiling points of some compounds of hydrogen and some elements in group (IV) and (VI) of the periodic table are given below.

Compound	Boiling point ($^\circ$C)	Compound	Boiling point ($^\circ$C)
CH_4	-174.0	H_2O	100
SiH_4	-112.0	H_2S	-61

(a)   Which of the compounds CH_4 and SiH_4 has stronger intermolecular forces. Give a reason.   (1 mark)

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(b)   Explain why the boiling points of H_2O and H_2S show different trends from that of CH_4 and SiH_4.   (4 marks)

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21.　Radon $^{222}_{84}$Ra undergoes alpha decay to form lead, taking 15 days for the original mass to reduce to 6.25%.

(a)　Write the nuclear equation for the reaction.　(1 mark)

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(b)　Calculate the half-life of radon.　(2 marks)
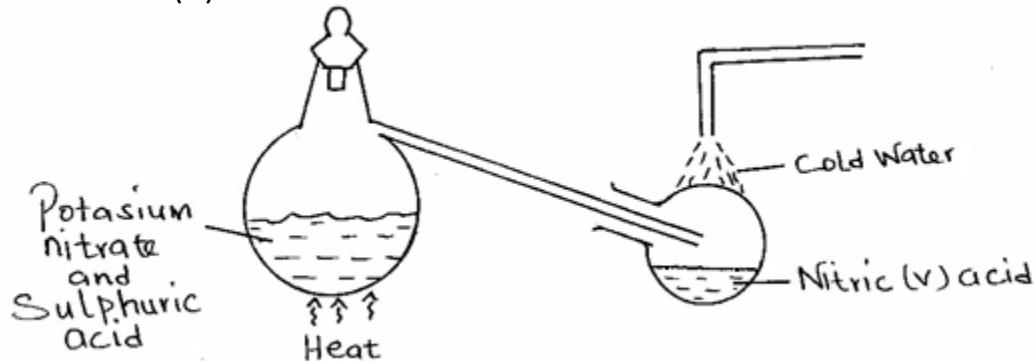
22.　Ethanol and pentane are miscible liquids. Explain how water can be used to separate a mixture of ethanol and pentane.　(2 marks)

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23. Illustrate bonding in carbon (II) oxide using dot (•) and cross (x) (C – 6, O – 8).

(2 marks)

24. The diagram below shows a set-up that was used to prepare and collect a sample of nitric (V) acid.

(a) Give a reason why it is possible to separate nitric (V) acid from sulphuric (VI) acid in the set up. (1 mark)

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....

(b) Name another substance that can be used instead of potassium nitrate.(1 mark)

....

....

(c)　　Give **one** use of nitric (V) acid.　　　　　　　　　(1 mark)

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25.　A mixture of kerosene and water was shaken and left to stand, ammonia gas was then bubbled into the mixture followed by a few drops of phenolphthalein indicator. State and explain the observations made. (2 marks)

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26.　Trona is a double salt of sodium with formula $Na_2CO_3 \cdot NaHCO_3 \cdot 2H_2O$. Trona is collected, dried and heated to convert it to sodium carbonate.
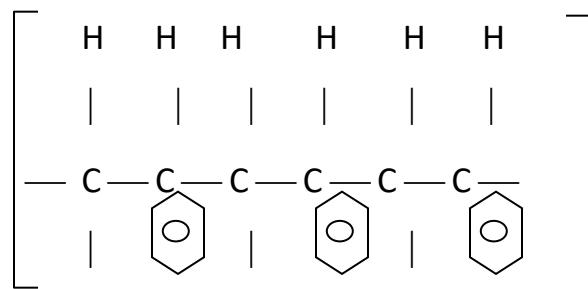
(i)　　Write an equation for the decomposition of trona by heat. (1 mark)

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(ii)　　State **two** uses of sodium carbonate.　　　　　　　(2 marks)

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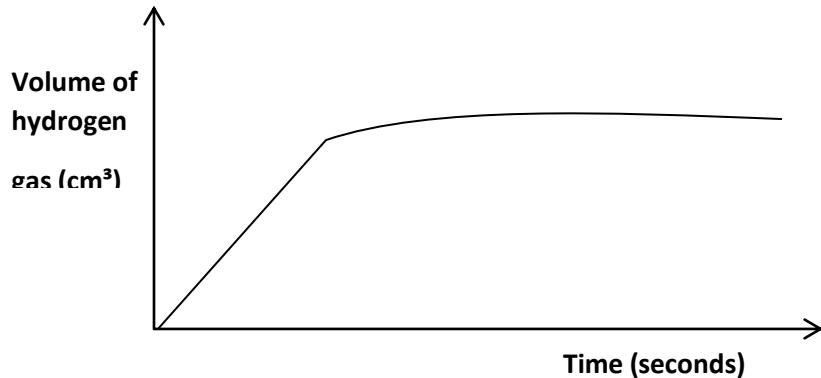
27. Below is part of a synthetic polymer. Study it and answer the questions that follow.

$$
\begin{bmatrix}
& H & H & H & & H & H & H \\
& | & | & | & & | & | & | \\
-\!\!\!& C & -C & -C & -C & -C & -C & -\!\!\! \\
& | & & | & & |
\end{bmatrix}
$$

(i)   Draw the structure of its monomer.   (1 mark)

(ii)   Determine the number of monomers making the above compound if its relative molecular mass is 104,000. The benzene ring has six carbon atoms and five hydrogen atoms (C = 12, H = 1).   (2 marks)

28. In an experiment to prepare hydrogen gas using magnesium ribbon and dilute hydrochloric acid, a student plotted volume of hydrogen gas against time as shown

in the sketch below.

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(a) (i) On the same axes, sketch the curve that would be obtained if a few crystals of copper (II) sulphate are added and label it curve C. (1 mark)

(ii) What would be the function of copper (II) sulphate in the reaction?

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29. 1g of element T was completely converted to its chloride, TCl_2. The mass of the chloride formed was 3.96g. Calculate the relative atomic mass of element T. (Cl = 35.5).   (3 marks)

NAME: ………………………………………………………………………………………………………..

INDEX NO: ………………….. CANDIDATE'S SIGN: …………….……… DATE: …………………………

CHEMISTRY   PAPER 2 (THEORY)

SEPTEMBER/OCTOBER

TIME: 2 HOURS

AMOBI SOFT COPY PUBLISHERS

2020 TOP EXAMINERS' MOCK SERIES 3

INSTRUCTIONS TO CANDIDATES:

(iii)   Write your **name** and **index number** in the spaces provided **above**.
(iv)   **Sign** and write the **date** of examination in the spaces provided **above**.
(v)   Answer **ALL** the questions in the spaces provided.
(iv)   All working **must be** clearly shown where necessary.

(v)   Mathematical tables and silent electronic calculators **may be** used.

FOR EXAMINER'S USE ONLY:

Question	Maximum Score	Candidate's Score
1	12	
2	14	
3	13	
4	11	
5	10	
6	10	
7	10	
Total Score	80	

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1. The table below gives some elements of the periodic table (not actual symbols) and their atomic masses, atomic numbers and melting points.

Element	B	C	D	E	F	G	H	I	J	K
Atomic Nº	7	8	19	15	2	9	6	16	12	11
Atomic mass	14	16	39	31	4	19	12	32	40	23
Mpt (ºC)	-	-	63.7	44	-272	-223	Vary	113	669	98

(a) Select **two** elements with oxidation states of -3. (1 mark)

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(b) Which elements represents:-
   (i) the most powerful reducing agent. (½ mark)

....

....

   (ii) the most powerful oxidizing agent. (½ mark)

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(c) Which metallic element has the highest first ionization energy? (1 mark)

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(d) Select **two** elements which when reacted form a compound that conducts electricity in both molten and aqueous state. (1 mark)

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(e) Select any **two** elements which when reacted form a compound that dissolves in water to form an acidic solution. (1 mark)

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(f) Using dots (●) and crosses (x) to represent valency electrons, draw diagrams to show bonding between **B** and **J**. (2 marks)

(g) Explain why for some elements the atomic mass is not twice the atomic number. (1 mark)

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(h)   Explain why the melting point of element K is higher than that of element D. (1 mark)

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(i)   Describe how a solid mixture of the sulphate of element K and lead (II) sulphate can be separated.   (3 marks)

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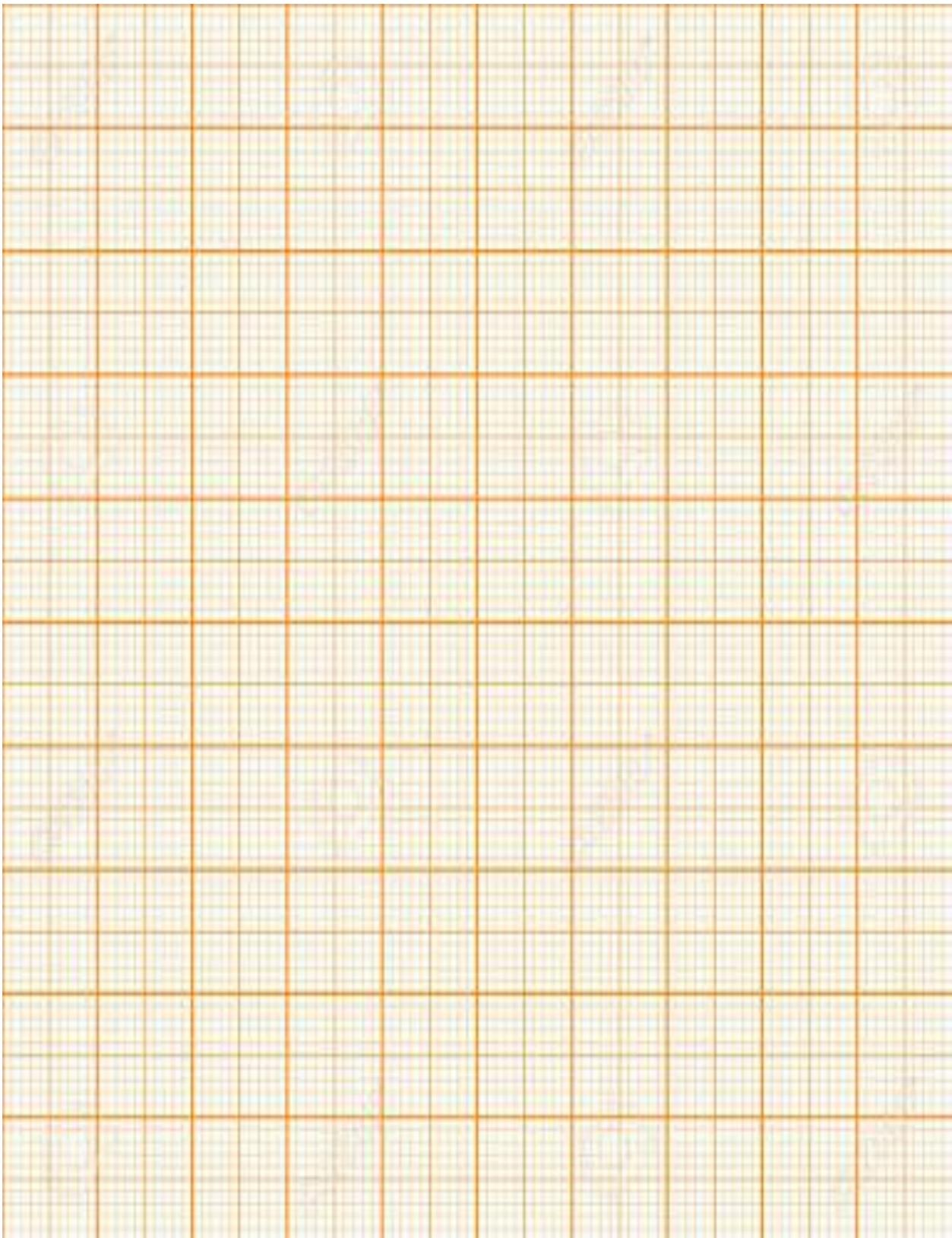
2.   The solubilities of two salts D and E are given in the following table in each case the solubility is expressed as grammes per 100g of water.

Temperature (ºC)	10	20	30	40	50	60	70	80
Solubility of D	17	21	24	29	34	40	47	56
Solubility of E	35.8	36	36.2	36.5	36.8	37.3	37.6	38.0

(a)Using these data plot solubility curves for D and E on the same grid. (5 marks)

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(b)   Use your graph to answer the following questions:
(i)At what temperature are the solubilities of the two salts equal? (1 mark)

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(ii)   Estimate the solubility of salt D at 0ºC.   (1 mark)

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(iii) A saturated solution of E in 50g of water at 25ºC was evaporated to
    dryness. What was the mass of the residue?   (1 mark)

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(iv) Two separate 100g of water are saturated at 75ºC, one with D and the other with
    E. What is the difference in mass between the two solutions? (2 marks)

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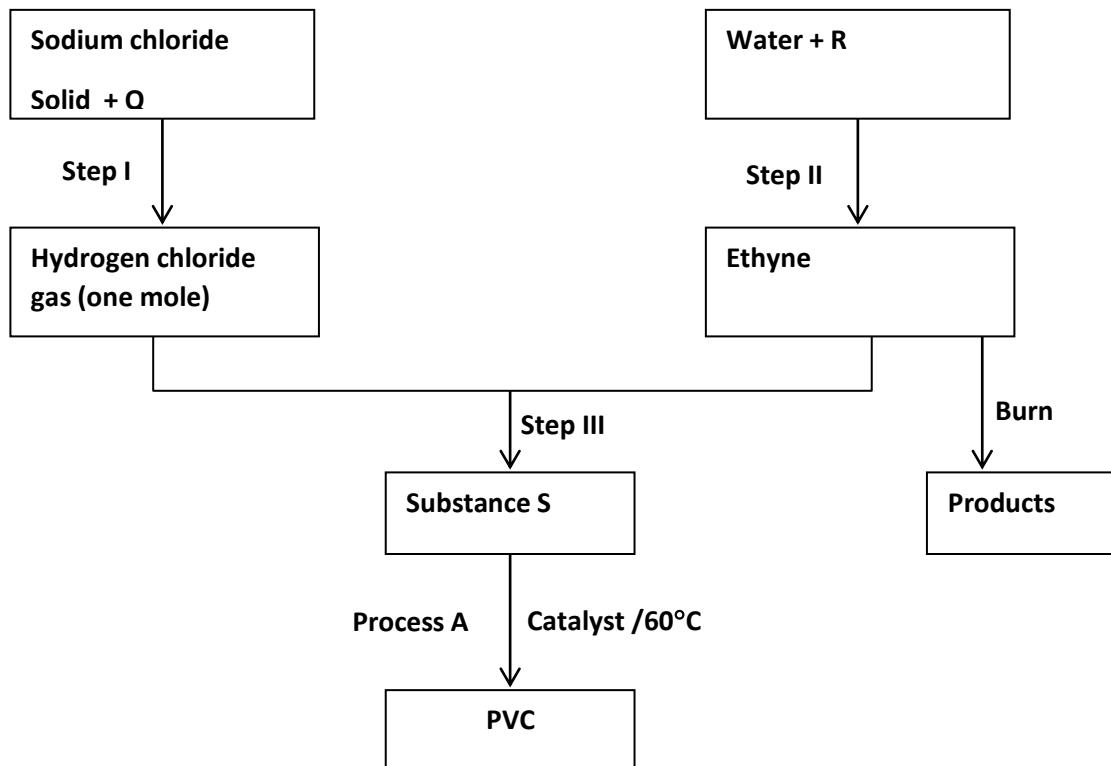
(v) The saturated solution obtained were each cooled to 20ºC.

  I   Calculate the total mass of the two salts precipitated.   (2 marks)

II   Calculate the mass of each salt dissolved at saturation in 20g of water at

  20ºC.   (2 marks)

3.   (i)   Study the flow chart below and answer the questions that follow.

```
┌─────────────────────┐              ┌─────────────────────┐
│ Sodium chloride     │              │ Water + R           │
│ Solid  + Q          │              │                     │
└─────────────────────┘              └─────────────────────┘
        │  Step I                            │  Step II
        ▼                                    ▼
┌─────────────────────┐              ┌─────────────────────┐
│ Hydrogen chloride   │              │ Ethyne              │
│ gas (one mole)      │              │                     │
└─────────────────────┘              └─────────────────────┘
        │                                    │            │  Burn
        │           Step III                 │            ▼
        └──────────────┬─────────────────────┘    ┌──────────────┐
                       ▼                           │ Products     │
                ┌──────────────┐                   └──────────────┘
                │ Substance S  │
                └──────────────┘
         Process A    │  Catalyst /60°C
                      ▼
                ┌──────────────┐
                │    PVC       │
                └──────────────┘
```

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(i)   Identify substances **Q** and **R**.   (2 marks)

Q: ……………………………………………….   **R:** ………………………………………………………….

(ii)   Using a chemical equation, show how **R** reacts with water.   (1 mark)

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(iii)   Name and draw the structures of substance **S**.   (2 marks)
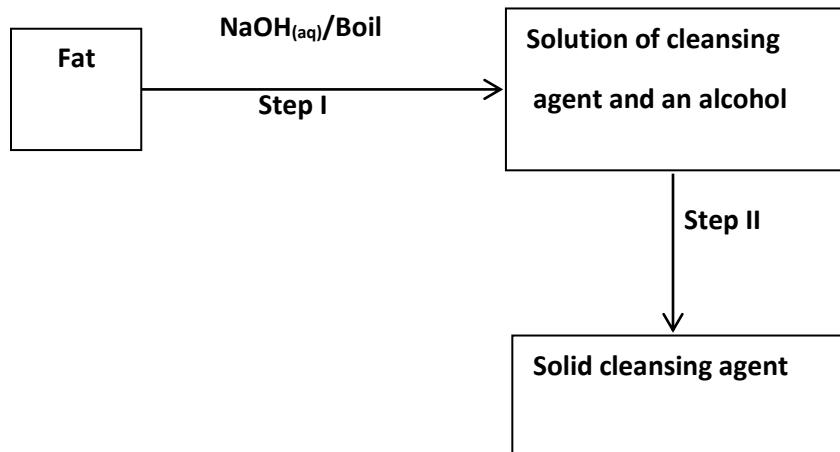
(iv)   Name process **A**.   (1 mark)

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(v)   State **two** uses of PVC.   (1 mark)

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(b)   The scheme below was used to prepare a cleansing agent. Study it
        and answer the questions that follow.

```
          NaOH(aq)/Boil      ┌──────────────────────┐
 ┌────────┐                  │  Solution of cleansing │
 │  Fat   │ ─────────────→   │                       │
 └────────┘    Step I        │   agent and an alcohol │
                             └──────────────────────┘
                                        │
                                     Step II
                                        │
                                        ↓
                             ┌──────────────────────┐
                             │  Solid cleansing agent │
                             │                       │
                             └──────────────────────┘
```

   (i)   What name is given to the type of cleansing agent prepared by
           the method above?   (1 mark)

....

....

(ii)   Name **one** chemical substance added in Step **II**.   (1 mark)

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(iii) What is the purpose of adding the chemical named in b(ii) above. (1 mark)

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(iv)   Name any other suitable substance that can be used in Step **I**. (1 mark)

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(v)   Explain how an aqueous solution of the cleansing agent removes oil during washing.   (2 marks)

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4.   (a)   The standard reduction potentials for five half cells are shown in the table below. Study it and answer the questions that follow. The letters do not represent the actual symbols of the elements.

$$E^{\theta}(V)$$

$$A_{2(aq)} + 2e^{-} \rightarrow 2A^{-}_{(aq)} \quad +1.09$$

$$Q^{2+}_{(aq)} + 2e^{-} \rightarrow Q_{(s)} \quad -0.13$$

$$R^{2+}_{(aq)} + 2e^{-} \rightarrow R_{(s)} \quad -2.37$$

$$Y^{2+}_{(aq)} + 2e^{-} \rightarrow Y_{(s)} \quad +0.34$$

$$25^{+}_{(aq)} + 2e^{-} \rightarrow S_{2(g)} \quad 0.00$$

(i)   With a reason identify the strongest reducing agent. (1 mark)

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(ii)   Which element is likely to be hydrogen. Explain.   (1 mark

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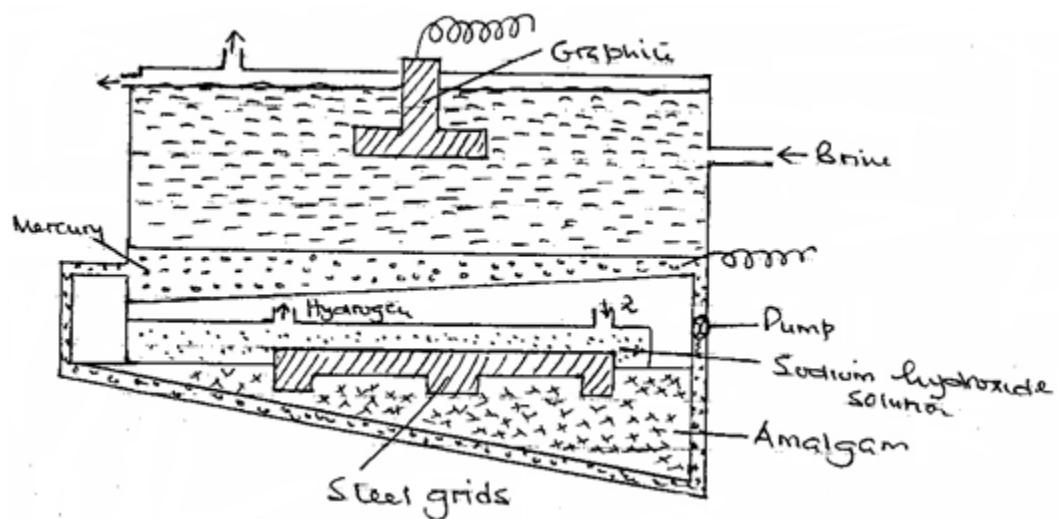
(iii) Write an equation for the cell formed when Q and Y half cells are joined.(1 mark)

....

....

(iv)   Calculate the e.m.f of the cell in (iii) above.   (1 mark)

(b)   The diagram below represents a mercury cell that can be used in the industrial manufacture of sodium hydroxide. Study it and answer the questions that follow.

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(i)   Name raw material introduced at **2**.   (½ mark)

....

....

(ii)   Name another material that can be used in the cell instead of graphite. (½ mark)

....

....

(iii)   Write an equation for the reaction.
        I   that occurs at the anode.   (1 mark)

....

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        II   In which sodium hydroxide is produced.   (1 mark)

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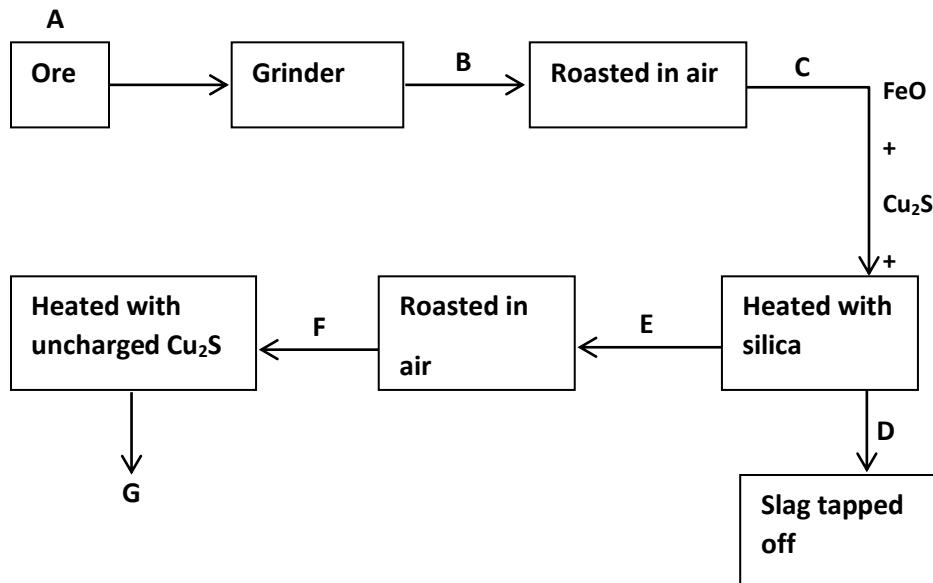
(iv)   Give **two** reasons why mercury is recycled.   (1 mark)

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(iv)   A current of 100 amperes was passed through the cell for five (5) hours. Calculate the mass of sodium hydroxide that was produced.

(Na = 23.0, O = 16.0, H = 1.0, 1 Faraday = 96500C).   (3 marks)

5.   Study the flow diagram below and answer the questions that follow.

(a)   Give the names of the two ores that can be used in the above process in Stage **A**. (1 mark)

....

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(b)   What process takes place in Stage **B**?   (1 mark)

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(c)   Give the equation for the formation of the slag that is tapped of in Stage **D**.   What is the name of the slag?   (2 marks)

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(d)   What are the names of the products formed in Stage **G**? (1 mark)

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(e)   What are the main impurities that are contained in the copper obtained in Stage **G**.   (1 mark)

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(f)   Draw a well labelled diagram of the set-up of apparatus that would be used to purify the copper obtained in Stage **G**.   (2 marks)
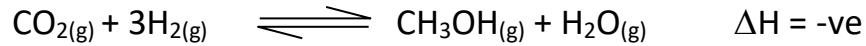
(g)   State **two** uses of copper.   (1 mark)

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(h) What environmental problems would be associated with copper mining? (1 mark)

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6.   (a)   Methanol is manufactured from carbon (IV) oxide and hydrogen gas according to the equation.

$$CO_{2(g)} + 3H_{2(g)} \rightleftharpoons CH_3OH_{(g)} + H_2O_{(g)} \qquad \Delta H = \text{-ve}$$

The reaction is carried out in the presence of a chromium catalyst at 400ºC

and 30Kpa under these conditions, an equilibrium is reached when 2% of the carbon (IV) oxide is converted to methanol.

(i)   Explain how the yield of methanol would be affected if; the manufacturing process above is carried out at, 200ºC and a pressure of 30Kpa. (2 marks)

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(ii)   A more efficient catalyst is used.   (2 marks)

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(b) In an experiment to determine the molar heat of reaction when zinc displaces copper, 0.4g of zinc powder were added to 25.0cm³ of 2.0M copper (II) sulphate solution. The temperature of copper (II) sulphate solution was 24ºC, while that of the mixture was 36ºC.

(i)   Other than increase in temperature, state and explain the observations which were made during the reaction. (3 marks)

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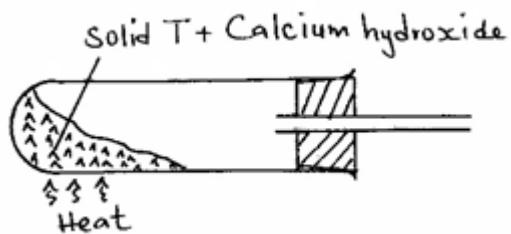
(ii) Calculate the heat change during the reaction. (Specific heat capacity of the solution = $4.2Jg^{-1}K^{-1}$ and the density of the solution = 1g/cm³. (1 mark)

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(iii)   Determine the molar heat of displacement of copper by zinc. (Zn = 65). (2 marks)

7.   (a)   The diagram below shows an incomplete set-up used to prepare and collect ammonia gas.

