FORM FOUR EXAMS
HOLIDAY ASSIGNMENT

COMPLETE FORM 4 EXAMS AND ANSWERS

231/1
BIOLOGY
PAPER 1
THEORY
TIME: 2 HOURS

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

231/1
Biology
Paper 1
2 hours

INSTRUCTIONS TO CANDIDATES

- *Write your name, Index number and school in the spaces provided above.*
- *Answer All questions in the spaces provided on the question paper.*
- *Sign and write the date of examination in the spaces provided above.*
- *Additional pages must NOT be inserted.*

FOR EXAMINER'S USE ONLY

Question	Maximum Score	Candidate's Score
1-29	80	

This paper consists of 7 printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.

1. What is meant by the term sex linkage. (1mk)

…………………………………………………………………………………………………….

2. Part of one strand of DNA molecule was found to have the following sequence

G-C-C- G – A – T- T – T – A – C – G – G

What is the sequence

(i) of the complimentary DNA strand? (1mk)

…………………………………………………………………………………………………….

(ii) On a m-RNA strand copied from this DNA portion? (1mk)

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3. State **three** regions ion a plant where the end products of photosynthesis are translocated to? (3mks)

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4. With reference to circulatory system only give **two** reasons why birds and mammals are more active compared to other organisms? (2mks)

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5. (a) What **three** characteristics are used to divide the phylum arthopoda into classes? (3mks)

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(b) The diagram below shows an organisms from a division in Kingdom plantae. Study it and answer the questions that follow.
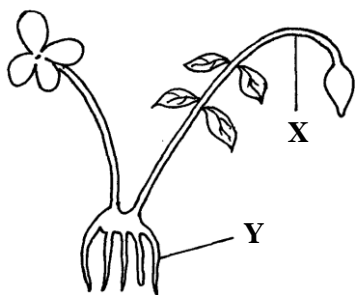
(i) Identify the division from which the plant was obtained. (1mk)

……………………………………………………………………………………………………

(ii) Name the parts labelled **X** and **Z** (2mks)

X……………………………………………………………..

Z……………………………………………………………

2

6. What is the relationship between a genus and a species? (1mk)

……………………………………………………………………………………………………….

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7. A drawing of 3 cm was made of a giant spider whose actual length was 7cm. calculate the magnification of the drawing? (3mks)

8. Explain why osmosis is described as a special type of diffusion? (1mk)

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9. The following table shows the estimated number of organisms recorded in a dam.

Organisms	Number
Small fish	3500
Microscopic algae	12000
Crocodiles	100
Large fish	950
Mosquito larvae	8900

(a) Construct a possible food chain for the dam? (1mk)

(b) Construct a pyramid of numbers for the given data? (1mk)

(c) Explain the shape of pyramid obtained? (2mks)

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10. (a) Explain why leaves of most plants are thin and broad. (2mks)

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(b) State the function of the following enzymes during digestion in the stomach?

(i) Pepsin (1mk)

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(ii)Renin (1mk)

………………………………………………………………………………………………….

11. Explain the following:

(i)   Respiratory surface must be moist? (1mk)

………………………………………………………………………………………………….

(ii)   Respiratory surface must be thin (1mk)

………………………………………………………………………………………………….

(iii)   Palisade cells are cylindrical shaped and arranged with long axis perpendicular to the leaf surface. (1mk)

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12.

Cork disk **Damp cotton wool** **Clinostatcase** **Clinostat set up** **Gernunatina bean seed**
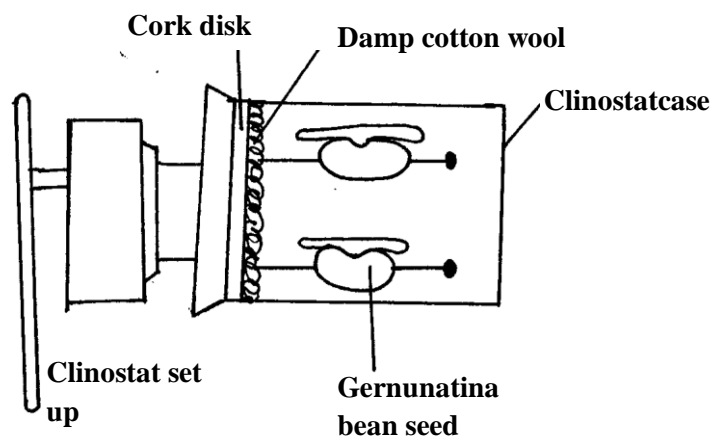
Germinating beans seeds were placed in the clinostat as shown in the diagram and left for three days.

(a) What is a clinostat. (1mk)

………………………………………………………………………………………………….

(b) The Clinostat was switched on and left to run for the three days. Suggest the direction the seedling will be facing at the end of the three days. (1mk)

………………………………………………………………………………………………….

4

(c) Give a reasons for your answer in (b) above? (1mk)

……………………………………………………………………………………………………

13. Explain why the body temperature of a healthy person rises slightly during humid days? (2mks)

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14. Nocturnal animals such as owl are capable of seeing fairly at night. What **two** retinal adaptations have made this possible? (2mks)

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15. State the function of the following organelles:

(i) Granulated Endoplasnic reticulum (1mk)

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(ii) Nucleolus (1mk)

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16. State **three** gaseous exchange sites in plants? (3mks)

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17. The diagram below shows an apparatus used during collection of specimen or biological study.
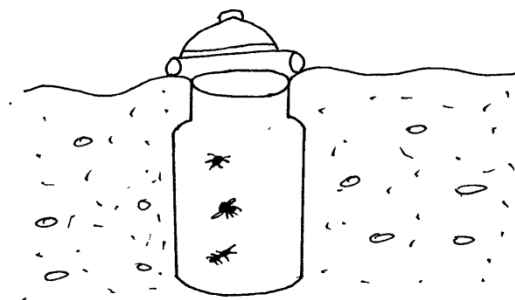
(a) Identify the apparatus? (1mk)

……………………………………………………………………………………………………

(b) What is the use of the apparatus named above? (1mk)

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18. List **three** limitations of fossil records as an evidence of organic evolution? (3mks)

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19. Distinguish between enzyme co-factors and co-enzymes? (2mks)

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20. Give **two** reasons for the rapid growth during the exponential phase of growth curve? (2mks)

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21. Give **two** reasons why *Carolus Linneaus* preferred the use of latin language in the scientific naming of living organisms. (2mks)

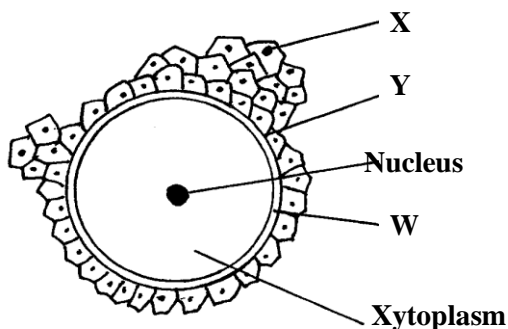………………………………………………………………………………………………

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22. State **three** roles played by active transport in living organisms. (3mks)

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23. List **three** factors affecting the rate of respiration? (3mks)

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

(a) Identify the cell (1mk)

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(b) Label the parts **X,Y** and **W** (3mks)

X ………………………………………………………………………………………………

Y ………………………………………………………………………………………………

W ………………………………………………………………………………………………