Solid T + Calcium hydroxide

Heat

(i)   Name solid **T**.   (1 mark)

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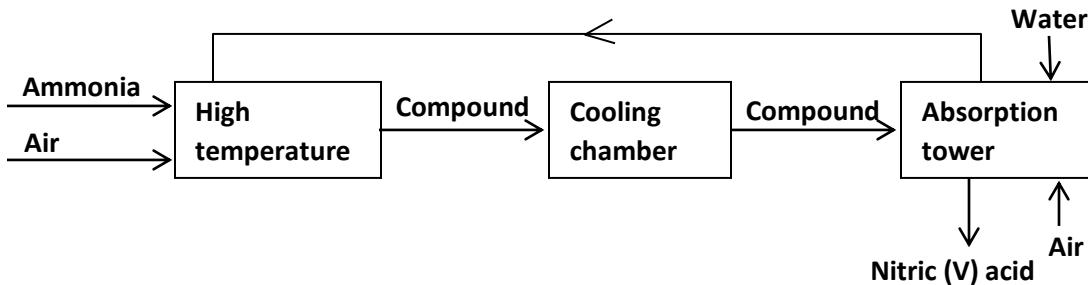
(ii)   Write an equation for the reaction that occurred when a mixture of solid **T** and calcium hydroxide was heated.   (1 mark)

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(iii) Complete the diagram to show how a dry sample of ammonia gas can be collected.   (3 marks)

(b)   Ammonia gas is used to manufacture nitric (V) acid as shown below.

(i)   Name the catalyst used in the above process. (½ mark)

....

....

(ii)   Identify compound **u**.   (½ mark)

....

....

(iii) Write the equation for the reaction that took place in the absorption tower. (1 mark)

....

....

(iv)   Ammonia and nitric (V) acid are used in the manufacture of ammonium nitrate fertilizer, calculate the amount of the fertilizer manufactured per day, if the daily consumption of ammonia is 2400kg. Assume that the factory is 100% efficient. (N = 14, H = 1, O = 16).   (3 marks)

233/3

CHEMISTRY

PAPER 3

(PRACTICAL CONFIDENTIAL)

SEPTEMBER/OCTOBER

TIME: 2¼ HOURS

CONFIDENTIAL

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Each candidate will require:

- 30cm³ of solution A, Hydrochloric Acid.
- 100cm³ of solution C.
- 60cm³ of solution F, Sulphuric (VI) Acid (density – 1.84g/cm³)
- Solid G, 0.2g of magnesium powder.
- Stopwatch.
- Thermometer (-10 to 100ºC).
- 100ml beaker.
- Phenolphthalein indicator.
- Pipette.
- Pipette filler.
- 250ml volumetric flask.
- Distilled water.
- 2 labels.
- 250ml conical flask.
- Burette.
- White tile.
- Filter funnel.
- Stand and clamp.
- About 2.0g of solid H.

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- About 0.2g of sodium hydrogen carbonate.
- 6 test tubes in a rack.
- Test tube holder.
- Metallic spatula.
- Boiling tube.
- Red and blue litmus paper.
- About 2.0g of solid J.
- 50ml or 100ml measuring cylinder.

Chemistry Paper 3 (Practical)

ACCESS TO:

2M NaOH solution.

2M Ammonium hydroxide solution.

2M Barium nitrate solution.

2M Lead (II) nitrate solution.

Bunsen burner.

Acidified potassium dichromate (VI).

Acidified potassium manganate (VII).

2M Nitric (V) acid.

NOTE:

- Solution F is 0.5M sulphuric (VI) acid (density – 1.84g/cm³).
- Solution C is made by dissolving 10g sodium hydroxide and 2g sodium nitrate in water to make 1 litre of solution.

- Solution A is 2M hydrochloric acid.
- Solid J is made by mixing hydrated zinc sulphate and ammonium sulphate in the ratio 1: 1.

- Solid H is 1.5g maleic acid.

Prefer Calling Sir Obiero Amos @ 0706 851 439 for the Marking Schemes

NAME: ……………………………………………………..…………………………………………………..

INDEX NO: …………………….... CANDIDATE'S SIGN…………….….… DATE……………………….

CHEMISTRY   PAPER 3   (PRACTICAL)

SEPTEMBER/OCTOBER

TIME: 2¼ HOURS

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INSTRUCTIONS TO CANDIDATES:

(vi)   Write your **name** and **index number** in the spaces provided **above**.

(vii)   **Sign** and write the **date** of examination in the spaces provided **above**.

3.   Answer **ALL** questions in the spaces provided for each question.

4.   You are not allowed to start working with the apparatus for the first 15 minutes

of the 2¼ hours allowed for this paper. This time is to enable you to read

the question paper and make sure you have all chemicals and apparatus that you may need.

5.   All working must be clearly shown where necessary.

6.   Mathematical tables and silent electronic calculators may be used.

7.   This paper consists of **7** printed pages.

8.   Candidates should check the question paper to ascertain that all the pages

are printed and that no questions are missing.

FOR EXAMINER'S USE ONLY:

QUESTION	MAXIMUM SCORE	CANDIDATES SCORE
1	12	
2	11	
3	17	
TOTAL SCORE	40	

Prefer Calling Sir Obiero Amos @ 0706 851 439 for the Marking Schemes

1. You are provided with:

- Solution A – 2.0M Hydrochloric Acid.
- Solution C – a solution containing 12g/dm³ of sodium hydroxide contaminated
  with sodium nitrate.

- Phenolphthalein indicator.

You are required to prepare a dilute solution of hydrochloric acid solution A and use it to determine the purity of sodium hydroxide in solution C.

PROCEDURE

- Using a pipette and a pipette filler place 25cm³ of solution A into a 250ml volumetric flask.
- Add distilled water to make 250cm³ of solution. Label this solution B.
- Pipette 25cm³ of solution B into a 250ml conical flask. Add 2 drops of phenolphthalein indicator.
- Fill the burette with solution C and titrate with solution B until there is a permanent colour change.

- Repeat the titration two more times and complete the table below.

	1	2	3
Final burette reading (cm³)			
Initial burette reading (cm³)			
Volume of C used (cm³)			

(3 marks)

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(a)   Determine the average volume of solution C used.   (1 mark)

(b)   Calculate the number of moles in
        (i)   250cm³ of solution B.   (2 marks)

        (ii)   25cm³ of solution B.   (1 mark)

(c)   Calculate the
        (i)   Number of moles of sodium hydroxide in the average volume
                 of solution C used.   (2 marks)

(ii)   Mass of sodium hydroxide in 1dm³ of solution C.   (2 marks)

(iii)   Percentage purity of the sodium hydroxide.   (1 mark)

2.   You are provided with:

- Sulphuric (VI) acid, solution F.

- 0.2g magnesium, solid G.

You are required to determine the molar heat of reaction, ΔH between magnesium the acid.
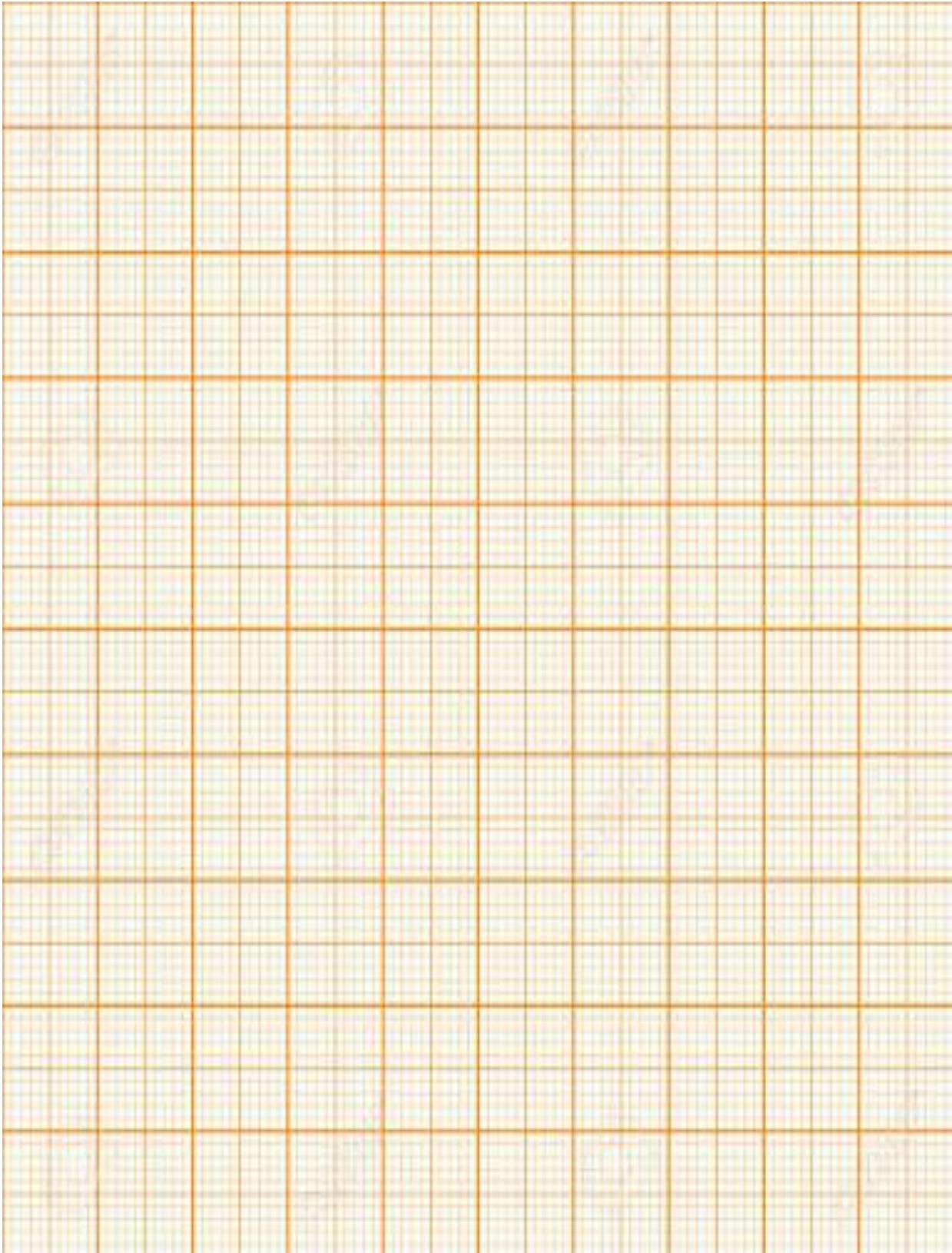
PROCEDURE:

- Measure 50cm³ of solution F using a measuring cylinder and place it in a 100cm³ beaker.

- Stir the solution gently with a thermometer and take it's temperature after
  every half-minute.

- Record your results in Table III below.
- After one and half minutes, add all of solid G at once. Stir the mixture gently
  with the thermometer and record the temperature of the mixture after
  every half-minute in table III up to the sixth minute.

Table III

Time (min)	0	½	1	1½	2	2½	3	3½	4	4½	5	5½	6
Temperature (ºC)													

(a)   In the grid provided, plot a graph of temperature (vertical axis) against time.(3 marks)

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(b)   From the graph determine the change in temperature, ΔT. (1 mark)

(c)   Calculate the heat change for the reaction using the expression.

(Heat change = mass of solution x 4.2 x ΔT – assume density of

solution = 1.0g/cm³).   (2 marks)

(d)   Calculate the molar heat of reaction of sulphuric (VI) acid with
        magnesium.   (Mg = 24.0).   (2 marks)

3.   I   You are provided with solid J. Carry out the test below to identify the

        compound.

(a)   Place ½ spatula of solid J in a hard test tube and heat strongly until
        no further change. Test the gas produced with litmus paper.

Observation	Inference
(1mk)	(1mk)

(b)   Place the remaining solid J into a clean boiling tube. Half fill it with distilled water and shake well. Divide the solution into four portions.

Observation	Inference
(1mk)	(1mk)

(i)   To the first portion add dilute sodium hydroxide solution dropwise till in excess.

Observation	Inference
(1mk)	(1mk)

(ii)   To the second portion add ammonia solution dropwise till in excess.

Observation	Inference
(1mk)	(½mk)

(iii)   To the third portion add drops of dilute barium nitrate.

Observation	Inference
(½mk)	(1mk)

(iv)   To the fourth portion add a few drops of dilute nitric acid followed by lead (II) nitrate solution and warm.

Observation	Inference
(½mk)	(½mk)

II   (7 marks)

You are provided with solid H. Carry out the tests below.

Write your observations and inferences in the spaces provided.

(a)   Place about a spatulaful of solid H on a metallic spatula and burn it using a
Bunsen burner.

Observation	Inference
(½mk)	(1mk)

(b)   Place the remaining solid H in a boiling tube. Add about 10cm³ of distilled water and shake well. Retain the mixture for use in the tests below.

Prefer Calling Sir Obiero Amos @ 0706 851 439 for the Marking Schemes

Observation	Inference
(½mk)	(½mk)

(c)   Divide the solution in (b) above into three portions.

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

Observation	Inference
(1mk)	(1mk)

(ii)   To the second portion, add 1cm³ of acidified potassium dichromate (VI) and warm.

Observation	Inference
(½mk)	(1mk)

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

Observation	Inference
(½mk)	(½mk)

313/1

CHRISTIAN RELIGIOUS EDUCATION

PAPER 1

SEPTEMBER/OCTOBER

TIME: 2½ HOURS

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Kenya Certificate of Secondary Education

CHRISTIAN RELIGIOUS EDUCATION

PAPER 1

TIME: 2½ HOURS

INSTRUCTIONS TO CANDIDATES:

(a)   This paper consists of **six** questions.

(b)   Answer any **FIVE** question in the answer booklet provided.

(c)   Each question carries 20 marks.

1. (a) Outline **six** causes of sin from the Biblical stories of the fall of man.(6mks)
   (b) Show how the study of CRE has promoted morality in the society.(8mks)
   (c) Give **six** reasons why Christians should forgive. (6mks)

2.(a) Explain **four** significance of the right of the Passover to the Israelites. (8mks)
   (b) Outline the specific conditions that the Israelites were to fulfill during the renewal of the Sinai covenant. (7mks)
(c) State **five** leadership qualities that a Christian can learn from Moses. (5mks)

3. (a) Outline the success of Elijah as a Prophet of God. (8mks)
   (b) Explain why Samuel was opposed to kingship in Israel. (7mks)
   (c) Explain **five** ways how church leaders are put to test today. (5mks)

4. (a) Identify **seven** channels through which Prophets in Old Testament received God's revelation. (7mks)
(b) In what ways did the Israelites break their relationship with God during the time of Prophet Amos. (8mks)
   (c) How is the church promoting social justice in Kenya today? (5mks)

5. (a) Outline **four** differences between the mosaic covenant and the New covenant foretold by Jeremiah. (8mks)
   (b) List **six** of Nehemiah's reforms on the Sabbath. (6mks)
   (c) What is the relevance of Nehemiah's leadership to Christians today?(6mks)

6. (a) Give the importance of kinship system in Traditional African communities. (7mks)
   (b) Outline **seven** occasions when diviners were consulted in Traditional African communities. (7mks)
   (c) Give **six** reasons why initiation rites are still practiced today. (6mks)

313/2

CHRISTIAN RELIGIOUS EDUCATION

PAPER 2

SEPTEMBER/OCTOBER

TIME: 2½ HOURS

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2020 TOP EXAMINERS' MOCK SERIES 3

Kenya Certificate of Secondary Education

CHRISTIAN RELIGIOUS EDUCATION

PAPER 2

TIME: 2½ HOURS

INSTRUCTIONS TO CANDIDATES:

(a) This paper consists of **six** questions.

(b) Answer any **FIVE** question in the answer booklet provided.

(c) Each question carries 20 marks.

1. (a) With reference to Luke 1: 26-38 describe the announciation of the Birth of Jesus Christ. (6mks)

(b) State the differences between the work of John the Baptist and that of Jesus Christ. (8mks)

(c) What lessons do Christians learn from the visit of Mary to Elizabeth. (Luke 1: 39-56). (6mks)

2. (a) Describe the healing of the Demon possessed man at Capernaum (Luke 4: 31-37). (7mks)

(b) Identify ways through which churches continue with the healing ministry of Jesus.(6mks)

(c) State **seven** factors which hinder Christians from helping the needy in the society. (7mks)

3 (a) Identify the signs of the End of time given by Jesus to His disciples. (8mks)

(b) Describe characteristics of a true follower of Jesus today. (6mks)

(c) Give reasons why some people find it difficult to accept Jesus today. (6mks)

4. (a) Explain the New Testament teachings on the unity of believers as expressed in "The Bride". (6mks)

(b) Give reasons why Jesus sent the Holy Spirit to the disciples after His Ascension. (7mks)

(c) Show how Christians demonstrate the fruit of generosity today. (7mks)

5. (a) Outline Christian teachings on work. (8mks)

(b) State the role of professional ethics in a work place. (6mks)

(c) Give **six** ways in which forced reduction of employees affect the Christian family in Kenya today. (6mks)

6. (a) Outline **seven** ways in which Science and Technology help to improve human life.
(8mks)

(b) What are the effects of pollution on the environment?
(6mks)
(c) Explain ways in which Christians can help to reduce pollution of the environment today.
(6mks)

NAME: ………………………………………………………………………………………………………..

INDEX NO: ……………………..... CANDIDATE'S SIGN: …………….…… DATE: …………………

101/1

ENGLISH   (FUNCTIONAL SKILLS)   PAPER 1

SEPTEMBER/OCTOBER

TIME: 2 HOURS

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INSTRUCTIONS TO CANDIDATES:

(a) Write your **name**, **index number** in the spaces provided above.

(b) **Sign** and write the **date** of examination in the spaces provided above.

(c) Answer all questions in this question paper.

(d) All your answers **must be** written in the spaces provided in this question paper.

(e) Candidates should check the question paper to ascertain that all the pages are

      printed and that no page is missing.

FOR EXAMINER'S USE ONLY:

Question	Maximum Score	Candidate's Score
1	20	
2	10	
3	30	
Total Score	60	

Prefer Calling Sir Obiero Amos @ 0706 851 439 for the Marking Schemes

1. **<u>FUNCTIONAL WRITING</u>:**

You are the Chief Executive Officer of a Non Governmental Organization and Mr. Zack Mwambia has been working under you, in the accounts department.

Your organization has opened a branch in U.S.A and has offices in London.

Zack has applied for the position of a Senior Accountant in the London offices.

Write a confidential report to the manager recommending him for this

position. Remember to email it to him.   (20 marks)

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Prefer Calling Sir Obiero Amos @ 0706 851 439 for the Marking Schemes

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2. **CLOZE TEST: (10 MARKS)**

Read the following passage and fill in the gaps with the most appropriate words.

The police frequently **1** ………………………. our slum village in search

of hidden illicit brews. It was one of **2** ………………………. raids that constable Amka
Twende earned himself unexpected honour **3** …………………. respect

for his detective skills. **4** ………………………. chang'aa brewers in the village

had devised several smart ways of hiding their liquor in spots **5**…………………….

even the nosiest cops would not dream of looking. A new favourite trick was to

put the chang'aa **6** ……………………. twenty litre jerry cans, close them tightly

tie strong sisal ropes **7** …………………. the necks and dangle them down pit

8 …………………..

This of course necessitated boring extra opening at the back of the toilet's
structures for the jerry cans to be let down before the holes were ingeniously

covered and disguised **9** ……………………. soil, refuse or even green grass.

No policeman in his right **10** …………………….. was going to start looking

for hidden chang'aa down a toilet pit, surely.

3. (a) **ORAL SKILLS: (30 MARKS)**

Read the oral poem below and then answer the questions that follow: (5 marks)

He couldn't wait, eh!

For the child of my mother

To finish school

He begged, eh!

That man begged

He begged and begged

He couldn't wait, eh!

For the child of my mother

To dress up

Questions.

(i)   What makes this oral poem rhythmic?   (2 marks)

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....

(ii) Which word are you likely to stress in the second line of the first and last stanzas and why?   (2 marks)

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(iii)   How would you say the last line of the poem?   (1 mark)

....

....

....

....

(b) **Identify the word with the odd sound from the following sets of words**. (5 marks)

       (i)   Pooh   poop   pool   poor

....

       (ii)   Tortoise   boy   join   ploy

....

       (iii)   Scuttle   scythe   scullery   sculpture

....

       (iv)   Gingivitis   gigolo   gist   gender

....

       (v)   Cannibal   caesura   calcium   cachet

....

(c) **Provide another word that will form minimal pairs for the following words**. (3 marks)

       (i)   Not   ....

       (ii)   Play   ....

(iii)   Rips   ……………………………………………….

(d)   **Study the genre below and answer the questions that follow**. (6 marks)

The short child shot a shot of his short white wash.

Questions

(i)   Classify the genre.   (2 marks)

………

………

………

(ii)   Identify consonance in the genre above.   (2 marks)

………

………

………

(iii)   State two functions of the genre above.   (2 marks)

………

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……….

(e) (i) You are invited as a motivational speaker to give a talk to a group of people. State **three** factors about the audience that you must consider before giving the speech. (3 marks)

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State **three** factors the listener ought to observe in order to gain from the speech. (3 marks)

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(e) Two friends, Mutunga and Mutiso have a debate. Mutunga strongly feels that a man should marry more than one wife. Mutiso on the other hand argues that a man should only marry one wife. Advise them on five things they should do in order to disagree in an agreeable manner so that their conversation does not degenerate into a quarrel. (5 marks)

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NAME: ………………………………………………………………………………………………………..

INDEX NO: …………………….. DATE: ……………………… CANDIDATE'S SIGN: …………..……...

101/2   ENGLISH

PAPER 2

SEPTEMBER/OCTOBER

TIME: 2½ HOURS

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INSTRUCTIONS TO CANDIDATES:

(a)   Write your **name, index number** in the spaces provided above.

(b)   **Sign** and write the **date** of examination in the spaces provided above.

(c)   Answer all questions in this question paper.

(d)   All your answers **must be** written in the spaces provided in this question paper.

(e)   Candidates should check the question paper to ascertain that all the pages are

        printed and that no page is missing.

FOR EXAMINER'S USE ONLY:

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

Prefer Calling Sir Obiero Amos @ 0706 851 439 for the Marking Schemes

1.   **COMPREHENSION:**

Read the following passage and answer the questions that follow:

You may think that expecting food to change your life is too much to ask. But have you considered that eating the right food at the right time will increase energy, help you manage weight and ward off major illness?

Researchers have found that eating a meal with plenty of protein leaves you feeling more satisfied for longer when compared to a meal loaded with low-quality carbohydrates. Your body takes longer to digest protein, leading to a gradual increase in blood sugar. The high protein breakfast will therefore carry you through the morning and more importantly, through your tea break. Many high carbohydrate meals are absorbed quickly and send blood sugar on a roller coaster ride, taking your appetite with it and depleting your energy.

Many foods contain antioxidants, but fruits and vegetables may be the richest source. Behaving like chemical warriors, antioxidants neutralize molecules known as free radicals before they damage arteries and body cells. This protects you from heart diseases, high blood pressure, cancer and diabetes. You can now see why antioxidant foods should be consumed in generous portions.

Actually, forget pills – antioxidants work best when consumed in foods. In fact, nutritionists recommend that we eat five portions of fruit and vegetables a day. It's less daunting than it sounds: a portion equals a piece of fruit, three tablespoons of cooked vegetables or a glass of fresh juice.

And do you desire to relive yourself of some baggage? Calcium is the latest weight-loss star to appear on the scene. Scientists stumbled on its magic by accident. From study that measured the blood pressure of obese people, it was discovered that those who took one large tub of yoghurt a day in their

Prefer Calling Sir Obiero Amos @ 0706 851 439 for the Marking Schemes

diet lost an average of eleven pounds of body fat in one year, even though they did not eat less.

A follow-up study found that people on a high calcium diet lost weight and fat than did people on a low-calcium diet – and again, both consumed the same number of calories. Researchers believe calcium encourages fat cells to stop "getting fatter" instead, the cells burn extra fat without you having to go anywhere near a gymnasium.

It probably sounds strange to say that you can cat more in order to lose weight. Obviously , the question you should ask immediately is, "Eat more of what?" We are talking about foods rich in fibre. They have what is referred to as low-energy density; that translates to few calories relative to weight. This means that you can down a mountain without fear of calories overload.

Fibre also aids weight loss because it's filling. Most high-fibre foods take a lot of chewing, triggering your body's fullness sensors. Moreover, you absorb the food more slowly so you feel full longer.

Will the wonders of food ever cease? Not if researchers in nutrition keep their pace.

Let them keep the good news flowing - such as the fact that we don't have to starve ourselves to lose weight and keep diseases at bay.

(Adapted from Reader's Digest, January 2004)

(a)   From the information given in the first paragraph, how can you
        improve your life?   (1 mark)

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……..

(b) In not more than 35 words, summarize the effects of eating carbohydrates. (4 marks)

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(c) Explain how free radicals contribute to the occurrence of high blood pressure and cancer. (2 marks)

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(d) In what two forms can antioxidants be consumed? (2 marks)

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(e) In fact, nutritionists recommend that we eat five portions of fruit and vegetable a day. Rewrite this statement as a question. (1 mark)

....

....

(f) What is the attitude of the author towards calcium as a weight-cutting measure? (3 marks)

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(g) According to the passage, how can you use up excess fat? (2 marks)

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(h) Identify an instance of irony in the passage. (2 marks)

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....·

(i)   Explain the meaning of the following expressions as used in the passage.
(3 marks)

        (a)   Daunting

....…

....·

        (b)   Baggage

....…

....…

        (c)   Down a mountain

....…

....…

2.   Read the excerpt below and answer the questions that follow:

"She means everything to me." She looked at him steadily for a little while. "So do you – though I am beginning to think it's a waste of time. When are you going to propose if at all? We've known each other for six years. Six years! What I don't have by now I'll never get. I am twenty six years old and you are looking at the finished product. And I am tired of being asked when I'll bring home the man from *Ruguru* – meaning the man from the west as my relatives refer to you."

"You do mean it, don't you? It is not brain fever due to overwork and lack of sleep, is it?" He said it half in jest, half in earnest.

"You really are too much," she said getting up.

"Come on! Do have a sense of humour. It isn't everyday a girl proposes to me. As a matter of fact this is the first time – so forgive me if I don't quite know what to say. But you know there's never been anyone else since I met you. To hell with it, since we are in the age of equality, why don't I just say that there's never been anyone else? The answer is – yes I'll marry you. Any day you want. Today, if we can get anyone to marry us."

"You are really a comedian, you know. What are you still doing here – an underpaid intern? You should be out there earning your millions with Bill Cosby and the rest." This is how their conversation ended. Two strong wills pitted against each other. She wondered if she was taking on more than she could manage. But he had a power over her – which even he did not know. There was no one else. There could be no one else. Still she was piqued by him.

"Point taken. But I am dead serious. You can tell your mum that I'll be over to pay my courtesy call as soon as this internship business is over. My intentions towards her daughter have always been good even if I am not a son of Mumbi and Gikuyu – the founders of your great tribe."

The alarm rang and cut him short.

"Yak! I've got to run, honey. I have gallonfuls of blood letting yet to be done. I'll just walk you to the bus stop and then get on with the job at hand." He grabbed his coat and opened the door. She understood. After all, she herself was an intern and at the mercy of the clock and the beck and call of others. It was one hell of a life and one hell of a courtship. Why couldn't she fall in love with an ordinary guy who worked ordinary hours? One doctor in the house was more than enough. She wondered if the marriage would survive the onslaught of medicine. Time would tell.

Questions.

(a) Explain what happens immediately before and after this excerpt.   (4 marks)

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(b)   Identify and illustrate any one theme evident in this excerpt.   (2 marks)

....

....

....

(c)   (i)   'She means everything to me'

Who is referred to as 'she' in this sentence?   (1 mark)

....

....

(ii) What makes the 'she' age faster than she should have later in the story? (1 mark)

....

....

(iii)   Explain the meaning of the following:

'I am twenty six years old and you are looking at the finished product.' (1 mark)

....

....

(d) Both Wandia and Aoro are interns in different hospitals. What challenges do they encounter as they serve as interns?   (4 marks)

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....

....

(e)   Which trait of character is shared by both Aoro and Wandia in this excerpt?

(3 marks)

....

....

....

....

....

(f)   Illustrate any two features of style evident in the excerpt. (4 marks)

....

....

....

....

....

(g)   Where do Aoro and Wandia meet for the first time in the story? (1 mark)

....

....

(h)   'There's never been anyone since I met you'

(Begin: Never ……………..)   (1 mark)

....

....

(i)   Explain the meaning of the following words as used in the excerpt: (3 marks)

        (i)   Piqued.

....

....

        (ii)   Internship.

....

....

        (iii)   Jest.

....

....

3.   **Read the poem below and answer the questions that follow:**

THE VILLAGE WELL

By the well,

Where fresh water still quietly whisper

As when I

First accompanied Mother and filled my baby gourd,

By this well,

Where many an evening its clean water cleaned me;

This silent well

Dreaded haunt of the long haired Musambwa

Who basked

In the mid-day sun reclining on the rock

Where I now sit

Welling up with many poignant memories;

This spot,

Which has rung with the purity of child laughter;

This spot,

Where eye spoke secretly to responding eye;

This spot,

Where hearts pounded madly in many a breast;

By this well,

Over-hung by leafy branches of sheltering trees

I first noticed her

I saw her in the cool of red, red evening

I saw her

As if I had not seen her a thousand times before

By this well

My eyes asked for love, and my heart went mad.

I stuttered

And murmured my first words of love

And cupped

With my hands, the intoxication that were her breasts

In this well,

In the clear waters of this whispering well,

The silent moon

Witnessed with a smile our inviolate vows

The kisses

That left us weak and breathless.

It is dark.

It is dark by the well that still whispers.

It is darker

It is utter darkness in the heart that bleeds

By this well

Where magic has evaporated but memories linger.

Of damp death

The rotting foliage reeks,

And the branches

Are grotesque talons of hungry vultures,

For she is dead

The one I first loved by this well.

Questions:

(i)   Who is the persona in this poem?   (2 marks)

....

....

....

(ii)   What is the significant of the well to the persona?   (4 marks)

....

....

....

....

....

....

     (iii)   Identify imagery in the poem.   (2 marks)

....

....

....

....

     (iv)   Explain the meaning of the following lines as used in the poem.
              (a)   Dreaded haunt of the long haired Musambwa.   (2 marks)

....

....

....

              (b)   I saw her in the cool of a red, red evening.   (2 marks)

....

....

....

(c)   It is dark by the well that still whispers.   (2 marks)

....

....

....

(v)   Comment on the change of mood in the last two stanzas. (4 marks)

....

....

....

....

(vi)   What is the attitude of the persona towards death?   (2 marks)

....

....

....

4.   **GRAMMAR:**

(a)   *Arrange the adjectives in the following sentences in their correct order*. (3 marks)

(i) I hate blue toilet big ugly flies.

....

....

(ii) They found gold handsome round Swiss old watches.

....

....

(b) *Replace the underlined words with a suitable phrasal verbs*. (3 marks)

(i) Grusha <u>fainted</u> from exhaustion.

....

....

(ii) The thief <u>escaped</u> with our valuables.

....

....

(iii) Vera <u>visited</u> Wandia.

....

....

(c) *Complete the sentences using the correct form of the word in brackets*. (3 marks)

(i) In summary writing, you should observe both accuracy and

.... (brief)

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(ii)   That we cannot add one and one is …………………………………   (conceive)

(iii)   Phil Collins is a famous ……………………….……… all over the world. (piano)

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

      (i)   If you have nothing more to contribute we will stop fundraising.
           (Begin: Unless……………)

………

……….

    (ii)   Only the head boy among the other prefects remained in the school.
           (Begin: All……………..)

………

……….

     (iii)   They had just entered the house. The shooting started.
           (Join as one sentence beginning: Hardly…………)

………

………

(e)   *Explain the meaning of the following idiomatic expressions*.   (2 marks)

     (i)   A skeleton in the cupboard.

………

………

…….

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(ii)   Show one's teeth.

……

……

……

(f)   **_Fill in the blanks with the correct preposition_**.   (2 marks)

(i)   You must not lean ……………………….. the wall during the assembly.

(ii)   Robbers broke …………………….. our house while we were away.

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NAME: _____

CLASS: _____ **ADM.NO:** _____ **DATE:** _____

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2020 TOP EXAMINERS' MOCK SERIES 3

ENGLISH

IMAGINATIVE

COMPOSITION AND ESSAYS BASED ON TEXTS

PAPER 101/3 FORM 4

1. **Compulsory: Imaginative Composition** **(20mks)**
    Either,
    (a) Write a story beginning with the words:
    I had not thought it was a big problem until I got involved…

    or

    (b) Discuss the measures you would take to curb flooding in our Kenyan urban areas.

2. **Compulsory Set Text**
   Novels
   H.Ole Kulet, <u>**Blossoms of the Savannah**</u>

Bad decisions can adversely affect our lives. Write an essay in support of the statement with illustrations from the novel.

3. **Optional set Texts**

(a) Short story
   Chris Wanjala <u>**Memories we lost and other stories**</u>

When a teenage girl is brought up by an absentee mother, she is bound to face countless challenges. Justify this assertion basing your answer on Lesley Nneka's story 'Light' in 'Memories we Lost and Other Stories' by Chris Wanjala.

or

(b) Drama
   David Mulwa, <u>**Inheritance**</u>

Greed is disastrous. Write an essay to illustrate this statement basing your answer from inheritance by David Mulwa.

or

(c) Novel

John Steinbeck: <u>**The Pearl**</u>   (20mks)

Greed for worldly possessions can lead to <u>incontrollable madness</u>. Using Kino, draw illustrations from *John Steinbeck's The Pearl*.

312/1

GEOGRAPHY

PAPER 1

SEPTEMBER/OCTOBER

TIME: 2¾ HOURS

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2020 TOP EXAMINERS' MOCK SERIES 3

INSTRUCTIONS TO CANDIDATES:

(a) This paper has **two** Sections **A** and **B**.
(b) Answer all the questions in Section **A**.
(c) Answer question **6** and **any** other **two** questions from Section **B**.
(d) All answers must be written in the answer booklet provided.
(e) Candidates should check the question paper to ascertain that no questions

 are missing.

(f) Candidates should answer the questions in English.

SECTION A:

Answer **all** questions from this section in the spaces provided.

1.   (a)Differentiate between relative humidity and absolute humidity. (2mks)

(b) State the significance of water vapour in the atmosphere.   (3mks)

2.   (a) What do you understand by the term; Vertical Earth movement. (2mks)

(b)   Identify **three** causes of earth movement.   (3mks)

3.   (a)   Define the term block disintegration   (2mks)

(b)   State **three** factors influencing the rate at which weathered materials move down slope.   (3mks)

4.(a)   Name **two** places in Kenya where karst scenery is relatively well

developed.   (2mks)

(b)   State **three** ideal conditions for development of an artesian well/basin. (3mks)

5.   (a)   Give **two** characteristics of plutonic rocks?   (2mks)

(b)   State **three** ways in which rocks are significant to Kenya's economy. (3mks)
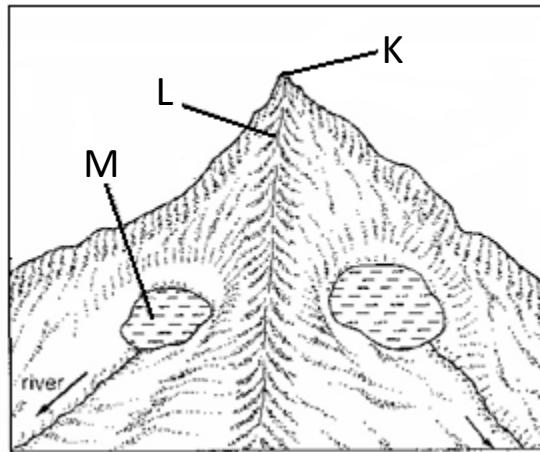
SECTION B: MAPWORK

Answer question **6** and any other **two** questions from this section.

6. Study the map of Busia 1: 50,000 (Sheet 101/1) provided and answer the following questions.

    (a) (i) What is the approximate height of Ndanyi Hill Peak in grid square 4032. (2mks)

    (ii) Identify **two** natural relief features in grid square 2837. (2mks)

    (iii) Name **two** types of natural vegetation to the North of Northings 45. (2mks)

    (b) (i) What is the bearing of Principal photo point in grid square 3827 from principal photo point in grid square 3131. (2mks)

    (ii) Citing evidence from the map identify **two** social services offered in the area covered by the map. (4mks)

    (c) (i) Using a vertical scale of 1cm to represent 40 metres, draw across-section along Northing 36 from easting 29 to easting 34. (4mks)

    (ii) On it mark and label the following

    - Ridge. (1mk)
    - Loose surface road. (1mk)
    - River. (1mk)

    (iii) From the cross-section you have drawn, test if the starting and end point are intervisible. (Give a reason for your answer). (2mks)

    (d) Describe briefly the drainage of the area covered by the map. (4mks)

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7. (a) (i) Differentiate between a mineral and a rock. (2mks)

   (ii) Name any **two** intrusive igneous rocks. (2mks)

   (b) (i) Name **four** characteristics of minerals. (4mks)

   (ii) Describe **three** ways in which sedimentary rocks are formed. (9mks)

   (c) Explain **four** significances of rocks. (8mks)

8. (a) (i) Define the term vulcanicity. (2mks)

   (ii) Name **two** features resulting from fissure eruptions. (2mks)

   (b) With the aid of a diagram, describe the formation of the following intrusive features:- (9mks)

   (i) Sill.
   (ii) Dyke.
   (iii) Batholith.

   (c) Explain **three** positive effects of vulcanicity to human activities. (6mks)

   (d) You have been asked to carry out a field study in Mount Kenya on vulcanicity.

   (i) State **three** methods you would use to collect your data. (3mks)

   (ii) Name **three** follow-up activities you will undertake. (3mks)

9. (a) (i) Define the term glaciation. (2mks)

   (ii) Give **two** processes of glacial movement. (2mks)

   (iii) Explain **three** factors that enhance glacial erosion. (6mks)

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(b)   The diagram below shows features resulting from glacial erosion
        on a highland area.

(i)   Name the feature marked **K**, **L** and **M**.   (3mks)

(ii)   Describe how the feature marked **M** is formed.   (6mks)

(c)   Explain **three** negative effects of glaciation on the physical and
        human environment.   (6mks)

10. (a)   List **three** factors which contribute to the development of deserts. (3mks)

(b) Name **three** processes through which wind erodes a desert landscape. (3mks)

(c)   Explain **three** ways through which wind transports its load.   (6mks)

(d)   Describe how the following desert features are formed.   (9mks)

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(i)   Yardangs.

(ii)   Rock pedestals.

(iii)   Wadis.

(e)   State **four** ways in which desert features are significant to human

activities.   (4mks)

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312/2

GEOGRAPHY

PAPER 2

SEPTEMBER/OCTOBER

TIME: 2¾ HOURS

AMOBI SOFT COPY PUBLISHERS

2020 TOP EXAMINERS' MOCK SERIES 3

Kenya Certificate of Secondary Education

GEOGRAPHY

PAPER 2

TIME: 2¾ HOURS

INSTRUCTIONS TO CANDIDATES:

(e)   This paper has **two** Sections **A** and **B**.

(f)   Answer all the questions in Section **A**.

(g)   Answer question **6** and **any** other **two** questions from Section **B**.

(h)   All answers must be written in the answer booklet provided.

(e)   Candidates should check the question paper to ascertain that no questions

   are missing.

(f)   Candidates should answer the questions in English.

1. (a)   Define the term transhumance.   (2mks)

    (b)   State **three** characteristics of nomadic pastoralism. (3mks)

2. State **five** factors which influence nucleated settlement pattern. (5mks)

3. (a)   What is a cottage industry.   (2mks)

    (b)   Give **three** reasons why the government of Kenya encourages the
          establishment of Jua Kali Industries.   (3mks)

4. (a)   What is air pollution?   (2mks)

    (b)   State **three** negative effects of uncollected garbage on the environment. (3mks)
5. (a)   Name **two** main reclamation projects in the Netherlands. (2mks)

    (b)   State **three** reasons for reclaiming swamps in Kenya.   (3mks)

SECTION B:

Answer question **6** and any other **two** questions from this section.
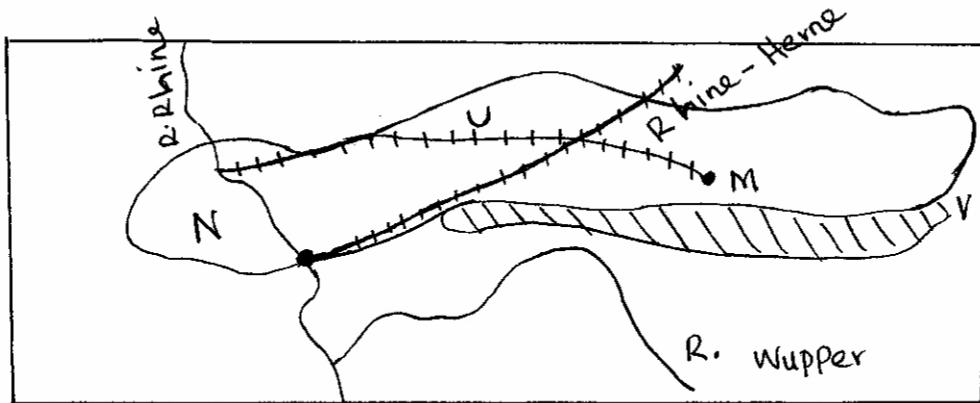
6. The table below shows agricultural crops produced in Kenya in the year 2008 to 2011.

    Use it to answer question (a).

Crops	Amount in metric tonnes			
	2008	2009	2010	2011
Tea	240,000	314,000	399,000	405,000
Coffee	98,000	54,000	42,000	55,000
Wheat	70,000	37,000	54,000	66,000
Others	165,000	180,000	147,000	155,000

    (a)   (i)   Using a scale of 1cm to represent 100,000 metric tones, draw
                 a compound bar graph to represent the data above. (6mks)

          (ii)   State **two** advantages of using compound bar graphs to

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represent geographical data. (2mks)

(b) State **five** physical factors that favour coffee growing in the Kenya highlands. (5mks)

(c) Describe the stages involved in coffee production from harvesting to marketing. (6mks)

(d) Compare coffee farming in Kenya and Brazil under the following sub-headings.

- Growing areas. (2mks)
- Processing. (2mks)
- Labour. (2mks)

7. (a) (i) What is rural settlement? (2mks)

(ii) State **three** characteristics of rural settlement. (3mks)

(b) Explain **three** factors that led to the growth of Kisumu town. (6mks)

(c) Explain how the following problems facing Kisumu town can be solved.
(i) Pollution. (2mks)

(ii) Crime. (2mks)

(iii) Unemployment. (2mks)

(d) Explain how the port of Rotterdam differs from the port of Mombasa. (8mks)

8.(a) (i) Apart from coal name **three** other non-renewable sources of energy. (3mks)

(ii) State **four** reasons why there has been a decline in the use of coal as a source of energy. (4mks)

(iii) Give **three** advantages of using wind energy. (3mks)

(b) Name **two** examples of agricultural non-food processing industries in Kenya. (2mks)

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(c)   Below is a sketch map of the Ruhr industrial region.
       Use it to answer question (i).

(i)   Name:
       • The canal marked **U**.   (1mk)
       • The river marked **V**.   (1mk)
       • The town marked **M**.   (1mk)

(ii)   Explain **three** factors which led to the growth of iron and steel
       industry in the Ruhr region of Germany.   (6mks)

(d)   Explain **two** environmental problems which have resulted from the

       development of car manufacturing industry in Japan.   (4mks)

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

             (ii)   Define agro-forestry?   (2mks)

      (b)   Explain how the following factors influence the distribution of
             natural forest.

             (i)   Climate.   (4mks)

             (ii)   Altitude.   (2mks)

             (iii) Soil.   (2mks)

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(c)   Give
(i)   **Three** characteristics of softwood in Kenya.   (3mks)

(ii)   **Four** characteristics of softwood in Canada.   (4mks)

(d)   Explain **three** positive significances of forests products in Kenya.   (6mks)

10.   (a)   (i)   Define the term pollution.   (2mks)

(ii)   State **four** causes of land pollution.   (4mks)

(b)   (i)   Name **two** areas in Kenya which occasionally experience

flooding.   (2mks)

(ii)   Explain **three** major causes of widespread flooding in Kenya. (6mks)

(iii) State **four** methods used in controlling and managing floods
in Kenya.   (4mks)

(c)   (i)   State **three** problems caused by lighting.   (3mks)

(ii)   Give **four** measures used to control and manage lighting
in Kenya.   (4mks)

Prefer Calling Sir Obiero Amos @ 0706 851 439 for the Marking Schemes

311/1

HISTORY AND GOVERNMENT

PAPER 1

SEPTEMBER/OCTOBER

TIME: 2½ HOURS

AMOBI SOFT COPY PUBLISHERS

2020 TOP EXAMINERS' MOCK SERIES 3

INSTRUCTIONS TO CANDIDATES:

(a)   This paper consists of **three** Sections **A**, **B** and **C**.

(b)   Answer **ALL** the questions in Section **A**, **three** questions from Section **B**

   and **two** questions from Section **C**.

(c)   Answers to **all** the questions **must** be written in the answer booklet provided.

(d)   Candidates should check the question paper to ascertain that no questions

   are missing.

(e)   Candidates should answer the questions in English.

SECTION A: (25 MARKS)

Answer all questions in this section in the answer booklet provided.

1. Identify **one** branch in the study of Kenyan history. (1mk)

2. Give **two** political roles of the Orkoiyot among the Nandi. (2mks)

3. Give **one** difference in the social practices of the Luyia and Ameru in the 19th century. (1mk)

4. Give the main reason that made the Borana migrate to Kenya from Southern Ethiopia in 1897. (1mk)

5. Give **one** evidence to show the Chinese reached the East African Coast. (1mk)

6. State **two** negative effects of the Indian Ocean trade on the Kenyan people. (2mks)

7. In what **two** ways can the government limit ones right to own property. (2mks)

8. Give **two** National symbols of the Republic in the constitution of Kenya. (2mks)

9. Give **two** leaders who led the Agiriama against the British during the colonial period. (2mks)

10. Identify the commission that recommended a uniform system of education in all government and mission schools during the colonial period. (1mk)

11. Name the executive head of the colony in colonial Kenya. (1mk)

12. State **two** reasons why Africans moved to urban centres in colonial Kenya. (2mks)

13. Give **two** reasons why oathing was necessary among the Mau Mau freedom fighters. (2mks)

14. Identify **two** qualifications for the appointment in the office of Kadhi. (2mks)

15. Give **one** reason that can make the national government in Kenya to suspend a county government. (1mk)

16. State **one** contribution of "Harambee" movement to the development of health services in Kenya. (1mk)

17. Name the main function of the equalization fund. (1mk)

SECTION B: (45 MARKS)

Answer any **three** questions from this section in the answer booklet provided.

18. (a) Give **three** social aspects borrowed by the Bantu from the Cushities during the pre-colonial period. (3mks)

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

19. (a) State **five** reasons why the missionaries established settlements for freed slaves in Kenya in the 19th century. (5mks)

    (b) Explain **five** ways in which the introduction of Christianity undermined African culture. (10mks)

20. (a) Give **five** terms of Devonshire White Paper of 1923. (5mks)

    (b) Explain **five** impacts of colonial land policies in Kenya during the colonial period. (10mks)

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21. (a) Identify **three** types of land holdings in Kenya today. (3mks)

(b) Explain **six** challenges facing the agricultural sector in Kenya. (12mks)

SECTION C: (30 MARKS)

Answer any **two** questions from this section in the answer booklet provided.

22. (a) Name **three** rights of aliens in Kenya. (3mks)

(b) Explain **six** civic responsibilities of Kenyan citizens. (12mks)

23. (a) Why are general elections conducted in Kenya every five years. (5mks)

(b) Explain **five** functions of the public service commission. (10mks)

24. (a) Identify **five** sources of public revenue in Kenya. (5mks)

(b) Explain **five** challenges facing the government of Kenya in her efforts to raise revenue. (10mks)

311/2

HISTORY AND GOVERNMENT

PAPER 2

SEPTEMBER/OCTOBER

TIME: 2½ HOURS

AMOBI SOFT COPY PUBLISHERS

2020 TOP EXAMINERS' MOCK SERIES 3

Kenya Certificate of Secondary Education

HISTORY AND GOVERNMENT

PAPER 2

TIME: 2½ HOURS

INSTRUCTIONS TO CANDIDATES:

(a)   This paper consists of **three** Sections **A**, **B** and **C**.

(b)   Answer **ALL** the questions in Section **A**, **three** questions from Section **B**

and **two** questions from Section **C**.

(c)   Answers to **all** the questions **must** be written in the answer booklet provided.

(d)   Candidates should check the question paper to ascertain that no questions

are missing.

(e)   Candidates should answer the questions in English.

SECTION A: (25 MARKS)

Answer all questions in this section in the answer booklet provided.

1. Name **two** types of written materials used by historians as a source of history and government. (2mks)

2. Give the main reason why the period of early man is referred to as the Stone Age. (1mk)

3. Name **two** rivers which were associated with early agriculture in Mesopotamia. (2mks)

4. Give **two** advantages of human transport. (2mks)

5. Give the main use of steam power during the industrial revolution in Europe. (1mk)

6. State **one** political function of the city of Cairo. (1mk)

7. Which was the main factor that unified the communities of the Shona Kingdom during the pre-colonial period. (1mk)

8. State **one** way in which the Ndebele benefited after the British-Ndebele war of 1893 to 1896. (1mk)

9. Name **two** social factors that led to the scramble for colonies in Africa by the European powers. (2mks)

10. Name **two** colonies of Britain in North Africa. (2mks)

11. Name the first President of the Front for the liberation of Mozambique. (1mk)

12. State **two** economic results of the First World War. (2mks)

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13. Name the organ of United Nations that admits suspends and expels members. (1mk)

14. Identify **two** ways in which Mwalimu Julius Nyerere promoted the development of education in Tanzania after independence. (2mks)

15. Identify **two** superpowers that were involved in cold war. (2mks)

16. Give the main political challenge that the Democratic Republic of Congo has faced since independence. (1mk)

17. Name **one** major political party in the United States of America. (1mk)

SECTION B: (45 MARKS)

Answer any **three** questions from this section in the answer booklet provided.

18. (a) State **five** reasons why early people domesticated crops and animals during the Neo-lithic period. (5mks)

    (b) Explain **five** causes of food shortages in Africa today. (10mks)

19. (a) State **three** ways in which the industrial revolution contributed to European expansion to Africa. (3mks)

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

20. (a) Identify the **three** methods used by the French to acquire colonies in West Africa. (3mks)

    (b) Explain **six** factors that led to the defeat of Samori Toure by the French. (12mks)

21. (a) How did the invention of the steam engine contribute to the process of colonization in Africa. (3mks)

    (b) Explain **six** positive effects of European colonization of Africa. (12mks)

SECTION C: (30 MARKS)

Answer any **two** questions from this section in the answer booklet provided.

22. (a) State **five** reasons why the British used indirect rule in Northern Nigeria. (5mks)

    (b) Explain **five** reasons why the use of indirect rule was unsuccessful in Southern Nigeria. (10mks)

23. (a) Identify **three** duties performed by the secretary general of the new East African community established in 2001. (3mks)

    (b) Explain **six** benefits of the new East African community formed in 2001 to its members. (12mks)

24. (a) State **five** functions of the political parties in the United States of America. (5mks)

    (b) Explain **five** ways in which the doctrine of parliamentary supremacy is applied in Britain. (10mks)

NAME: ……………………………………………………………………………………………………….

INDEX NO: ……………………….. DATE: …………….………………. CANDIDATE'S SIGN: ………….…….

HOME SCIENCE

PAPER 1   (THEORY)

SEPTEMBER/OCTOBER

TIME: 2½ HOURS

AMOBI SOFT COPY PUBLISHERS

2020 TOP EXAMINERS' MOCK SERIES 3

INSTRUCTIONS TO CANDIDATES:

1. Write your **name**, **index number** in the spaces provided.

2. Answer all questions in Section **A** and **B** and any **two** questions from

     section **C** in the spaces provided.

3. Answers to all questions **MUST** be written in this booklet.

FOR EXAMINER'S USE ONLY:

Section	Question	Maximum Score	Candidate's Score
A	1 – 20	40	
B	21	20	
C	22	20	
	23	20	
	24	20	
	TOTAL SCORE	100	

SECTION A: (40 MARKS)

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

1. What are cosmetics? (1 mark)

....

....

....

2. State **three** causes of poor sanitation in most towns. (3 marks)

....

....

....

....

3. State **two** points to consider when cleaning oil painted walls. (2 marks)

....

....

....

4.Identify **two** reasons for pouring hot water down the sink after cleaning. (2 mks)

....

....

....

....

5. Give **one** main disadvantage of using sodium bicarbonate in flour mixtures. (1 mark)

....

....

6. State **four** reasons for using loose seat covers in house. (2 marks)

....

....

....

....

7. What is insomnia in pregnant women? (1 mark)

....

....

8. Mention **two** problems a consumer faces today. (2 marks)

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9.   State **three** dangers or excessive weight gain during pregnancy.(3 marks)

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10.   Give **two** advantages of sorting clothes before washing.   (2 marks)

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11.   Why should fruit salads be included in a meal?   (2 marks)

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12.   Identify **four** methods of preventing loss of color during the laundering of
       loose colored garments.   (2 marks)

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13. Define a cover in table setting.   (1 mark)

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14. State **four** causes of anaemia.   (2 marks)

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15. Mention **two** function of an opening in a garment.   (2 marks)

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16. Give **three** advantages of home-based care of the sick. (3 marks)

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17. Mention **two** uses of temporary stitches. (2 marks)

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18. The colour wheel helps in the choice of a good colour scheme of the house. What is the meaning of the following terms. (2 marks)

(a) Monchromatic colour scheme.

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Single complimentary harmony.

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19.   Give **three** methods of finishing darts.   (3 marks)

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20.   State **two** reasons for coating food before deep frying.   (2 marks)

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SECTION B: (20 MARKS): (COMPULSORY)

Answer question 21 in the spaces provided.

21.   You are going to spend the August holiday with your grandmother who lives in the rural area.

   (a)   Explain the procedure you will follow to daily clean her hurricane lamp and keep it ready for use.   (6 marks)

   (b)Give the procedure of laundering her synthetic nightdress. (7 marks)

   (c)   Describe how you would clean the plastic bottle she uses to store

          milk.   (6 marks)

SECTION C: (40 MARKS)

Answer any two questions from this section in the spaces provided after the end of this section.

22.(a) Explain **three** factors that affect normal foetal development. (6 marks)

(b)Discuss **three** ways you would encourage a patient to eat. (6 marks)

(c)   Give **three** disadvantages of renting a house. (3 marks)

(d)   Mention **five** factors that affect individual nutritional requirements

in meal planning. (5 marks)

23.   (a)   Highlight **two** advantages of using leftover food to produce a family

meal. (4 marks)

(b)   Give **three** factors that influence the layout plan when using a
commercial pattern. (3 marks)

(c)   Describe the procedure of cleaning a table-top gas cooker. (7 marks)

(d)With the aid of diagrams, describe the working of single pointed dart. (6 marks)

24.   (a)   Discuss the role of play in a child's physical development, social

development and mental development. (6 marks)

(b)   Give **three** reasons for using interfacings on a garment during

construction. (3 marks)

(c)   Highlight **four** preventative measures to be taken to prevent the
spread of water-borne diseases. (4 marks)

(d)   Describe the procedure of preparing an interfaced shirt collar
before attaching. (7 marks)

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441/2

(CLOTHING CONSTRUCTION)

PAPER 2

(PRACTICAL)

SEPTEMBER/OCTOBER

TIME: 2½ HOURS

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2020 TOP EXAMINERS' MOCK SERIES 3

Kenya Certificate of Secondary Education

CLOTHING CONSTRUCTION

PAPER 2

(PRACTICAL)

TIME: 2½ HOURS

A pattern of a blouse is provided.

You are advised to study the sketches, instructions and the layout carefully before you begin the test.

MATERIAL PROVIDED.

1.   Pattern pieces.

   A – Front bodice.

   B – Back bodice

   C – Sleeve

   D – Pocket

   E – Collar

2.   Light weight fabric 62cm long and 114cm (45") wide.

3.   Sewing thread to match the fabric.

4.   One large envelope.

THE TEST.
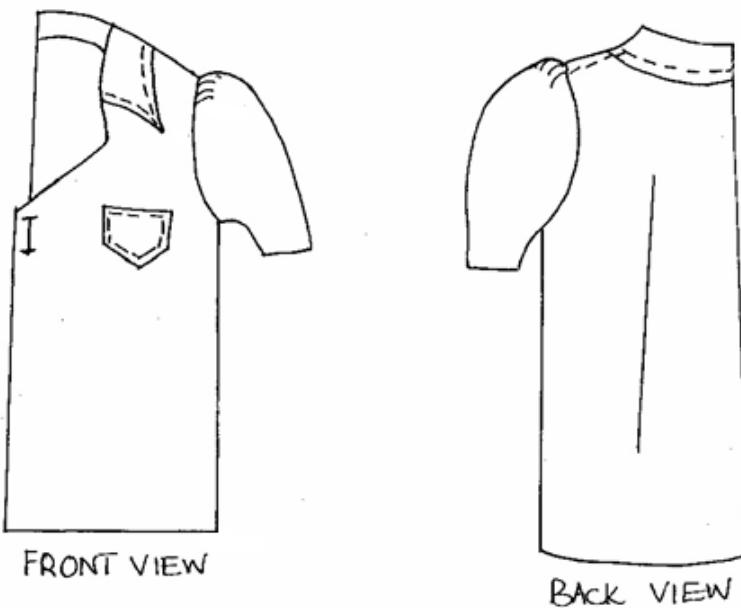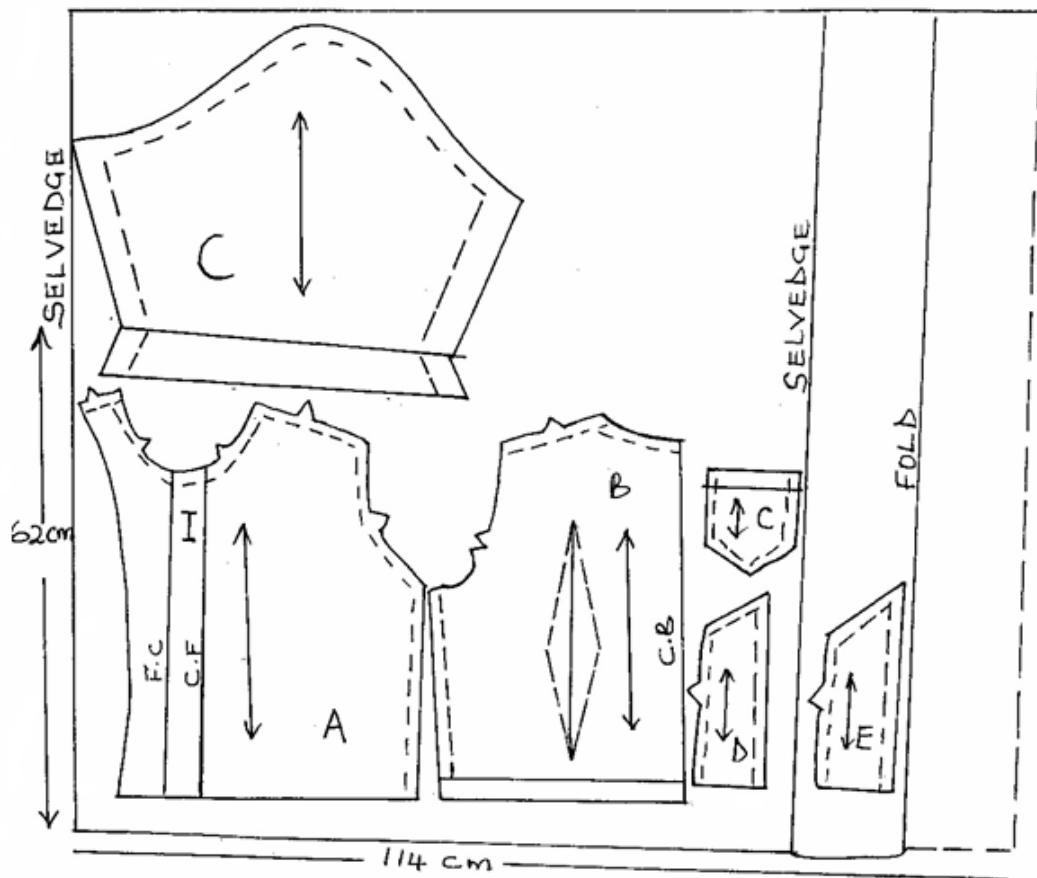
Using material provided cut out and make up the LEFT HALF of the shirt to show the following processes:

(a)	Cutting out.	(9 marks)
(b)	Making double dart at the back bodice.	(7 marks)
(c)	Making of double stitched seam at the shoulder.	(9 marks)
(d)	Making of side seam using open seam.	(9 marks)
(e)	Neatening free edge of the facing.	(4 marks)
(f)	Preparation of the interfaced collar.	(7 marks)
(g)	Attaching the collar to the blouse.	(7 marks)
(h)	Preparation and attaching of patch pocket.	(8 marks)
(i)	Preparation of the sleeve and joining of under-arm seam using unneatened plain seam.	(7 marks)
(j)	Attaching the sleeve to the blouse do not neaten.	(8 marks)
(k)	Making a hem on the lower part of the sleeve using slip-hemming (make half the front part of the hem only).	(5 marks)
(l)	Overall presentation.	(10 marks)

At the end of the examination, firmly sew onto your work on a single fabric a label bearing your Name and Index Number. Remove the needle and pins and from your work., then fold your work neatly and place it in the envelope provided.

DO NOT put scraps of fabric in the envelope.

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LAYOUT (NOT DRAWN TO SCALE)

SELVEDGE

SELVEDGE

FOLD

62cm

C

I

F.C

C.F

A

B

C.B

C

D

E

114 cm

FRONT VIEW

BACK VIEW

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HOME SCIENCE (FOODS AND NUTRITION)

PAPER 3   (PRACTICAL)

SEPTEMBER/OCTOBER

TIME: 1¾ HOURS

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2020 TOP EXAMINERS' MOCK SERIES 3

Kenya Certificate of Secondary Education

HOME SCIENCE (FOODS AND NUTRITION)

PAPER 3 (PRACTICAL)

TIME: 1¾ HOURS

PLANNING SESSION: **30 MINUTES**

PRACTICAL TEST SESSION: **1¼ HOURS**

INSTRUCTIONS TO CANDIDATE'S:

(a) Read the test carefully.

(b) Write your name and index number on every sheet of paper used.

(c) Text books and recipes may be used during the Planning Session as reference

     materials.

(d) You are expected to keep to your order of work during the Practical Session.

(e) You are only allowed to take away your reference materials at the end of the

     Planning Session.

(f) You are not allowed to bring additional notes to the Practical Session.

THE TEST

Your mother's friend is visiting your home and your mother has requested you to help prepare a 10.00 o'clock tea. Using the ingredient listed below, prepare, cook and present a beverage and two tea items for the three of you.

Ingredients.

- Plain wheat flour/self raising flour.

- Eggs.

- Sugar.

- Milk.

- Tea leaves/cocoa/soya.

- Oil/fat.

- Salt.

- Bread.

- Tomatoes.

- Blue band.

PLANNING SESSION: 30 MINUTES

Use separate sheets of paper for each task listed below and use carbon paper to make duplicate copies then proceed as follows:

1. Identify the beverage and the tea items then write down their recipes.
2. Write down your order of work.
3. Make a list of foodstuffs and equipment you will require.

441/2

HOME SCIENCE (CLOTHING CONSTRUCTION)

PAPER 2

(PRACTICAL)

SEPTEMBER/OCTOBER

TIME: 2½ HOURS

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All home science student (candidate) should be provided with the following:

1.   Light weight fabric measuring 62cm long and 114cm (45") wide.

2.   Sewing thread to match the fabric.

3.   Enough sewing equipments and tools.

Clothing & Construction Paper 2 (Practical)

102/1

KISWAHILI

INSHA

KARATASI YA KWANZA

SEPTEMBA/OKTOBA

MUDA: SAA 1¾

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2020 TOP EXAMINERS' MOCK SERIES 3

Hati ya Kuhitimu Elimu ya Sekondari

KISWAHILI

INSHA

KARATASI YA KWANZA

MUDA: SAA 1¾

MAAGIZO:

- Jibu maswali **mawili** pekee.
- Swali la kwanza ni la lazima.
- Kila swali lina alama 20.
- Chagua insha **moja** nyingine kutoka hizo **tatu** zilizosalia.
- Kila insha isipungue maneno **400**.
- Karatasi hii ina kurasa mbili zilizopigwa chapa.
- Watahiniwa ni lazima waangalie kuwa kurasa zote za karatasi hii zimepigwa chapa sawasawa na kuwa maswali yote yamo.

- Majibu yote yaandikwe kwa lugha ya Kiswahili.

1. **Lazima**.

    Mmetamatisha masomo yenu ya kidato cha nne, kuna sherehe ya mahafali. Umechaguliwa na wenzako kama kiranja mkuu kuyazungumzia matatizo yaliyowakumba katika kipindi cha masomo yenu, mbele ya mgeni mwalikwa,

    waziri wa elimu. Andika risala yako.

2. Eleza chanzo cha unywaji wa pombe haramu hapa nchini.

3. Uzuri wa mkakasi ndani kipande cha mti.

4. Andika insha itakayoanza kwa:-

    Nilikaa pale kwa mseto wa hisia, nisijue kama nilifurahishwa ama nilihuzunishwa na kisa hicho…………………..

Jina: ……..

Nambari Yako: ………………………. Sahihi: …………………………. Tarehe: …………………………

KISWAHILI

Karatasi ya pili   (LUGHA)

SEPTEMBA/OKTOBA

Muda: Saa: 2½

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MAAGIZO:

(a)   Andika jina lako na namba yako katika nafasi ulizoachiwa hapo juu.

(b)   Tia sahihi yako kisha uandike tarehe ya mtihani katika nafasi ulizoachiwa hapo juu.

(c)   Jibu maswali yote.

(d)   Majibu yote yaandikwe katika nafasi ulizoachiwa katika kijitabu hiki cha maswali.

(e)   Majibu yote lazima yaandikwe kwa lugha ya Kiswahili.

(f)   Watahiniwa ni lazima wahakikishe kwamba kurasa zote za karatasi hii zimepigwa

Chapa sawasawa na kuwa maswali yote yamo.

KWA MATUMIZI YA MTAHINI PEKEE

		SWALI	UPEO	Alama
1	Ufahamu		15	
2	Ufupisho		15	
3	Matumizi ya Lugha		40	
4	Isimu Jamii		10	
	JUMLA		80	

1. UFAHAMU

Soma makala yafuatayo kisha ujibu maswali.

Bila shaka, umewahi kusikia kuwa afya ni taji. Hakuna ajuaye haya vyema kama anayeugua. Wanaoelewa usemi huu huthamini na kudumisha siha yao kwa kila njia. Licha ya lishe bora, michezo ni muhimu katika kudumisha afya njema. Mtu asiposhiriki katika michezo au unyoshaji wa viungo, mwili hunyong'onyea na kunenepa. Mwili mnyonge ni windo rahisi la maradhi. Kushiriki katika michezo hukuepusha na kutingwa na shughuli za maisha ya kileo. Shughuli hizi zisipodhibitiwa huweza kumdhuru mtu kiafya.

Maradhi hatari ya moyo, akili na shinikizo la damu husababishwa na shughuli katika maisha yetu. Hapa ndipo michezo inaingilia. Michezo huyeyusha mafuta mwilini na kutukinga dhidi ya maradhi yanayosababishwa na unene wa kupindukia.

Kushiriki katika michezo vilevile hujenga ushirikiano na umoja. Michezo hutufundisha uwajibikaji. Mathalani, mlindalango atalenga kulilinda lango na kuhakikisha kuwa hamna bao linaloingia langoni. Washambulizi nao watalenga kushambulia lango la wapinzani huku waking'ang'ania kwa udi na uvumba kufunga bao.

Wachezaji ni sharti watii kanuni na sheria zinazotawala mchezo. Aidha, lazima wakubali amri za refa, kocha na waamuzi wengine ili kuimarisha nidhamu michezoni.

Watu hujipatia riziki kwa kushiriki michezo. Sasa hivi, kuna wanamichezo ambao wamesifika sana duniani. Baadhi yao wamevuka bonde la uchochole na kuwa wakwasi kutokana na talanta zao michezoni. Bila shaka, majina kama vile David Rudisha, Vivian Cheruiyot, Jason Dunford, Colins Injera na Dennis Oliech yakitajwa, kila awajuao huwavulia kofia.

Tangu jadi, michezo imekuwa kitegauchumi kote duniani. Wagiriki, kwa mfano walianzisha michezo ya Olimpiki karne nyingi zilizopita, takribani miaka 776 kabla ya kuzaliwa kwa Yesu Kristo. Michezo hii ilipoanza

ilishirikisha Wagiriki kutoka himaya zote za Ugiriki. Baadaye, watu wengine waliposhuhudia faida zilizotokana na michezo hii, walikubali kushirikishwa. Michezo ya Olimpiki ikawa si ya Wagiriki tu, bali dunia nzima.

Baada ya hapo pamekuwa na michezo mingine ambayo inashirikisha watu kutoka kila pembe ya dunia. Mchezo wa kandanda wa kuwania Kombe la Dunia, michezo ya raga na riadha ni baadhi tu ya michezo ya kimataifa.

Watu kutoka maeneo mbalimbali ulimwenguni wanapokutana kwa michezo, nchi na watu wake hufaidika sana kiuchumi. Wenyeji hupata soko la kuuza bidhaa zao. Wakulima hufaidi kuuza vyakula wanavyokuza. Mikahawa nayo hujaa wageni tele huleta fedha za kigeni. Wafanyabiashara katika sekta ya usafiri na wenye hoteli nao huchuma kutoka kwa washiriki na mashabiki. Nchi inayoandaa mashindano hayo, aidha hupata sifa kimataifa.

1. Taja aina mbili za *mbinu-ishi* ambazo hupatikana kwa kushiriki katika michezo. (alama 2)

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2. Michezo ina nafasi gani kiuchumi? (alama 4)

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3.   "Faida za michezo ni nyingi." Thibitisha kauli hii kwa kutoa mifano minne kutoka kwenye taarifa.   (alama 4)

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4. Eleza maana za msamiati ufuatao kulingana na taarifa uliyoisoma. (alama 3)
        (a)   kwa udi na uvumba.

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        (b)   limbukeni.

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        (c)   huwavulia kofia.

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5. Eleza faida nyingine mbili za michezo ambazo hazikutajwa katika taarifa.(alama 2)

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2. **UFUPISHO**

Soma taarifa ifuatayo kisha ujibu maswali yanayofuata.

Kadiri jamii mbalimbali zinavyotagusana, ndivyo lugha zinazozungumzwa na jamii hizi nazo zinavyoingiliana na kuathiriana. Mojawapo ya athari hizi ni ukopaji wa msamiati. Jamii zinazopakana au kutagusana kukopa msamiati kutoka kwa lugha jirani na kuutumia kuelezea dhana mpya zinazoingia katika utamaduni wao kupitia kwa mitagusano ya kijamii.

Lugha ya Kiingereza, kwa mfano, imekopa kutoka lugha nyingine kama vile Kifaransa na Kilatini. Mathalani, istilahi nyingi za kisheria zimekopwa kutoka lugha ya Kifaransa. Aidha, Kiingereza kimekopa kutoka lugha ya Kiswahili. Maneno ya Kiswahili kama vile mwalimu, jiko, mandazi, panga, buibui, ngoma na hata wananchi, sasa yameingia katika kamusi za Kiingereza, kumaanisha kuwa yamekubaliwa kama msamiati rasmi wa lugha ya Kiingereza.

Kiswahili nacho kimeathiriwa na lugha nyingine. Kimekopa msamiati wa Kiingereza na hata Kiarabu. Katika tungo nyingi za kishairi, kwa mfano, Utenzi wa Mwanakupona utapata msamiati wa Kiarabu uliotoholewa. Lugha nyingine ambazo zimeathiri Kiswahili ni pamoja na Kijerumani ambako

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msamiati kama vile 'shule' ulikopwa na kutoholewa na neno *schule*. Msamiati kama vile *'leso', 'karata'* na *'mvinyo'* yamekopwa kutoka lugha ya Kireno, huku majina 'balozi' na 'bahasha' yakikopwa kutoka Kituruki.

Pamoja na ukopaji wa vipengele vya lugha, mtagusano wa lugha una athari nyingine. Lugha zinapokuja pamoja, mazingira ya wingi-lugha husuka. Baadhi ya watu hujifunza zaidi ya lugha moja. Mtu anayeweza kuzungumza zaidi ya lugha moja anaweza kujieleza kwa urahisi kwa kuchanganya msamiati wa lugha tofauti. Aidha, anaweza kubadilisha msimbo kulingana na matilaha yake. Ikiwa anataka kukubalika na jamii-lugha anayotagusana nayo, atatumia lugha ya jamii hiyo ili kujinasihisha na kujitambulisha nayo. Wazungumzaji hupata visawe vya maneno kuelezea dhana zile zile, hivyo kuboresha mitindo yao ya mawasiliano.

Kadhalika, kutagusana kwa lugha kunaweza kusababisha kubuniwa kwa lugha ngeni ambayo inarahisisha mawasiliano. Wakati mwingine, watu wanaozungumza lugha tofauti wanapokutana, hubuni mfumo *sahili wa lugha* ili kufanikisha mawasiliano. *Pijini* ni mfano wa lugha iliyobuniwa kwa njia hii. Pijini huchota msamiati kutoka lugha zilizotagusana. *Sheng* ni mfano mwingine wa lugha ambayo ilibuniwa kutokana na kutagusana kwa lugha ya Kiswahili, lugha za kiasili na Kiingereza.

Japokuwa kuna faida nyingi za wingi-lugha, hasara pia zipo. Mazingira ya wingi-lugha huwapa wazungumzaji fursa ya kuchagua lugha wanayotaka kuwasiliana kwayo. Katika hali hii, lugha yenye ushawishi mkubwa kijamii, kiuchumi na kisiasa ndiyo inayopendelewa zaidi. Wingi-lugha unaweza kusababisha kukwezwa kwa lugha moja na kudunishwa kwa lugha nyingine. Mathalani, kuwepo kwa lugha nyingi nchini kulizua haja ya kukwezwa kwa lugha ya Kiswahili huku nyingine za kiasili zikipuuzwa.

Lugha hukua kwa kutumiwa. Lugha isipozungumzwa kwa muda mrefu, watu hupoteza umilisi ambao huifanya kuwa vigumu kuirithisha kwa vizazi. Lugha inaweza pia kukosa wazungumzaji ikiwa wale wanaoizungumza ni wachache, au ikaathiriwa na mtagusano na lugha nyingine iliyo na wazungumzaji wengi. Katika hali kama hii, lugha hiyo hukabiliwa na tisho la

kudidimia au hata kufa. Ikiwa jamii lugha itakosa kudhibiti sera za matumizi ya lugha yake, baadhi ya lugha ama zitafifia u zitakufa na kusahaulika kabisa.

1.   Bila kupoteza maana, fupisha aya za kwanza tatu. **(Maneno 50)**

(Alama 10, 3 za mtiririko)

Matayarisho

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Jibu

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2.Kwa mujibu wa taarifa hii, mtagusano wa lugha una athari gani? **(Maneno 30)**

(Alama 5, 1 ya mtiririko)

Matayarisho

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Jibu

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3. **SARUFI (MATUMIZI YA LUGHA): (ALAMA 40)**

(a)   Andika sifa zozote **mbili** za kila **mojawapo** ya sauti hizi.   (alama 4)

/j/

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/p/

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    (b)   Eleza dhana ya **'mofimu'**.   (alama 1)

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....

(c)   Badilisha kielezi **'bidii'** kiwe kitenzi kwa kukitungia sentensi.   (alama 2)

....

....

    Yakinisha sentensi hii.

Asiposoma hatapita mtihani vizuri   (alama 1)

....

....

(e)   Andika katika **wingi**.   (alama 2)

Rukwama ya jirani iliharibiwa na mama huyo.

………

………

(f)   Tunga sentensi **ukitumia**.   (alama 2)

(i)   Kihusishi cha ulinganisho

………

………

(ii)   Kihisishi cha hasira

………

………

(g)   Bainisha **virai** vyovyote **viwili** katika sentensi hii.   (alama 2)

Kikombe cheupe pe kilicho juu ya meza ni cha mwalimu mgeni

(h)   Andika sentensi hii katika hali ya **udogo/wingi**.   (alama 2)

Mbwa wetu alifukuzwa na mbweha karibu na mwitu.

………

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(i)   Tunga sentensi yenye **muundo** ufuatao.   (alama 2)

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Kitenzi halisi + kirai kielezi + kitenzi + kitenzi kikuu + kiunganishi + nomino ya jamii.

……

…….

(j)   Eleza **tofauti** kati ya   (alama 2)

Dawa yote itanywewa

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……….

Dawa yoyote itanywewa

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……

(k)   Nyambua kitenzi kilicho **mabanoni** katika kauli iliyotajwa.   (alama 1)

Mhubiri ………………………………. katika maandalizi ya karamu hii, (shiriki, tendeshwa)

(l)   Akifisha.   (alama 2)
basi shemeji akasema otieno hivyo ndivyo tunavyoweza kufaulu katika

        maisha wewe waonaje

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……….

(m) Tumia kiwakilishi cha **'a'** unganifu pamoja na kiashiria cha mbali sana kutunga sentensi. (alama 2)

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(n) Kwa kutolea mifano ya sentensi eleza matumizi mawili ya kiambishi 'ku'.(alama 2)

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(o) Kwa kutumia **jedwali,** changanua sentensi hii. (alama 4)

Mama alipata kunieleza ingawa hakutaka nimwamini.

(p) Tunga sentensi katika kauli ya kutendata ukitumia kitenzi **fumba**. (alama 2)

....

....

(q)   Andika sentensi ifuatayo katika wakati **ujao** hali **timilifu**. (alama 2)

Gikonyo alitia embe kabatini na akafunga.

....

....

(r)   Andika sentensi hii katika hali ya kuamrisha **wingi**. (alama 1)

Ondoka hapa.

....

....

(s)   Taja aina za **yambwa**.   (alama 2)

Watoto walimjengea mama yao nyumba kwa matofali

....

....

....

(t)   Kwa kutolea mifano **miwili** mwafaka, eleza dhana ya **'shadda'**. (alama 2)

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4. **ISIMU JAMII: (ALAMA 10):**

1.(a)   Eleza nadharia **tatu** kuhusu chimbuko la lugha ya Kiswahili.   (alama 6)

(b) Taja matatizo yanayokumba kukua kwa lugha ya Kiswahili nchini Kenya. (alm 4)

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Jina: ………………………………………………………………………………..………………...

Nambari ya mtahiniwa………………Sahihi…………………Tarehe…………………

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2020 TOP EXAMINERS' MOCK SERIES 3

Muda: Saa 2 ½

SEPTEMBA/OKTOBA
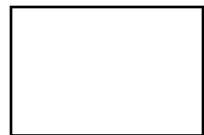
Maagizo

a) *Andika jina lako na nambari yako ya mtihani katika nafasi ulizoachiwa hapo juu.*

b) *Tia sahihi yako kisha uandike tarehe ya mtihani katika nafasi ulizoachiwa hapo juu.*

c) *Jibu maswali* **manne** *pekee .*

d) *Swali la* **kwanza** *ni la* **lazima.**

e) *Maswali hayo mengine matatu yachaguliwe kutoka sehemu nne. zilizobaki;yaani:Riwaya, Tamthilia, Hadithi fupi na Ushairi.*

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

g) *Majibu yote* **lazima** *yaadikwe kwa lugha ya Kiswahili.*

h) **Karatasi hii ina kurasa 5 zilizopigwa chapa.**

i) **Watahiniwa ni lazima wahakikishe kwamba kurasa zote za karatasi zimepigwa chapa sawasawa na kuwa maswali yote yamo.**

Kwa matumizi ya mtahini pekee

JUMLA

SEHEMU A: FASIHI SIMULIZI

1.Lazima

a) "Mwanangu nakuomba uzingatie uadilifu maishani uongofu ni nuru ya mustakabali wa kila mtu…"

i)Tambua kipera na utanzu wa tungo hili   (al. 2)

ii)Kwa kutumia hoja **mbili** eleza muundo wa kipera hiki   (al. 2)

iii)Fafanua sifa **nane** za kipera hiki   (al.8)

b) Eleza vikwazo **vinane** vya ukuaji wa fasihi simulizi.   (al.8)

SEHEMU B: RIWAYA

Assumpata k. matei: : chozi la Heri

Jibu swali la 2 au la 3

2."Si kufua, si kupiga deki, si kupika…almuradi kila siku na adha"

a) a) Eleza muktadha wa kauli hii.   (ala.4)

b) Taja mbinu mbili za kimtindo zilizotumika katika dondoo hili.

(al.2)

c) Kwa kutumia hoja **kumi na nne**, eleza maudhui yaliyodokezwa na dondoo hili.   (al.14)

3."Kila mara hujiuliza ikiwa watoto huwa na hadhi tofauti nje au ndani ya ndoa"

Amali inayotajwa imekumbwa na changamoto chungu nzima.Jadili kwa kurejelea riwaya nzima.   (al.20)

SEHEMU C: TAMTHILIA

P. Kea : Kigogo

Jibu swali la 4 au la 5

4."Acha porojo zako. Kigogo hachezewi;watafuta maangamizi!"

a)Eleza muktadha wa dondoo hili (al.4)

b)Fafanua sifa za mzungumzaji (al.6)

c)Kwa kurejelea hoja **kumi**, thibitisha kwamba kucheza na kigogo

anayerejewa ni sawa na kutafuta maangamizi (al.10)

5."Tunahitaji kuandika historia yetu upya."

a)Eleza sababu **kumi na mbili** kuonyesha kwa nini ilikuwa muhimu

kuiandika historia ya sagamoyo upya (al.12)

b)Onyesha mikakati inayotumiwa kuiandika upya historia ya Jumuiya ya

sagamoyo (al.8)

SEHEMU D: USHAIRI

Jibu swali la 6 au la 7

6.Soma shairi lifuatalo kisha ujibu maswali yafuatayo.

LONGA

Longa longea afwaji, watabusarika
Longa uwape noleji, watanusurika
Longa nenea mabubu,sema na viduko

Longa usichachawizwe, tamka maneno
Longa usitatanizwe, mbwa aso meno

Longa usidakihizwe,kishindo cha funo

Longa yote si uasi, si tenge si noma
Longa pasi wasiwasi,ongea kalima
Longa ukuli kwa kasi, likate mtima

Longa zungumza basi, liume ja uma
Longa japo ni kombora, kwa waheshimiwa
Longa liume wakora, kwani wezi miwa

Longa bangu na parara, hawakuitiwa
Longa bunge si kiwara, si medani tawa
Longa ni simba marara, wanaturaruwa.

Maswali

a) Tambua na ueleze nafsi neni katika shairi hili   (al.1)
b) Onyesha vile kibali cha utunzi wa mashairi kilivyotumika kukidhi mahitaji
   ya kiarudhi   (al.4)
c) Kwa kutoa maelezo mwafaka, tambua bahari **nne** zilizotumika na mtunzi
   kwenye shairi hili.   (al.4)
d) Eleza aina **tatu** za urudiaji katika shairi   (al.3)
e) Tambua na ueleze **ton**i ya shairi   (al.2)
f) Eleza maana ya misamiati ifuatayo kama ilivyotumika katika shairi. (al.2)
   i.   Afwaji
   ii.   Tenge
g) Eleza umbo la shairi hili.   (al.4)

7.Soma shairi lifuatalo kisha ujibu maswali
Kila nikaapo husikia tama
Na kuwazia hali inayonizunguka

Huyawazia madhila
Huziwazia shida
Hujiwazia dhiki

Dhiki ya ulezi
Shida ya kudhalilishwa kazini
Madhila ya kufanyiwa dharau

Kwa sababu jinsia ya kike
Hukaa na kujidadisi
Hujidadisi kujua ni kwa nini
Jamii haikisikii kilio changu
Wezangu hawanishiki mikono
Bali wananidharau kwa kuikosea utamaduni

Hukaa na kujiuliza
Iwapi raha yangu ulimwengu huu?
Iwapi jamaa nzimaa ya wanawake?

Maswali
   a) Taja sifa **mbili** za shairi huru zinazojitokeza katika shairi hili   (al.2)
   b) Eleza dhamira ya mshairi   (al.2)
   c) Kwa kutoa mifano, eleza maana ya mistari mishata   (al.3)
   d) Bainisha tamathali **mbil**i za usemi zilizotumika katika shairi hili(al.4)
   e) Eleza nafsineni katika shairi hiri   (al.2)
   f) Tambua **toni** ya shairi hili   (al.2)
   g) Taja maudhui **matatu** katika shairi hili   (al.3)
   h) Eleza maana ya msamiati ufuatao kama ulivyotumiwa katika shairi
        (al.2)
   Madhila
   Kudhalilishwa

SEHEMU E: HADITHI FUPI

A. Chokocho na D kayanda : Tumbo lisiloshiba na Hadithi Nyingine.

8.”...hamna mwendawazimu wala mahoka kati yetu, mimi nimepewa zawadi hizo”

   a) Eleza muktadha wa dondoo hili   (al.4)
   b) Eleza sifa nne za msemaji   (al.4)
   c) Hakiki nafasi ya maudhui ya busara kwa mujibu wa hadithi hii (al.12)

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NAME: ………………………………………………………………………………………………………..

INDEX NO: ………………. CANDIDATE'S SIGN: …………………… DATE: ……………………………

MATHEMATICS   PAPER 1

SEPTEMBER/OCTOBER

TIME: 2½ HOURS

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2020 TOP EXAMINERS' MOCK SERIES 3

1. Answer all the questions in Section **I** and any **FIVE** questions from Section **II**.

2. Show all the steps in your calculation, giving your answer at each stage in the spaces provided **below** each question.

3. Marks may be given for correct working even if the answer is wrong.

4. Non-programmable silent electronic calculators and **KNEC** Mathematical tables **may be** used, except where stated otherwise.

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

SECTION I: (50 MARKS)

Answer all the questions in the section.

1. Evaluate: $\dfrac{28-(-18)}{-2} - \dfrac{15-(-2)(-6)}{-3}$. (3mks)

2. John spent $^2/_3$ of his salary on food $^1/_3$ of the remainder on rent and saved the rest.

What fraction of his salary did he save? If he spent Sh.1200 on food, how much did he spend on rent. (3mks)

3.   Given that sin θ = $\dfrac{1}{\sqrt{5}}$ where θ is an acute angle, find without using

Mathematical tables or 'a calculator'.

   (a)   Cos θ in the form $a\sqrt{b}$.   (2mks)

   (b)   Tan (90 - θ).   (1mk)

4. Use tables 1 and table 2 below to find the average speed that the Nairobi-Mombasa passenger train uses to travel between Konza and Masongaleni.   (3mks)

   Table 1: Shows the rail distance in km between selected stations from Mombasa to Nairobi. Table 2: Shows the departure and arrival time between selected stations from Mombasa to Nairobi.

   Table 1 – is a travel table for a passenger train from Nairobi to Mombasa

w.e.f. 15/10/2001	Passenger train	
Station	ARR	DEP
Nairobi Yard		1900
Athi River	1952	1954
Konza	2055	2057
Sultan Hamad	2234	2236
Makindu	2354	2356
Kibwezi	0025	0027
Masongaleni	0057	0059
Mtito Andei	0158	0213
Voi	0423	0438
Mariakani	0718	0720
Mazeras	0740	0742
Mombasa	0825	

ARR – Arrival time at station

DEP – Departure time from station   Table 1

Nairobi	Athi River	Konza	Sultan Hamud	Makindu	Kibwezi	Masongaleni	Mtito Andei	Voi	Mariakani	Mazeras	Mombasa
29.6											
73.7	44.1										
130	100.4	56.3									
193.4	163.8	119.7	63.4								
215.3	185.7	141.6	85.3	21.9							
233.1	203.5	159.4	103.1	39.7	17.8						
266.6	237	192.9	136.6	73.2	51.3	33.5					

Table 2

5. Solve the following simultaneous equations. (3mks)

$$\chi^2 + y^2 = 26$$

$$\chi + y = 4$$
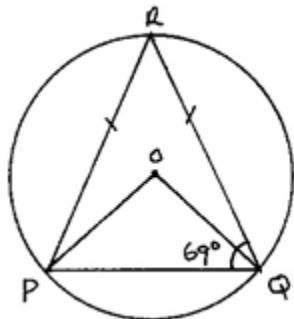
6. A Kenyan company received US Dollars 100,000. The money were converted into Kenya shillings in a bank which buys and sells foreign currencies as follows.

	Buying (Ksh)	Selling (Ksh)
1 US Dollar	77.24	77.44
1 Sterling Pound	121.93	122.27

(a) Calculate the amount of money, in Kenya shillings, the company received. (2mks)

(b) The company exchanged the Kenya shillings calculated in (a) above, into sterling pounds to buy a car from Britain. Calculate the cost of the car to the nearest sterling pond. (2mks)

7.

In the figure above O is the centre of the circle. Given that PR = QR and ∠PQR = 69º.

Find ∠RQO.

8.Find the smallest number which leaves a reminder of 4 when divided by either

8 or 12 or 14.   (2mks)

9.   Find the integral value of χ which satisfy the inequality.

$$3 + 2\chi < 3\chi - 1 \leq 2\chi + 7$$ (3mks)
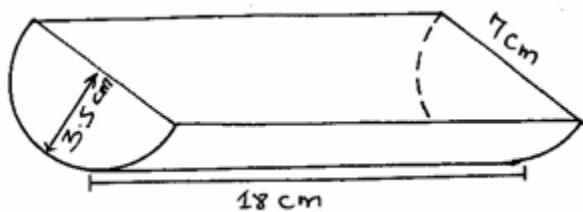
10.   A line L is perpendicular to $2\chi + y = 3$ and passes through point (4, -1). Determine

(i)   the equation of line L.   (2 marks)

(ii)   the acute angle that line L makes with the χ-axis.   (1 mark)
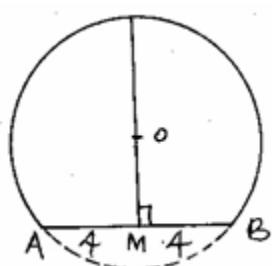
11. The angle of elevation of the top of a storey building from point P is 23.61º. From another point Q six metres nearer to the base of the building, the angle of depression from the top of the building is 35º. Calculate to 1 decimal place the height of the building. (4mks)

12. State the amplitude and the period of the function $y = \frac{3}{2} \cos(2\chi + 30º)$. (2mks)

13. In a fund raising committee of 45 people, the ratio of men to women is 7: 2. Find the number of women required to join the existing committee so that the ratio of men to women is changed to 5: 4. (3mks)

14. The figure below is a semi-cylindrical solid of length 18cm and radius 3.5cm are shown.

Draw a labelled net of the sold. (3mks)

15. Find the radius of the circle whose major segment is given below if

CM = AB = 8cm. (3mks)

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16. Given that P = 3^y express the equation $3^{2y-1} + 2 \times 3^{y-1}$ in terms of P.

Hence or otherwise find the value of y in the equation $3^{2y-1} + 2 \times 3^{y-1} = 1$. (3mks)

SECTION II: (50 MARKS)

Answer only ANY FIVE questions in this section.

17. Mutwapa Primary School is 30km on a bearing of 015º from a tourist hotel. The nearest town is 45km from the school on a bearing of 120º.

   (a) Using a scale of 1cm to represent 15km, make a scale drawing of the positions of the school the tourist hotel and the town. (4mks)

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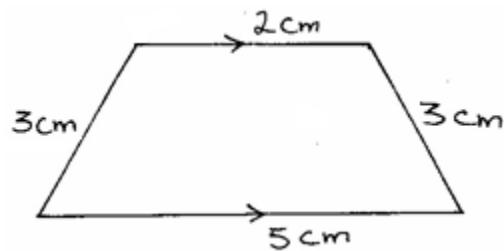
(b)   How far is the tourist hotel from the town?   (2mks)

(c)   What is the bearing of

    (i)   the town from the tourist hotel?   (2mks)

    (ii)   the school from the town?   (2mks)

18.   The diagram below (not drawn to scale) represents the cross-section of a solid prism to 8.0cm.

(a)   Calculate the volume of the prism.   (3mks)

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(b)Given that the density of the prism is 5.75g/cm³, calculate it's mass in grams. (2mks)

(c)   A second prism is similar to the first one but is made of a different material.
       The volume of the second prism is 246.24cm³.
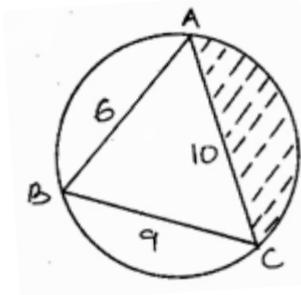
(i)   Calculate the area of the cross-section of the second prism. (3mks)

(ii)   Given that the ratio of the mass of the first prism to that of the second is 2: 5, find the density of the second prism. (2mks)

19. The distance between two towns A and B is 760km. A minibus left town A at 8: 15am and traveled towards B at an average speed of 90km/h. A matatu left B at 10:35am and on the same day and travelled towards A at an average speed of 110km/h.

(a) (i) How far from A did they meet? (4mks)

(ii) At what time did they meet? (2mks)

(b) A motorist starts from his home at 10:30am on the same day and travelled at an average speed of 100km/h. He arrived at B at the same time as the minibus. Calculate the distance from B to his home.(4mks)

20. A jet flies from town Q (60ºS, 24ºE) to town R (60ºS, 10ºW) and then due north for 1200 nautical miles to town S.

(a) Obtain the latitude of S.   (3mks)

(b) Calculate the distance between Q and R in
     (i)   Nautical miles.   (3mks)

     (ii) km   (2mks)

(c) Find the total flight time if the jet flies at an average speed of 800 knots. (2mks)

21. The figure below shows a triangle inscribed in a circle. AB = 6cm, BC = 9cm and AC = 10cm.

Calculate
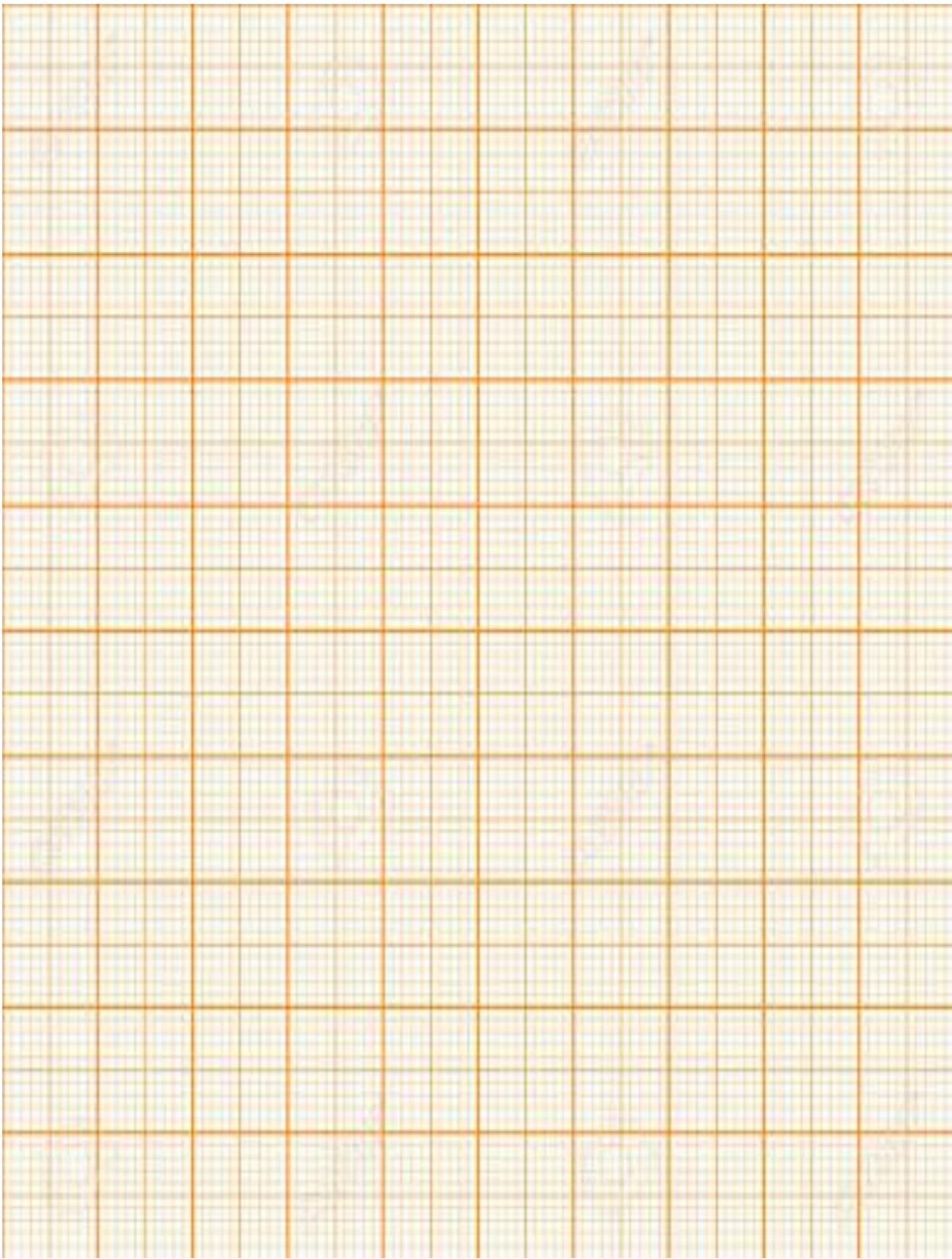
(a) the interior angles of △ABC. (5mks)

(b) the radius of the circle. (2mks)

(c)   the area of the shaded part.   (3mks)

22.   A triangle has vertices A (1, 2), B (4, 4) and C (6, 2).

(a)   Draw triangle ABC on the grid provided.   (1mk)

(b)   Construct the image triangle $A^1B^1C^1$ image of triangle ABC under a

rotation of 90º clockwise about the origin.   (2mks)

(c)   Draw triangle $A^{11}B^{11}C^{11}$ the image of triangle $A^1B^1C^1$ under a reflection

in line y = χ, state the coordinates of $A^{11}B^{11}C^{11}$ (3mks)

(d)   Draw triangle $A^{111}B^{111}C^{111}$ the image of triangle $A^{11}B^{11}C^{11}$ under a
reflection in the line y = 0 and state the coordinates of its vertices.
(2mks)

(e)   Describe a single transformation that maps triangle $A^{11}B^{11}C^{11}$ onto
triangle ABC.   (2mks)

23.   In triangle OAB, $OA = a$ and $OB = b$. Points P and T divide OB and AB in the ratio 2:3 and 1:3 respectively. Lines OT and AP intersect at Q.

(a)   Draw the diagram to represent the above information.   (1mk)

(b)   Express OP and AP in term of a and b.   (2mks)

(c)   Express OT in terms of a and b.   (1mk)

(d)   Given further that $OQ = tOT$ and $AQ = sAP$, express OQ in two ways

         and hence find the values of s and t.   (6mks)

24.   The velocity of a particle, Vm/s, moving in a straight line after t seconds is given by

$$V = 3t^2 - 3t - 6 \quad \text{Find:-}$$

(i)   The acceleration of the particle after 2 seconds.   (2mks)

(ii) The distance covered by the particle between t = 1 and t = 4 seconds. (3mks)

(iii)   The time when the particle is momentarily at rest.   (2mks)

(iv)   The minimum velocity attained by the particle.   (3mks)

NAME: ……..

INDEX NO: …………………………. CANDIDATE'S SIGN: ……………… DATE: ………………………

MATHEMATICS   PAPER 2

SEPTEMBER/OCTOBER

TIME: 2½ HOURS

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2020 TOP EXAMINERS' MOCK SERIES 3

INSTRUCTION TO CANDIDATE'S:

1. Write your **name**, **index number** and **school** in the spaces provided at the top of this page.

2. Answer all the questions in Section **I** and any **FIVE** questions from Section **II**.

3. All answers and working must be written on the question paper in the spaces provided

   below each question.

4. Show all the steps in your calculation, giving your answer at each stage in the spaces

   provided **below** each question.

5. Non-programmable silent electronic calculators and **KNEC** Mathematical tables

   may be used, except where stated otherwise.

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

SECTION I: (50 MARKS)

Answer all the questions in the section.

1.   Evaluate using logarithms.   (4 marks)

$$\sqrt[3]{\frac{(0.07432)^2 \times (48.38)^3}{8458}}$$

2.   A rectangular plot measures 31.4m by 28.3m. What is the percentage error in getting it's area.   (3 marks)

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3. Make M the subject in $K = \left(\dfrac{MV^2}{\chi + M} \right)^{\frac{1}{2}}$. (3 marks)

4. Solve the equation.

Sin $(2\chi - 30º) = \frac{1}{2}$ for $0º \leq x \leq 360º$. (3 marks)

5. y varies inversely as the square of χ. The difference between the value of y when $\chi = 6$ and when $\chi = 10$ is 16. Find the law connecting χ and y. (3 marks)

6.   (a)   Without using a calculator, expand $(10 - 2\chi)^5$.   (2 marks)

     (b)   Use your expansion in (a) above to find the value of $(9.8)^5$. (1 mark)

7.   Solve the simultaneous equation.

     $\text{Log}_3 (2\chi + y) = 2$

     $\text{Log}_2 (3\chi + 4y) = 4$ (3 marks)

8.   Find the inverse of the matrix $\begin{pmatrix} 2 & -2 \\ 3 & 1 \end{pmatrix}$ hence use the matrix method to

     solve the simultaneous equations.   (3 marks)

          $2\chi - 2y = 6$
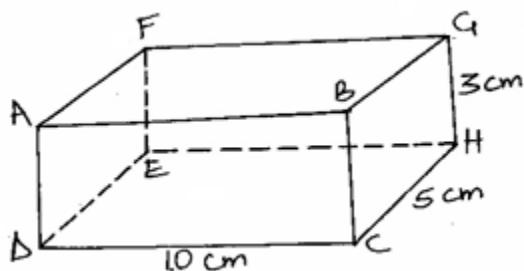
          $3\chi + y = 5$

9.	A shopkeeper mixes sugar costing Sh.40 per kg with another type which costs Sh.60 per kg. Find the ratio in which the two types should be mixed so that if a kilogram of the mixture is sold at Sh.55, a profit of 10% is realised.	(3 marks)

10.	A point R divides vector PQ in the ratio 5: -2. Find the coordinates of R given that

	P (3, -6) and Q (-9, 2).	(3 marks)

11. χ and Y are complementary angles and $Tan \; \chi = 3\sqrt{3}$. Find the value of $\dfrac{1}{2 - Tan \; y}$ hence rationalize the surd. (3 marks)

12. Find the distance between the centre A of a circle whose equation is

$2\chi^2 + 2y^2 + 6\chi + 10y + 7 = 0$ and point B (-4, 1). (3 marks)

13. The figure is a cuboid. The dimensions of the cuboid are 10cm by 5cm by 3cm.

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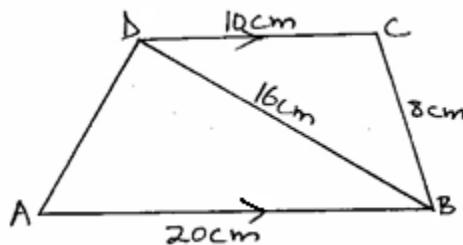
(a)   Find the angle between.
      (i)   lines CG and DE.   (2 marks)

      (ii)   lines FG and DB.   (2 marks)

14.   Simplify: $\dfrac{x-3}{x+3} - \dfrac{x^2-3x}{x^2-9}$.   (3 marks)

15.   Evaluate: $\int_{3}^{5}\left(x^3 - 7x^2 + 7x + 15\right)dx$.   (3 marks)

16. In the figure below ABCD is a trapezium with DC parallel to AB. DC = 10cm, BC = 8cm, DB = 16cm and AB = 20cm.

(a) Calculate the sine of angle BDC. (2 marks)

(b) Hence calculate the area of ΔABD. (1 mark)

SECTION II: (50 MARKS)
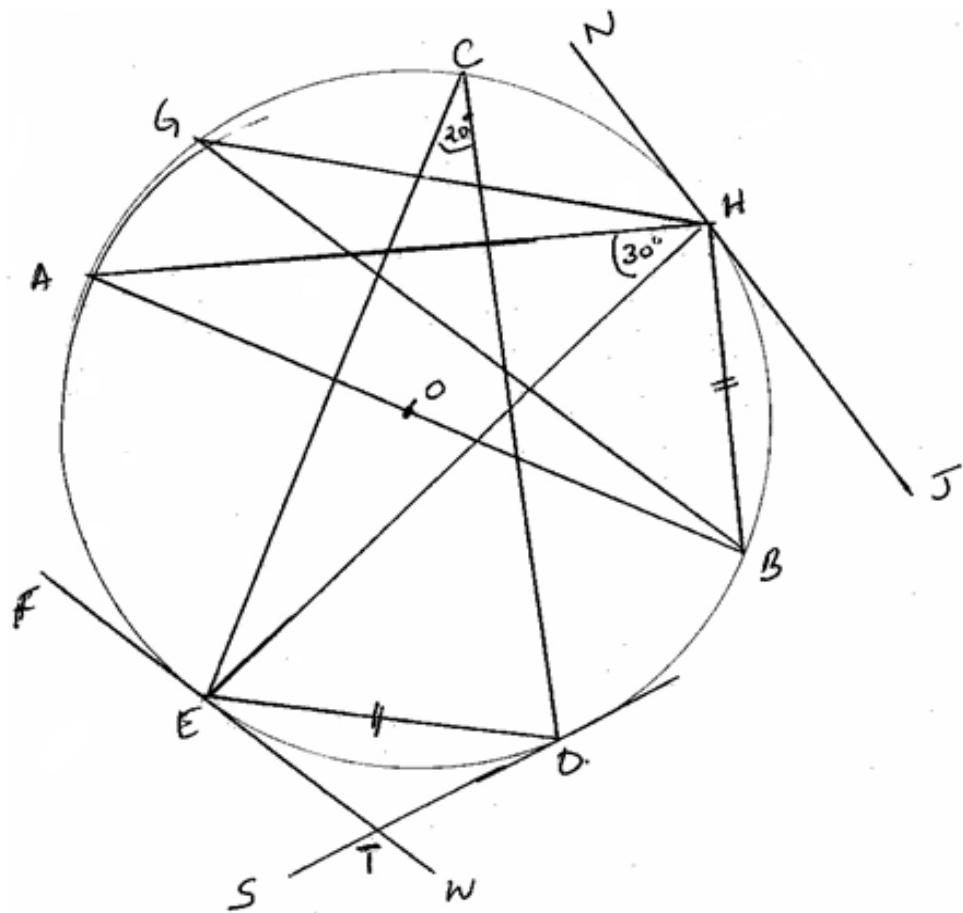
Answer only ANY FIVE questions in this section.

17. (a) A die and a coin (both fair) are thrown on a horizontal floor.

(i) List all the possible outcomes. (2 marks)

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(ii) Find the probability of getting even number on the die and a tail on the coin or an odd number on the die and a head on the coin. (3 marks)

(iii) Find the probability of getting a number greater than or equal to 3 on the die and a head on the coin. (2 marks)

(b) The probability that a student gets grade A in Mathematics is $\frac{9}{10}$. If she gets grade A in Mathematics then the probability that she gets grade A in Physics is $\frac{4}{5}$. If she does not get grade A in Mathematics then the probability that she gets grade A in Physics is $\frac{3}{8}$.

Calculate the probability that she gets grade A

in Physics only.   (3 marks)

18.   The figure below shows a circle centre O, AB is a diameter. Chords ED and
       BH are equal NHJ, FET, STD are tangents to the circle angle ECD = 20º and
       ∠AHE = 30º. The figure is not drawn to scale.

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Determine angles.

(i)   EHB.   (2 marks)

(ii)   ETS.   (2 marks)

(iii)   HGB.   (2 marks)

(iv)   EHJ.   (2 marks)

(v)   AOE.   (2 marks)

19.An arithmetic progression has the first term as a and the common difference as d.

(a) Write in terms of a and d, the 3rd, 9th and 25th terms of the progression. (1 mark)

(b) The progression is increasing and the 3rd, 9th and 25th terms form the first three consecutive terms of a geometric series. If the sum of the 7th term and twice the 6th term of the arithmetic progression is 78.

Calculate:

The first term and the common difference of the arithmetic progression. (6 marks)

(b)   Find the sum of the first nine terms of the A.P.   (3 marks)

20.   The table below shows tax rates in the year 2012.

Income in K£ p.a.	Rates of tax in %
1 – 5208	10
5209 - 9744	15
9745 – 14292	20
14293 - 18840	25
Over 18840	30

(a)   Mrs. Mwangi pays Ksh.5400 as PAYE. She is entitled to a house allowance of Ksh.9000p.m and claims a monthly tax relief of Ksh.1093.

Calculate;

(i)   Her gross tax per annum.   (2 marks)

(ii)   Her monthly basic salary in Ksh.   (6 marks)

(b)   She also has monthly contributions as follows:

(i)   Cooperative society contribution of Ksh.2000.

(ii)   Loan repayment of Ksh.2500.

Calculate her net monthly salary.   (2 marks)
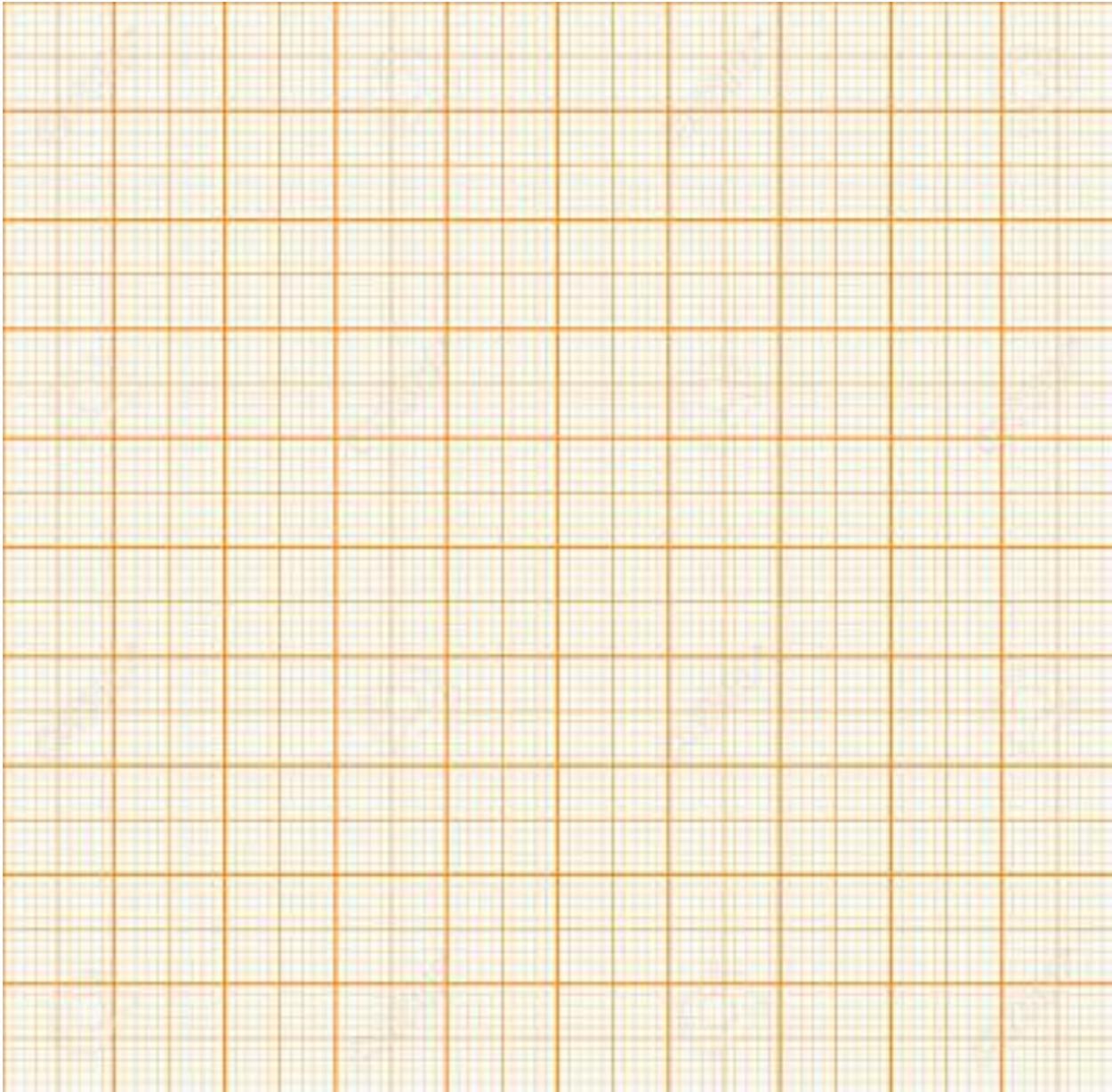
21.   The table below shows the marks scored by students in a Mathematics test.

Marks	30 - 39	40 - 49	50 - 54	55 - 59	60 - 64	65 - 69
No. of students	6	20	19	20	20	15

(a)   Calculate the median mark.   (3 marks)
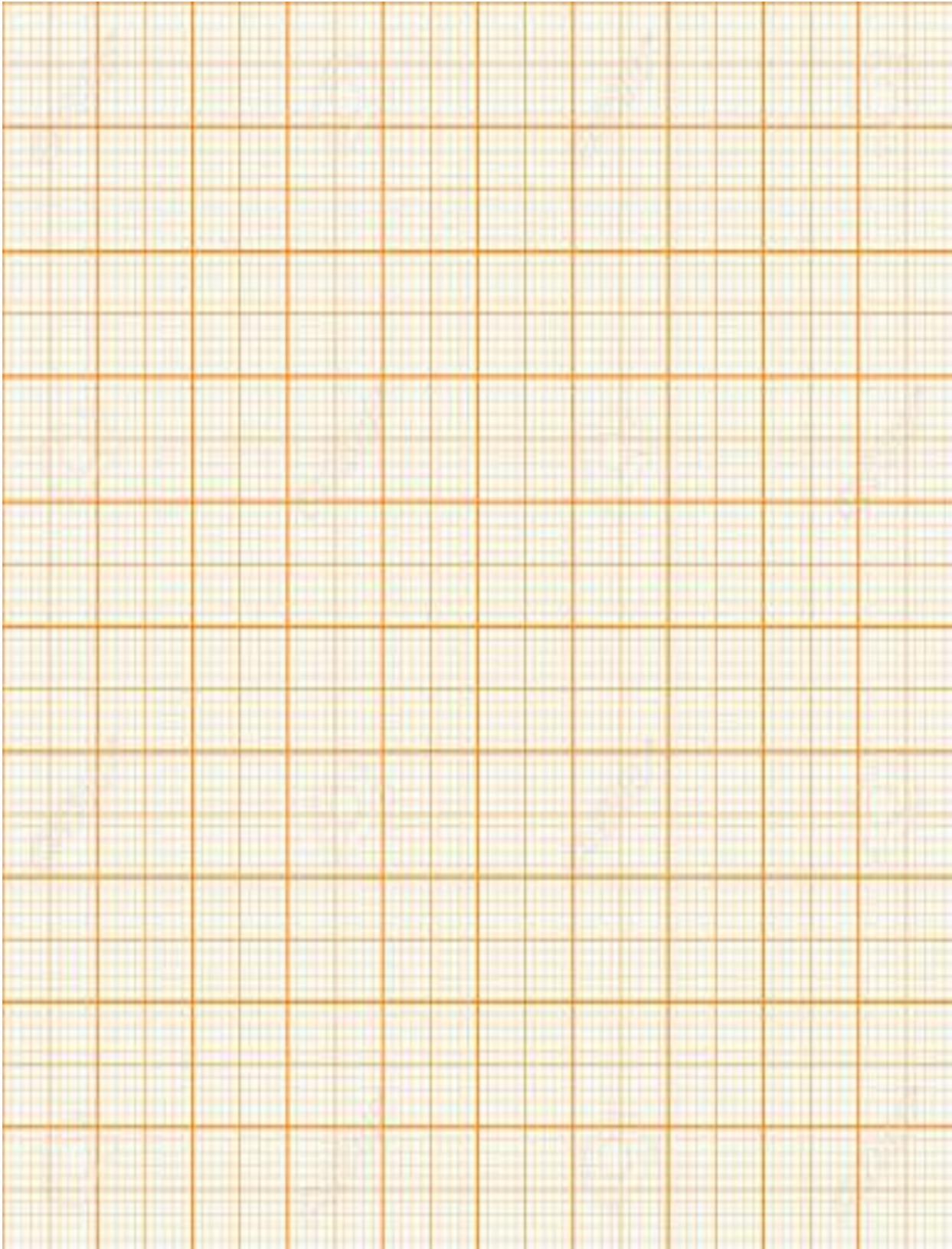
      (b)   Using an assumed mean of 52, calculate the mean mark. (3 marks)

      (c)   On the grid provided, draw a histogram to represent the information
            shown above.   (4 marks)

22. (a) Draw the graph of the function.

y = 6χ + χ² - χ³ for − 3 ≤ x ≤ 4

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(b)   By drawing a suitable straight line(s) on the graph in (a) above estimate

the roots of the following equations.

(i) $6\chi + \chi^2 - \chi^3 = 0$

(ii) $2\chi + \chi^2 - \chi^3 = 0$

23.   In a school trip there were χ buses and y luxury vans. Each bus was hired at

Ksh.1000 and could carry 60 students. Each van was hired at Ksh.2000 and could carry 30 students.

(a)   Express the following statements as inequalities in χ and y.

(i)   There must be some van or vans.   (1 mark)
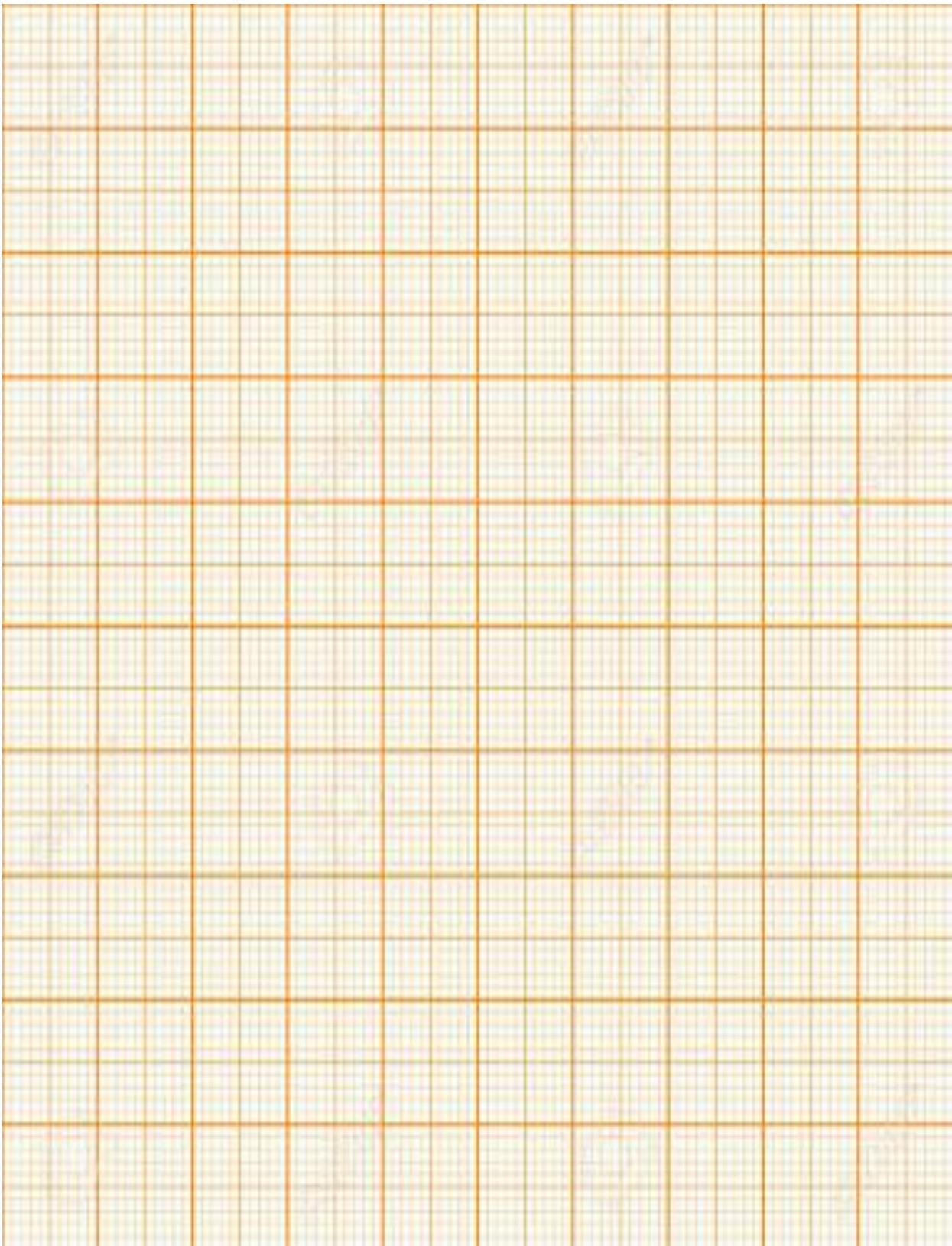
(ii)   There should at least 3 buses.   (1 mark)

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(iii) The school should be not spend more than Ksh.18000 on the trip. (1 mark)

(iv)   Not more than 420 students are to go on the trip.   (1 mark)

(b)   Illustrate inequalities graphically.   (4 marks)

(c)   Use your graph to determine the maximum number of students that can go on the trip and corresponding expenditure.   (2 marks)

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24. Using a ruler and compasses only.

   (i)   Construct a parallelogram ABCD such that AB = 10cm, BC = 7cm and angle ABC = 105º. (3 marks)

   (ii)   Construct the loci of P and Q within the parallelogram such that AP ≤ 4cm and BQ ≤ 6cm. (3 marks)

   (iii) Calculate the area within the parallelogram but outside regions bounded by the loci of P and Q. (4 marks)

NAME: …………………………………………………………………………………..………………….

INDEX NO: ………………… CANDIDATE'S SIGN: …………..……… DATE: …………………………

PHYSICS   PAPER 1   (THEORY)

SEPTEMBER/OCTOBER

TIME: 2 HOURS

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INSTRUCTIONS TO THE CANDIDATE:

(b) **Sign** and write the **date** of examination in the spaces provided above.

(d) Answer **all** the questions in sections **A** and **B** in the spaces provided.

(e) All working **must** be clearly shown in the spaces provided.

(f) Non-programmable silent electronic calculators and KNEC Mathematical tables

   may be used.

FOR EXAMINER'S USE ONLY:

Section	Question	Maximum Score	Candidate's Score
A	1 – 13	25	
B	14	12	
	15	10	
	16	11	
	17	09	
	18	13	
Total Score		80	

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SECTION A: (25 MARKS)

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

1. Figure 1 shows a measuring cylinder, which contains water initially at level A.

   A solid of mass 0.32g is immersed in the water, the level rises to B.
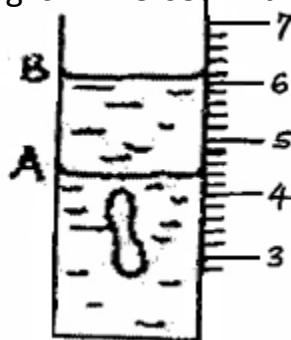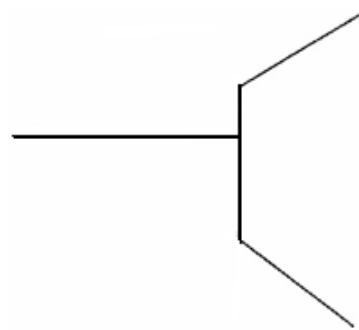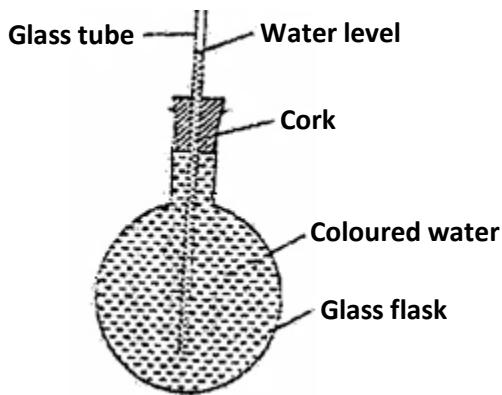
Figure 1

Determine the density of the solid. (Give your answer to 3 significant figures). (2mks)

2. The figure 2 below shows part of micrometer screw gauge with 50 divisions on the thimble scale. Complete the diagram to show a reading of 5.73mm. (1mk)

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3.	In the set up shown below, it is observed that the level of the water initially rises before starting to drop when the flask is dipped in ice cold water.

Glass tube — Water level
Cork
Coloured water
Glass flask

Explain this observation.	(2mks)

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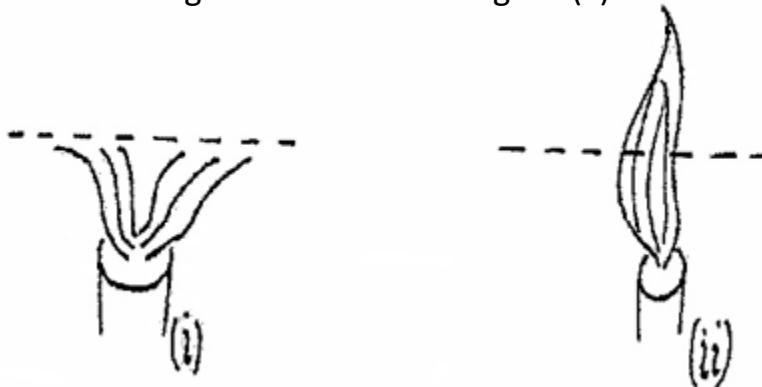
4.	When a Bunsen burner is lit below wire gauze, it is noted that the flame initially burns below the gauze as shown in Figure (i). After sometime, the flame burns below as
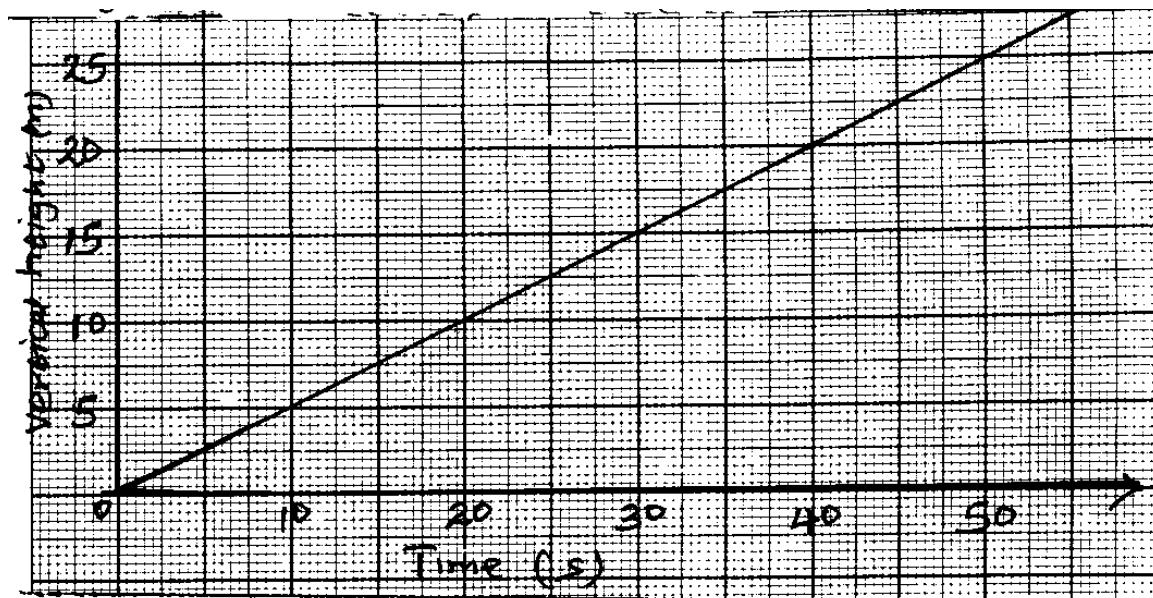
well as above the gauze as shown in Figure (ii).

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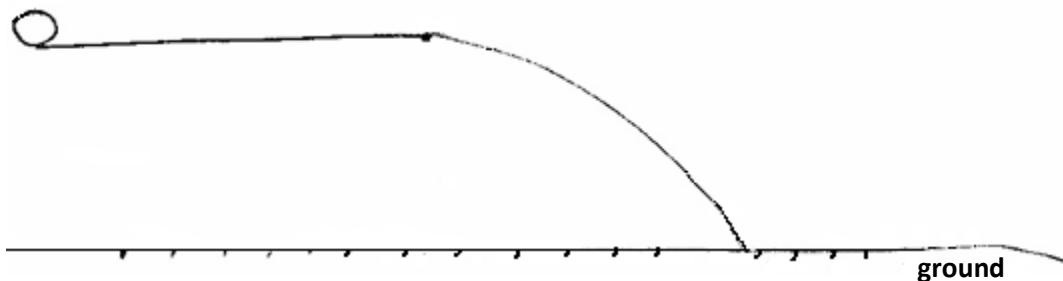
Explain this observation. (2mks)

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5. The reading on a mercury barometer at a place in 690mm. The barometer contains some air which exerts a pressure of $15Nm^{-2}$. What is the pressure at the place Nm^{-2}. (Density of mercury is $1.36 \times 10^{4}kgm^{-3}$). (3mks)

6. Figure below shows a graph of how the vertical height through which a machine raises a mass 30kg varies with time.

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Determine the power output of the machine after 40 seconds. (3mks)

Figure below shows a ball projected horizontally. Use the diagram to answer question **7** and **8**.

ground

A player taps the ball and makes it spin in anticlockwise direction as it moves.

7.   Show the new path followed by the ball.   (1mk)

8.   Explain how the ball attains the new path above.   (2mks)

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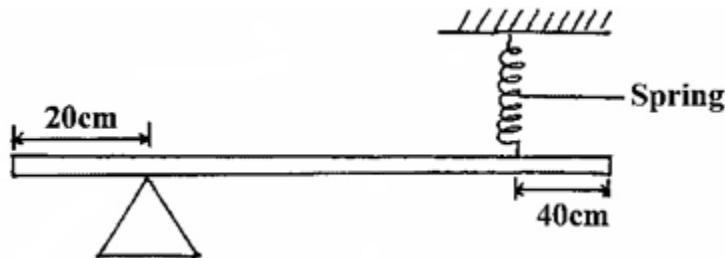
9.A constant force is applied to a body moving with a constant speed. State **one** observable change in the state of motion of the body likely to occur? (1mk)

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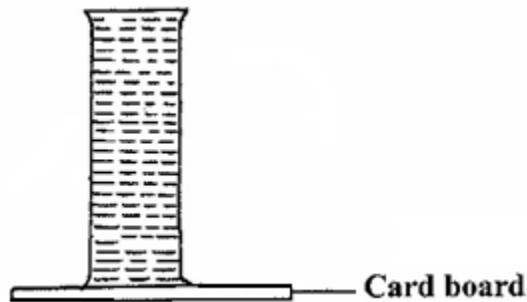
10.   The figure below is a uniform bar of length 2.0m pivoted near one end. The bar is balanced horizontal by a spring.
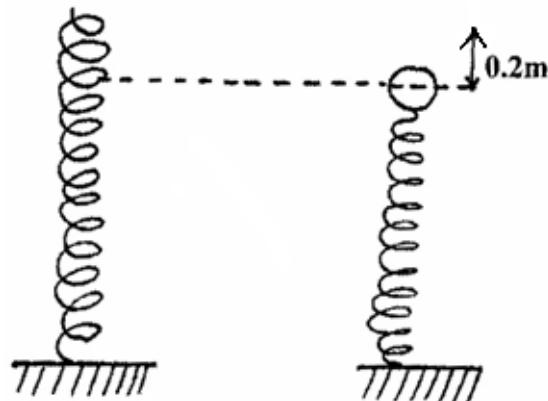
Given that the tension on the spring is 1.2N, determine the weight of the bar.(3mks)

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11. The figure below shows a long tube filled with water. The open end is then covered with a cardboard and tube is inverted. It is observed that the water in the tube does not spill out.

Card board

Explain the observation.   (1mk)

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12. A steel ball of mass 0.05kg was placed on top of a spring on a level ground. The spring was then compressed through a distance of 0.2m.

0.2m

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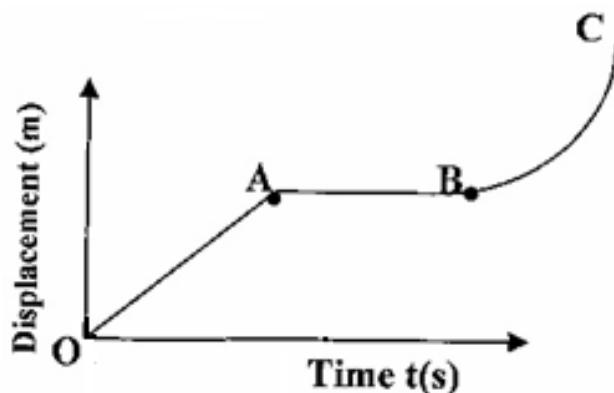
If the spring constant is 15N/m. Calculate the maximum height reached when the spring is released.   (3mks)

13.   The volume of inflated balloon is observed to reduce when the balloon is placed inside a refrigerator. Use the kinetic theory of gases to explain this observation.(1mk)

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SECTION B: (55 MARKS)

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

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Describe the motion of the particle in the region.   (3mks)

       (i)   **OA**...

       (ii)   **AB**...

       (iii)   **BC**...

(b)   A hot air balloon falling through the air attains terminal velocity after a short-time. State the reason why it attains terminal velocity. (1mk)

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(c)   State Newton's second law of motion.   (1mk)

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(d)   A ball of mass 0.2kg is thrown vertically upwards with velocity of 8ms^{-1}.

       The air resistance is 0.5N. Determine:
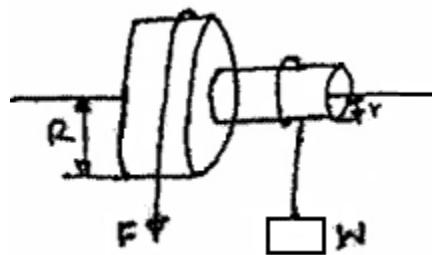
       (i)   the resultant force on the ball as it moves up;
             (Take acceleration due to gravity g = 10ms^{-2}).   (2mks)

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(ii)   the acceleration of the ball.   (3mks)

(iii)   the maximum height reached by the ball.   (2mks)

15.(a) Draw a single pulley arrangement with a velocity ratio of 2.   (2mks)

(b) Figure shows a wheel and axle being used to raise a load W by applying an effort F. the radius of the large wheel is R and of the small wheel r as shown.

(i) Shows that the velocity ratio (V.R) of this machine is given by R/r. (3mks)
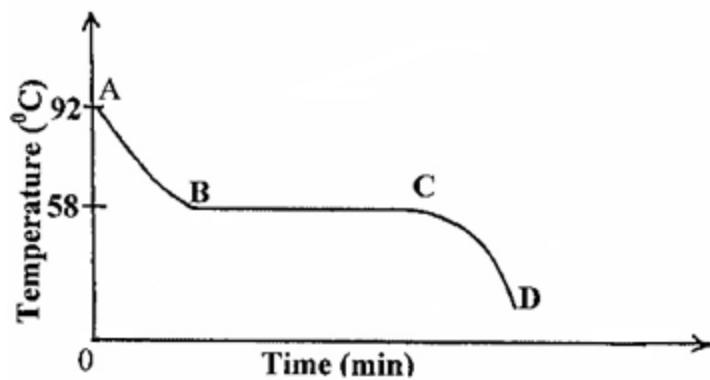
(ii) Given that r = 5cm, R = 8cm, determine effort required to raise a load of 20N if the efficiency of the machine is 80%.   (4mks)

(iii)   It is observed that the efficiency of the machines increases when it is used to lift large loads. Give a reason for this.   (1mk)

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16.   (a)   (i)   Define the term latent heat of fusion.   (1mk)

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(ii) 9816J of heat energy is required to completely convert m kg of ice at 0ºC to steam. Determine the value of m. (Take latent heat of fusion of ice = 2.34 x $10^{5J}kg^{-1}$; specific heat capacity of water = $4200Jkg^{-1}k^{-1}$, latent heat of vaporization of steam = 22.26 x 106Jkg^{-1}).   (4 marks)

(b)   The cooling curve shown in figure below is for a pure substance.

(i)   What is the melting point of the substance?   (1mk)

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(ii)   Explain what happens in the region.   (3mks)

I   **CD**

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II   **AB**

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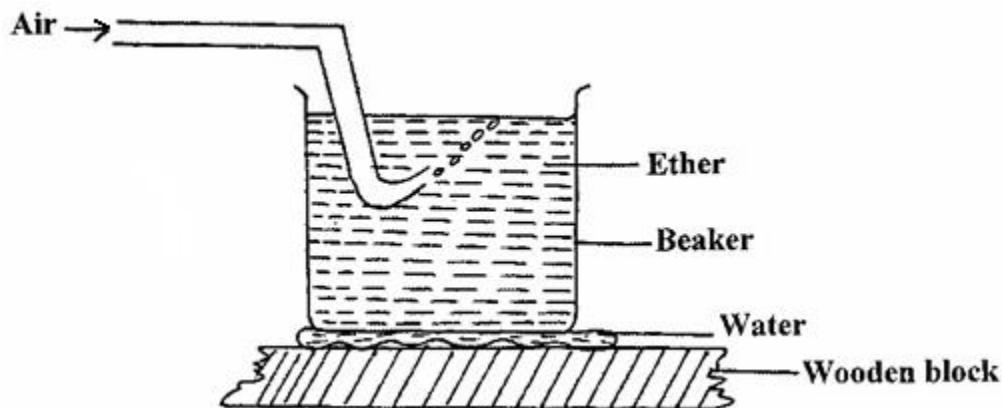
III   **BC**

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(c)   A beaker containing ether was placed on some water on a wooden block.

Air was then blown through the ether using a pump as shown in figure below.

State and explain what observation is made after sometime.   (2mks)

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17.   (a)   When the temperature of water reaches the boiling point, bubbles rise to the surface.
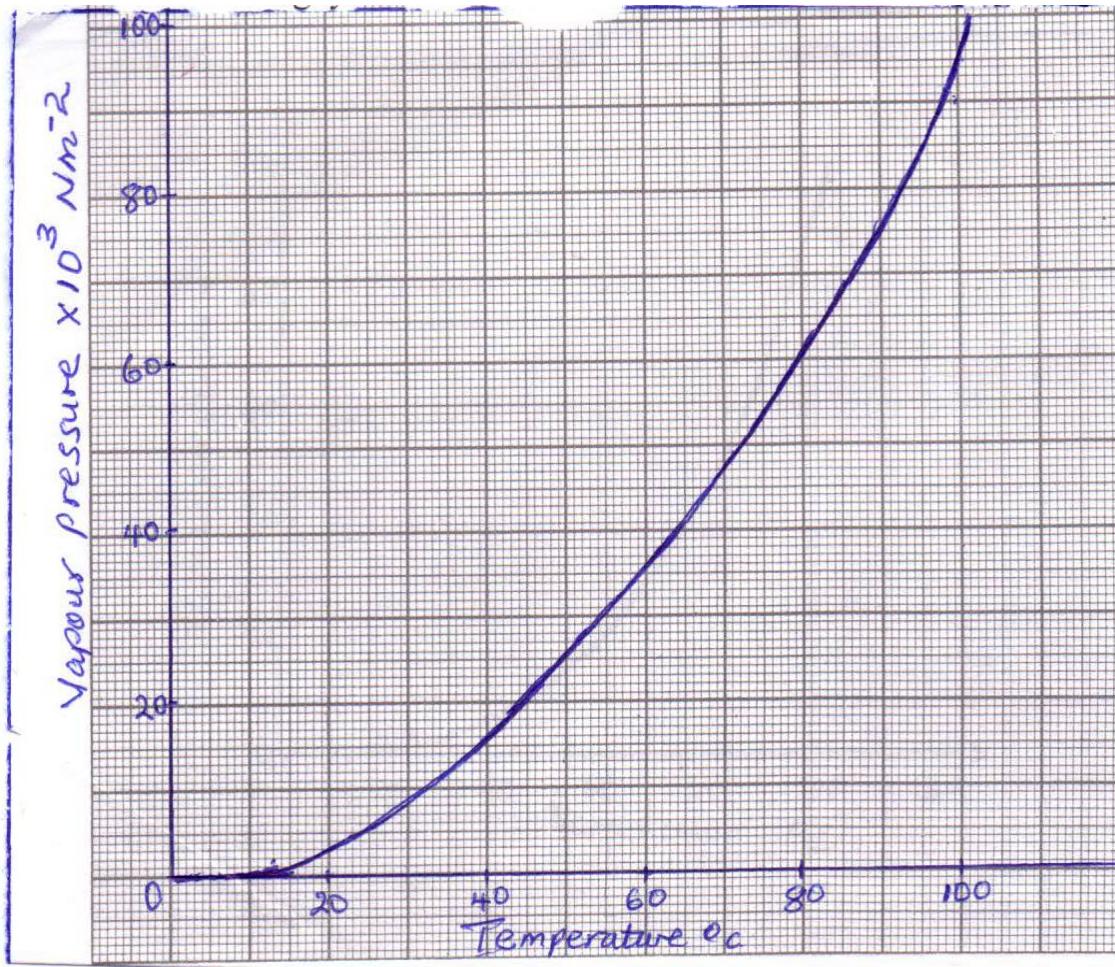
(i)   State what is contained in the bubbles.   (1mk)

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  (ii)   State the reason why bubbles rise to the surface only at the boiling point. (1mk)

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(b)   Figure below shows a graph of vapour pressure against the temperature of water vapour at Kerugoya town where mercury barometer indicates a height of 650mm.

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(i) Determine the atmospheric pressure of the town in Nm⁻². (Take g = 10m/s² and density of mercury = 13600kg/m³).(3mks)

(ii) Use the graph to determine the boiling point of water in the town. (1mk)

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(c) The pressure of helium gas of volume 10cm³ decreases to one third of its original value at constant temperature. Determine the final volume of the gas. (3mks)

18.(a)One of the factors that affect the centripetal force is the mass of the body.
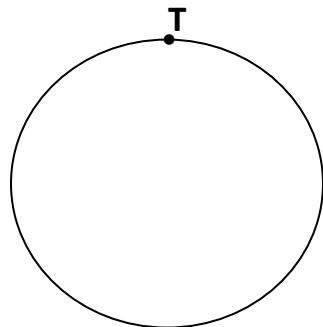
State **two** other factors. (2mks)

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(b)   A mass of 400g is rotated by a string at a constant speed V in a vertical circle of radius 100cm. The minimum tension in the string is 7.2N which is experienced at point T.

(i)   Determine the velocity V of the mass at point T.   (3mks)

(ii)   Determine the maximum tension in the string.   (2mks)

(c)   The anchor of a ship is made of steel and has a weight of 3200N in air. A ship floating in water is held by the anchor submerged in water. (Density of steel is 8000kgm⁻³).

Calculate.

(i)   The volume of the anchor.   (2mks)

(ii)   The up thrust on the anchor.   (2mks)

(iii)   The apparent weight of the anchor.   (2mks)

NAME: ……………………………………………………………………………………………………..

INDEX NO: …………………....... CANDIDATE'S SIGN: ………….……. DATE: ……………………

PHYSICS PAPER 2   (THEORY)

SEPTEMBER/OCTOBER

TIME: 2 HOURS

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INSTRUCTIONS TO THE CANDIDATE:

(a) **Sign** and write the **date** of examination in the spaces provided above.

(b) Answer **all** the questions in sections **A** and **B** in the spaces provided.

(c) All working **must** be clearly shown in the spaces provided.

(d)   Non-programmable silent electronic calculators and KNEC Mathematical tables   **may be** used.

FOR EXAMINER'S USE ONLY:

Section	Question	Maximum Score	Candidate's Score
A	1 – 12	25	
B	13	09	
	14	12	
	15	09	
	16	09	
	17	07	
	18	09	
Total Score		80	

SECTION A: (25 MARKS)

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

1. State **one** property of light that a pinhole camera illustrates.   (1 mark)

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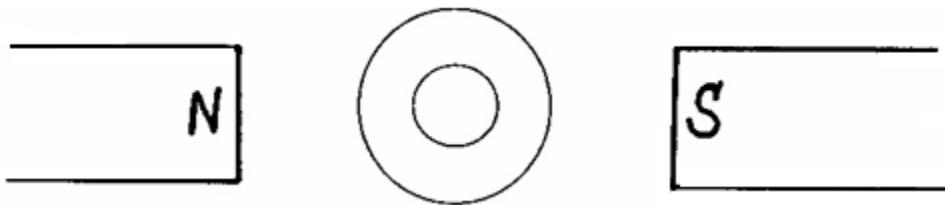
2. It is observed that when a rod A is brought near the cap of a negatively charged electroscope, the divergence of the leaf decreases. State **two** deductions that can be made about rod A from this observation. (2 marks)

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3. State the purpose of manganese (IV) oxide in a dry cell.   (1 mark)

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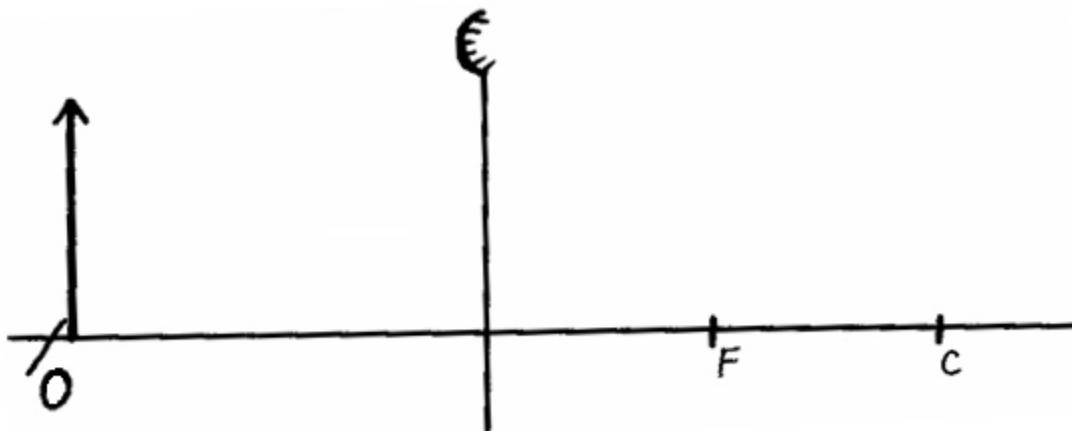
4.   A soft iron ring is placed between two poles of a magnet as shown in the figure below.

(a)   Show on the figure the magnetic field pattern between the poles. (2 marks)

(b)   State **one** application of soft iron in magnetism.   (1 mark)

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5.An object O is placed in front of convex mirror as shown in the diagram below.
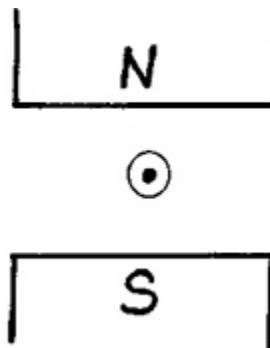
(a)   Complete the diagram to locate the position of the image, 1.   (3 marks)

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(b)   State **one** practical application of a convex mirror.   (1 mark)

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6.   The figure below shows a wire carrying current whose direction is out of the paper.   The wire is placed in a magnetic field.

(a)Indicate on the figure the direction of the force F, acting on the wire. (1 mark)
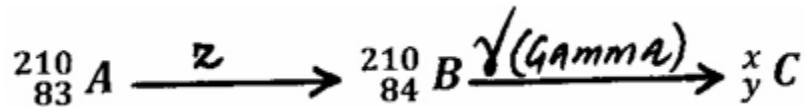
(b)   State what would be observed on the wire if the direction of the current is reversed (i.e. into the paper).   (1 mark)

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7.   Explain how doping a pure semi-conductor produces on n-type semi-conductor. (3 marks)

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8.   State **one** example of a transverse-progressive wave.   (1 mark)

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9.   The following reaction is part of a radioactive series.

$$^{210}_{83} A \xrightarrow{\quad z \quad} {}^{210}_{84} B \xrightarrow{\quad \gamma (GAMMA) \quad} {}^{x}_{y} C$$

   (a)   Identify the radiation **z**.   (1 mark)

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   (b)   Determine the values of x and **y**.   (2 marks)

10.   State:

   (a)   **two** applications of microwaves.   (2 marks)

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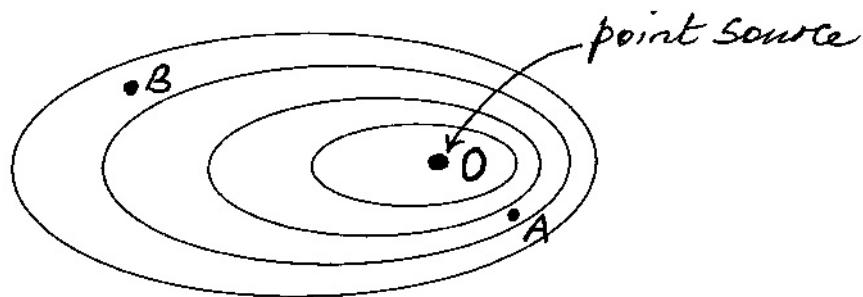
(b)   **one** detector of infrared radiation.   (1 mark)

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11.   State **one** factor that affects the speed of sound in a solid.   (1 mark)

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12.   The figure shown below illustrates crests of circular water wave-fronts radiating from a point source O in a pond.

State how the depth of the pond at **A** compares with that at **B**. (1 mark)

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SECTION B: (55 MARKS)
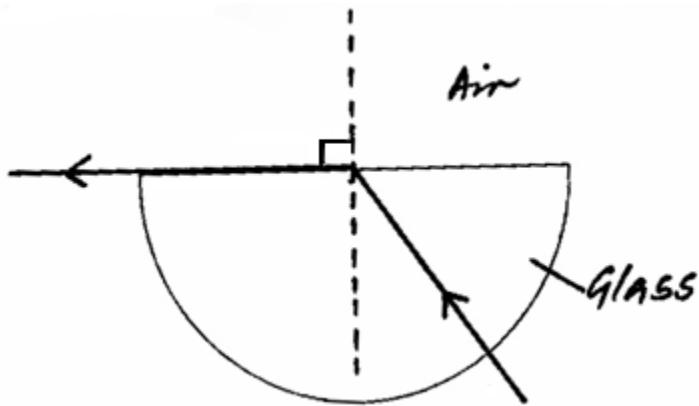
13. (a) State the meaning of the term critical angle as applied in refraction of light. (1 mrk)

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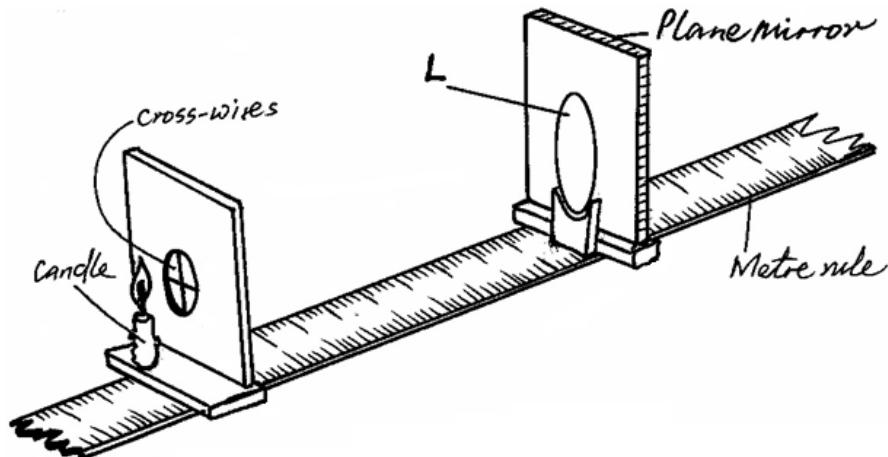
(b)   The figure shows a ray of light incident on a glass-air interface.
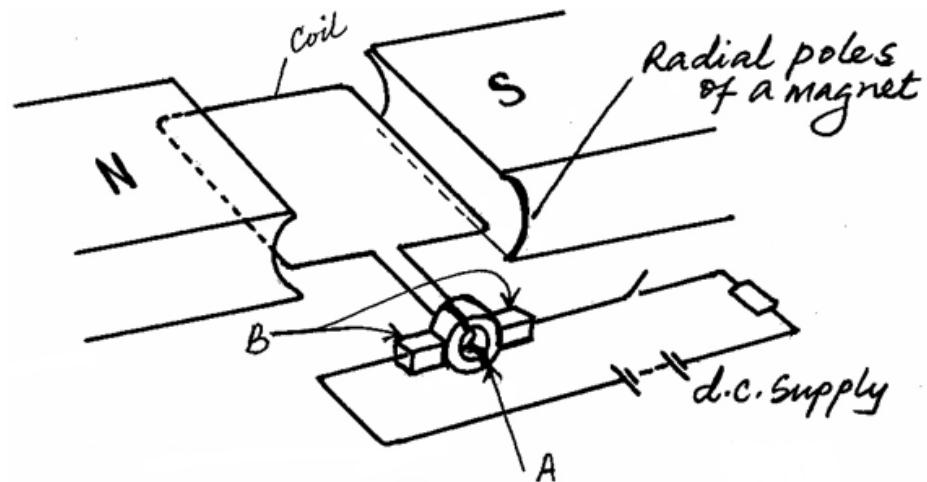
(i)   Show on the diagram the critical angle, **c**.   (1 mark)

(ii)   Given that the refractive index of the glass is $_a\eta_g$, and that the critical angle **c** = 42º, determine the value of is $_a\eta_g$.   (3 marks)

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(c) The figure shows an experimental set up consisting of a mounted convex lens **L**, cardboard screen with cross-wires at the centre, a plane mirror, a metre rule and a candle.

Describe how the set-up may be used to determine the focal length, f, of the lens. (4 marks)

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14.	(a)	The figure below shows parts of a simple electric motor.

(i)	Name the parts labelled **A** and **B**.			(2 marks)

A ....

B ....

(ii)	State the function of each of the parts named in part (i) above. (2 marks)

A ....

B ....
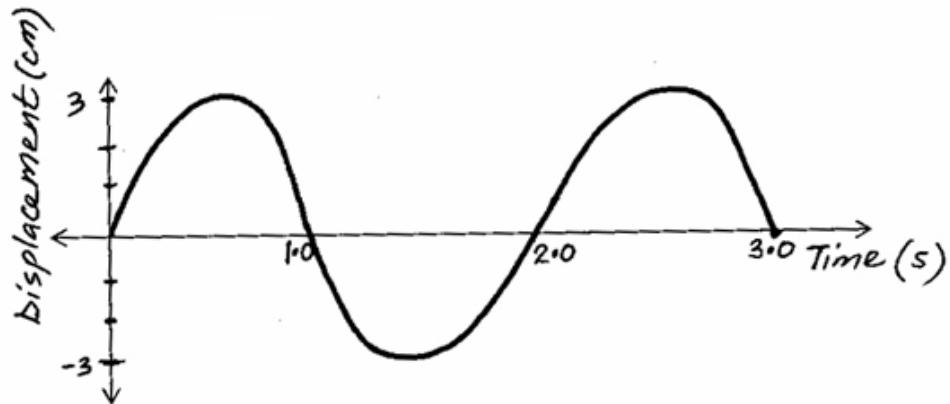
(iii)	State the advantage of using radial (curved) poles of a magnet over plane (flat) poles.				(1 mark)

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(iv) Explain the significance of copper coil as part of an electric motor. (2 marks)

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(b)   The graph in the figure below shows the displacement of a pendulum bob from its rest position as it varies with time.
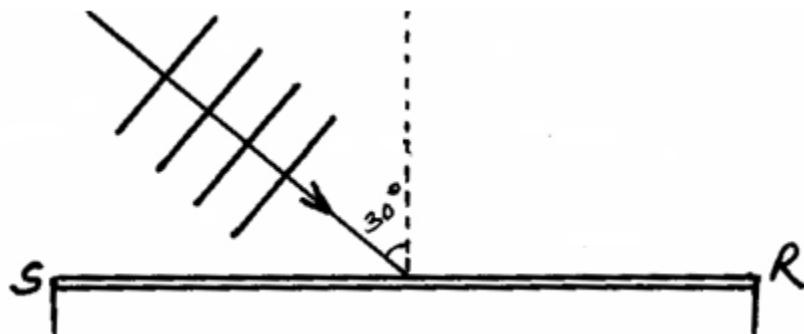
(i)   Determine the amplitude of the oscillation.   (1 mark)

(ii)   What is the time for one complete oscillation?   (1 mark)

(iii) On the same graph, draw a sketch graph which represents a pendulum swinging with half the amplitude and twice the frequency. (2 marks)

(c) Plane water wave fronts are incident onto reflector **SR** as shown in the figure below. Show on the diagram the nature and direction of the reflected wave fronts. (1 mark)
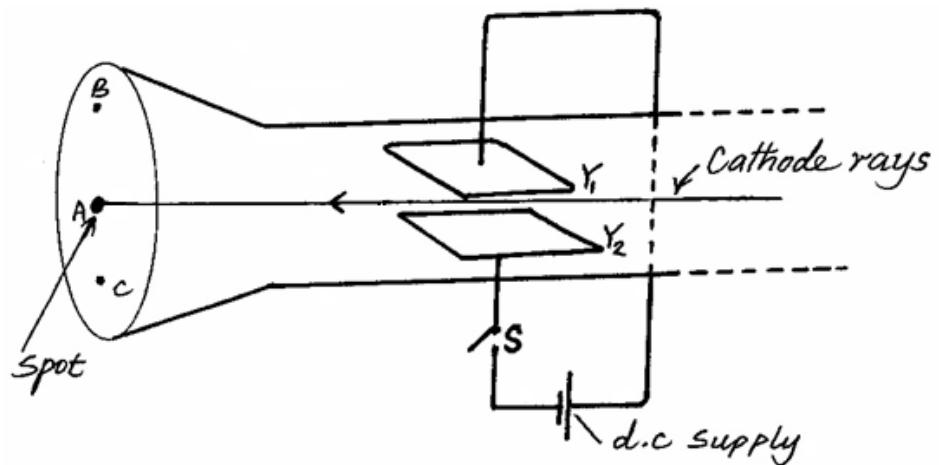
15. (a) State the property of lead that makes it a suitable material for shielding an x-ray tube. (1 mark)

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(b) State how an increase in temperature of the filament in an x-ray tube affects the nature of x-rays produced. (1 mark)

(c) The figure below shows the vertical deflection system of a Cathode Ray Oscilloscope (C.R.O).

(i)   State how cathode rays are produced in Cathode Ray Oscilloscope.(1 mark)

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(ii)   Show on the diagram the path of the cathode rays when the switch **S** is closed.   (1 mark)

(iii)   State what is observed on the screen if the d.c. supply is replaced with a high frequency a.c. supply.   (1 mark)

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(d)   An electric filament bulb is rated 24V, 0.5A.   Calculate:

(i)   the power of the bulb.   (2 marks)

(ii)   the energy dissipated by the bulb in 80 minutes.   (2 marks)
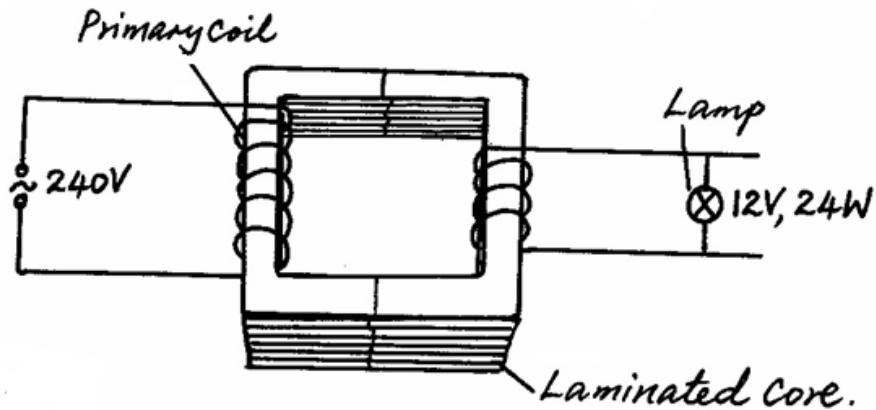
16.   (a)   State Faraday's law of electromagnetic induction.   (1 mark)

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(b)   The figure below shows a 12V, 24W lamp operated by a step-down transformer that is connected to a 240V mains supply.

(i)   Explain what is meant by the term 'laminated core' and state its significance in a transformer.   (2 marks)

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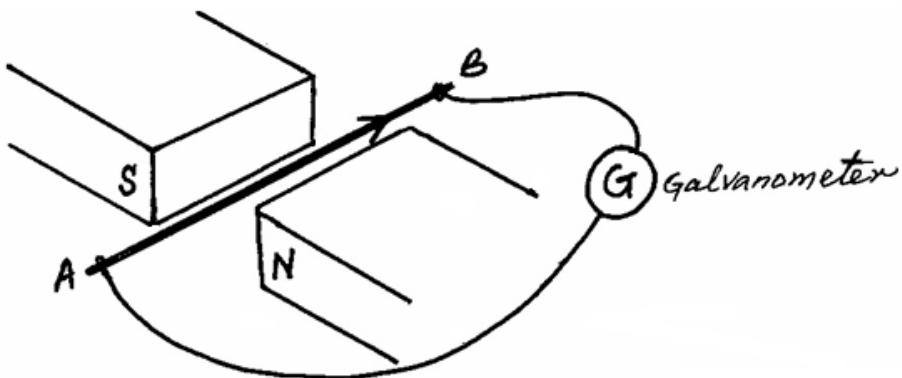
(ii)   Calculate the efficiency of the transformer if the current
        through the primary coil is 0.12A.   (3 marks)

(c)   The figure below shows a conductor AB placed in a magnetic field.

State the direction in which the wire must be moved for the induced current

        to flow in the direction shown.   (1 mark)

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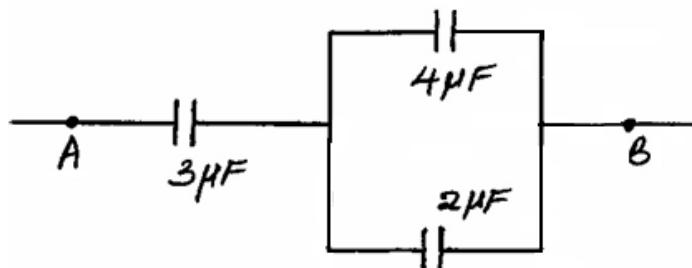
(d)   Explain the meaning of the term **'Hysteresis loss'** as applied in
        transformers and state how it can be reduced.   (2 marks)

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17.   (a)   State **two** properties of electric field lines.   (2 marks)

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....

(b)   The figure below shows part of a circuit containing three capacitors.
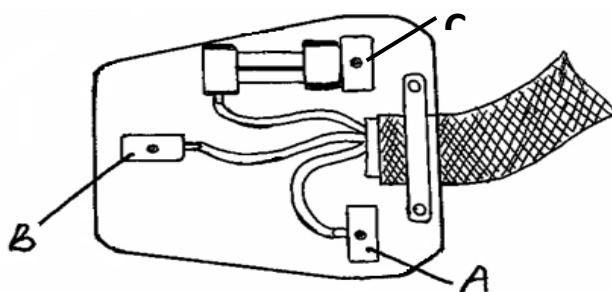
(i)   Calculate the effective capacitance between **A** and **B**.   (3 marks)

(ii)   Given that the potential difference (p.d.) across AB is 10V, what is the total charge flowing through the circuit?   (1 mark)

(c)   State how an increase in thickness affects electrical resistance of a conductor. (1 mark)

....

....

18.   (a)   The figure below shows the inner parts of a three-pin plug.

        (i)   Identify the pins **A** and **B**.   (2 marks)

        A ....
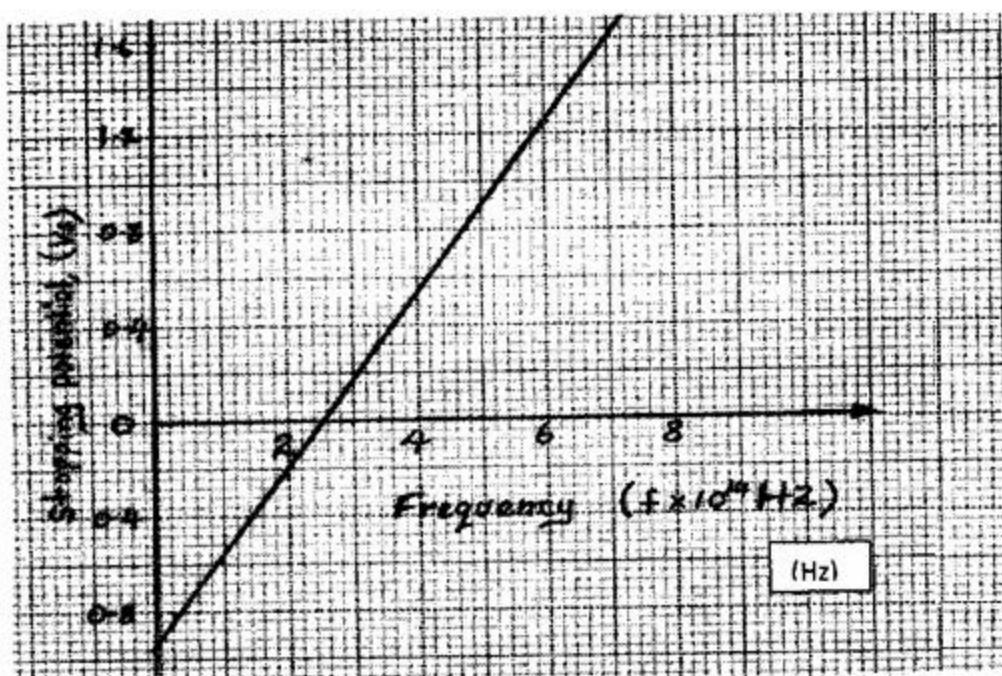
        B ....

(ii)   State the reason why the pin **B** is normally longer than the other two

        pins **A** and **C**.   (1 mark)

....

....

....

(b) In an experiment to find the relationship between frequency of radiation and kinetic energy of photoelectrons in a photoelectric device, the following graph was obtained.

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Use the graph to answer the following questions.

(i)   Determine the threshold frequency.   (1 mark)

(ii)Find the plank's constant h. (Take the charge of an electron to be 1.6 x 10^{-19}C).
                                                                      (3 marks)

(iii)   Calculate the work function of the metal in joules.   (2 marks)

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PHYSICS PAPER 3 (PRACTICAL)

SEPTEMEBER/OCTOBER

TIME: 2½ HOUR

CONFIDENTIAL

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2020 TOP EXAMINERS' MOCK SERIES 3

Question 1:

- A resistance wire PQ mounted on mm scale. (SWG 30, diameter = 0.32mm)
- Ammeter (0 – 1A).
- A voltmeter 0 – 3V or 0 – 5V.
- 2 new size D dry cells and a cell holder.
- A switch labelled K.
- Seven connecting wires at least two with crocodile clips.
- A convex lens of focal length 20cm and a lens holder.
- A metre rule.
- A white screen.
- A candle.

Question 2:

- A metre rule.
- A knife edge raised 20cm above the bench.
- One 50g mass and a 100g mass.
- Some thread (2) 20cm each.
- Some water in a beaker.
- Some liquid L in a beaker (paraffin).
- Tissue paper.
- A rectangular glass block.
- 4 optical pins.
- A plain sheet of paper.
- Cello tape.
- A piece of softboard.

Physics Paper 3 Confidential

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NAME: ……………………………………………………………………………………………………..

INDEX NO: …………………….. CANDIDATE'S SIGN: ………….…….. DATE: …………………….……

PHYSICS   PAPER (PRACTICAL)

SEPTEMBER/OCTOBE   **TIME: 2½ HOURS**

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2020 TOP EXAMINERS' MOCK SERIES 3

INSTRUCTIONS TO CANDIDATES:

1. *Answer **all** the questions in spaces provided in the question paper.*

2. *You are supposed to spend the first 15 minutes of 2½ hours allowed for*
    this paper reading the whole paper carefully before commencing the work.

3. *Marks are given for clear record of the observations actually made, their*
    suitability, accuracy and the use made of them.

4. *Candidates are advised to record their observations as soon as they are made.*

5. *Non-programmable silent electronic calculators and KNEC Mathematical table*
    may be used.

FOR EXAMINER'S USE ONLY

Question 1	b	c	d	e(i)	e(ii)	Part B	g	h
Maximum Score	1	5	5	2	3		2	2
Candidate's Score								

Question 2	a	b	c(i)	c(ii)	d	e	Part B (i)	j(i)	j(ii)
Maximum Score	1	5	1	2	1	1	3	5	1
Candidate's Score									

Question 1
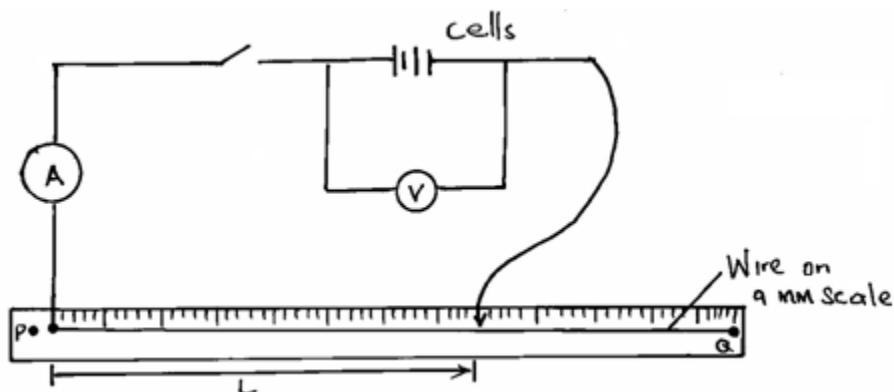
PART A

You are provided with the following.

- A resistance wire PQ mounted on a mm scale.
- An ammeter.
- A voltmeter.
- A switch K.
- Two new dry cells and cell holder.
- Seven connecting wires at least two with crocodile clips.

Proceed as follows:

(a)   Set up the circuit as shown in figure 1 below.

(b)   Open the switch and record the voltmeter readings.

E = …………………… volts.   (1 mark)
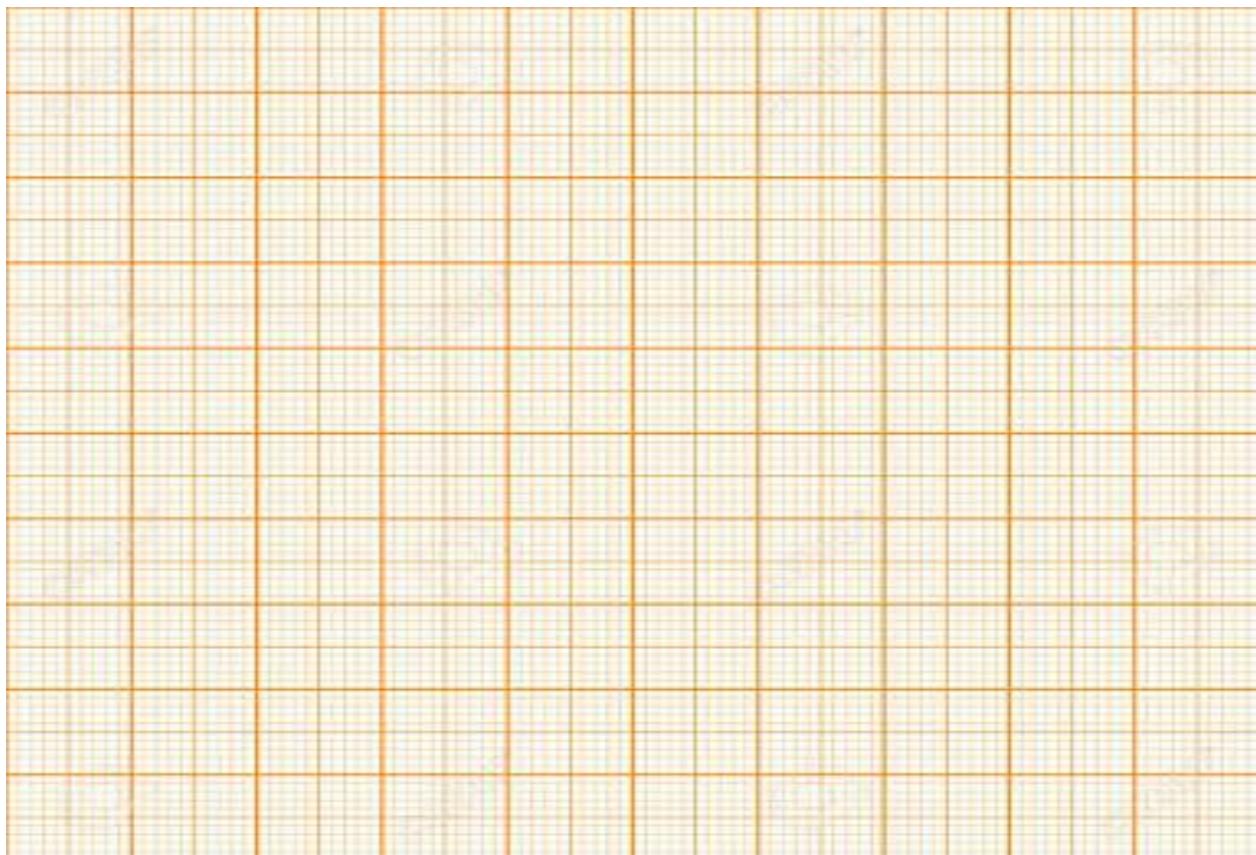
(c)   (i)   Starting with L = 70cm, read and record the readings of voltmeter and ammeter in table 1 provided.

Table 1

Length L(cm)	70	50	40	30	20	10
Current I(A)						
P.d, V (Volts)						

(ii)   Repeat step c(i) above for other values of L given in the table, 1 above. (5 marks)

(d)   Plot a graph of p.d (y-axis) against I.   (5 marks)

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(e)   Given that the graph is governed by the equation E = V + Ir, determine.

   (i)   the e.m.f of the two cells in series.   (2 marks)

   (ii)   the internal resistance of the two cells.   (2 marks)
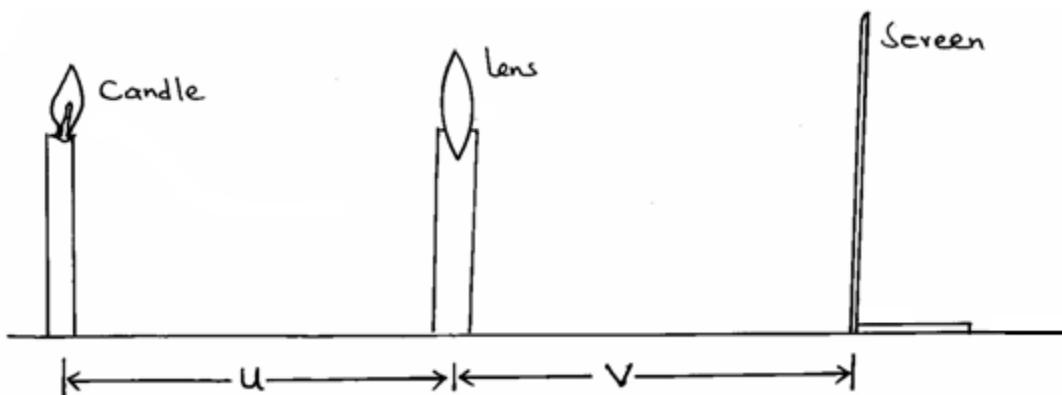
PART B

You are provided with the following.

-    A lens and lens holder.
-    A candle.
-    A screen.
-    A metre rule.

Proceed as follows:

Set up the apparatus as shown in figure 2.

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(f)   Starting with U = 30cm, adjust the position of the screen to obtain a sharp image of the candle. Record the value of V in Table 2.

(g)   Repeat the procedure in (f) for U = 40cm. Complete the table.

U(cm)	V(cm)	$m = \dfrac{V}{U}$
30		
40		

(2 marks)

Table 2

(h)   Given that the focal length of the lens satisfies the equation $f = \dfrac{V}{1 + m}$ determine the average value of focal length f.   (3 marks)

Question 2

PART A

You are provided with the following:

- A metre rule.
- A knife edge.
- One 50g mass and a 100g mass.
- Some thread.
- Some water in a beaker.
- Liquid L in a beaker.
- Tissue paper.

Proceed as follows:

(a)   Balance the metre rule on the knife edge and record the reading at this point.

      Balance point ……………………….. cm   (1 mark)

For the rest of this experiment the knife edge must be placed at this position.

(b)   Set up the apparatus as shown in the figure 1. Use the thread provided to hang the masses such that the positions of the support can be adjusted.

Figure 1

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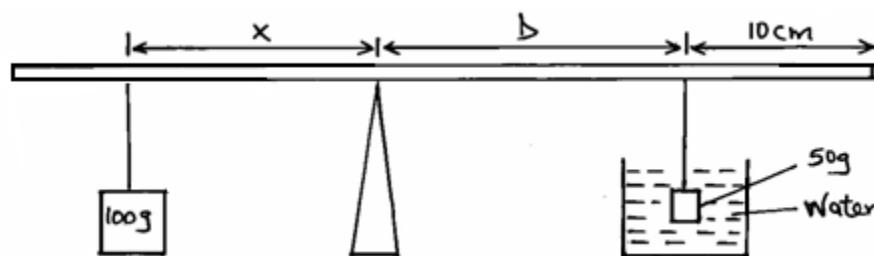
The balance is attained by adjusting the position of the 100g mass. Note that the distance **X** and **D** are measured from the knife edge and the 50g mass is fully immersed in water. Record the values of **X** and **D**.

X = ………………………………….. cm   (1 mark)

D = ………………………………….. cm   (1 mark)

Apply the principle of moments to determine the weight W_1 of the 50g mass in water and hence determine the upthrust U_w in water.   (2 marks)

W_1 = …………………………………………………………………………………

………………………………………………………………………………………… N

U_w = …………………………………………………………………   (1 mark)

………………………………………………………………………………………… N

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Remove the 50g mass from the water and dry it using tissue paper.

(c)   (i)   Now balance the metre rule when the 50g mass is fully immersed in the liquid L.   Record the value of the distance χ.

χ = ...cm   (1 mark)

(ii)   Apply the principle of moments to determine the weight W_2 of the 50g mass in the liquid L and hence determine the up thrust U_L in the liquid.

W_2 = ...   (1 mark)

U_L = ...   (1 mark)

(d)   Determine the relative density R.D of the liquid L, given that: (1 mark)

$$R.D = \frac{U_L}{U_w}$$

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(e)   Find the density of liquid χ in kg/m³. (Given that density of water in 1000kg/m³).(1 mark)

PART B

You are provided with the following:
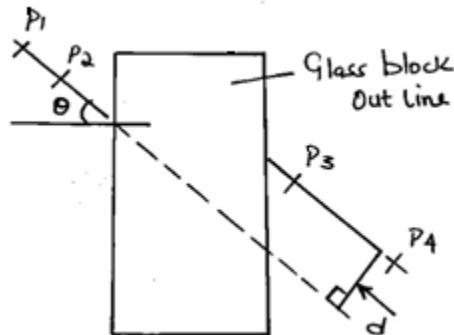
- A rectangular glass block.
- Four optical pins.
- A piece of soft board.
- A plain sheet of paper.
- Cello tape.

You are required to have your own Mathematical set.

Proceed as follows.

(f)   Place the plain sheet of paper on the soft board and fix it using the cello tape provided.

Place the glass block at the centre of the sheet, draw its outline. Remove the glass block.

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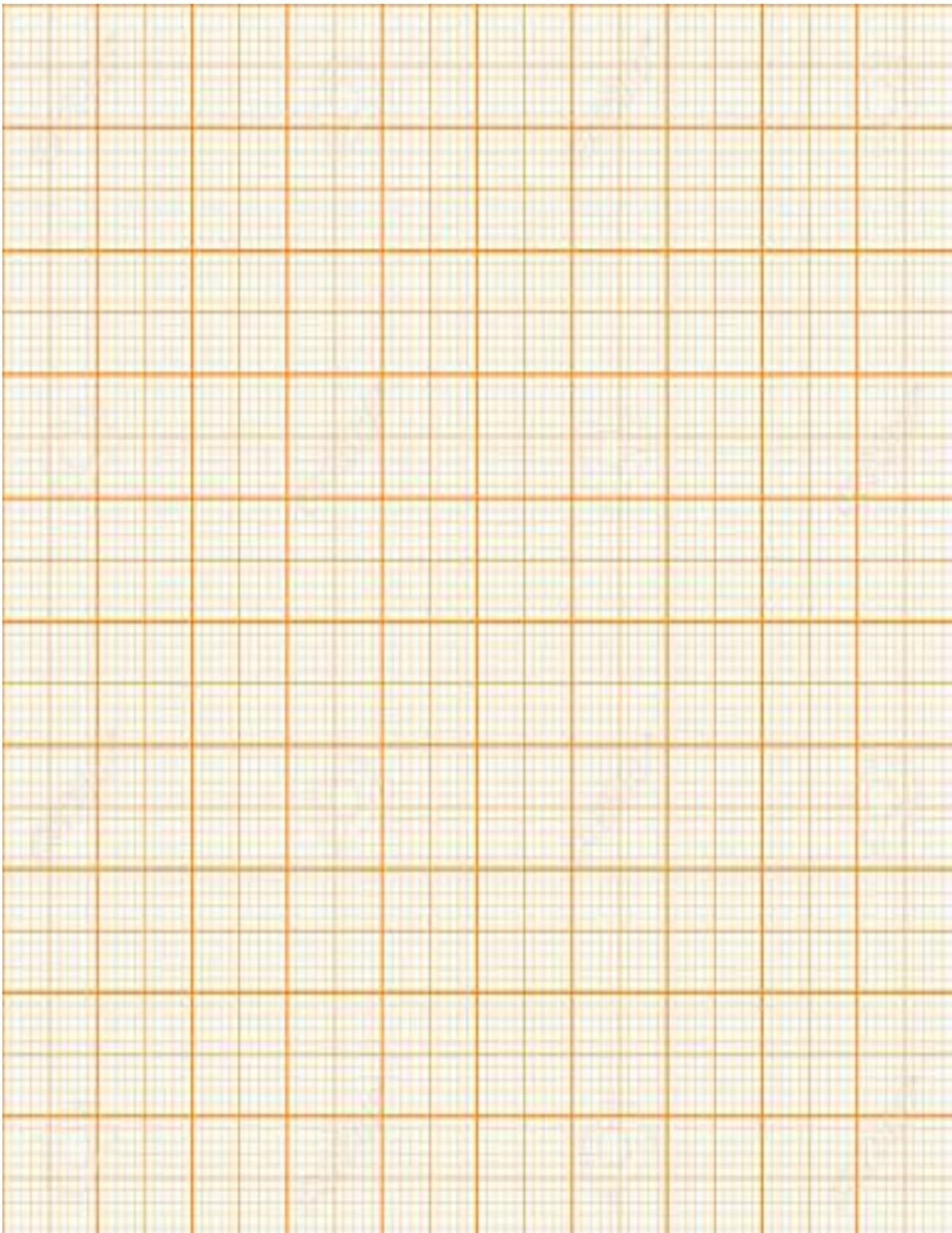
(g)   Draw a normal at a point 2cm from the end of one of the longer side of the block outline. This normal line will be used for the rest of the experiment. Draw a line
        at an angle $\theta = 25°$ from the normal. Stick two pins P_1 and P_2 vertically on this line.

(h)   By viewing through the glass from the opposite side, stick two other pins P_3 and P_4 vertically such that they are in line with the images of the first two pins. Draw a
        line through the marks made by P_3 and P_4 to touch the outline. Extend the line

        P_1P_2 through the outline (dotted line). Measure and record in the table the perpendicular distance d between the extended line and the line P_3P_4 . Record

        this value in the table.

(i)   Repeat the procedure in (g) and (h) for other values of θ shown in the table.

θ (deg)	25	35	40	45	55	60	56	
d(cm)								(3 marks)

(j)   (i)   Plot a graph of d against θ.   (5 marks)

        (ii)   Use the graph to estimate the value of d when $\theta = 0$.   (1 mark)

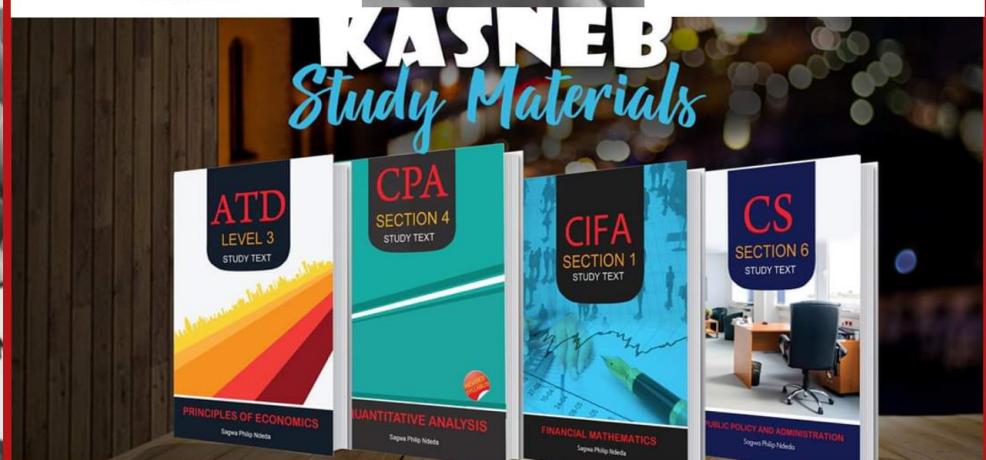Prefer Calling Sir Obiero Amos @ 0706 851 439 for the Marking Schemes

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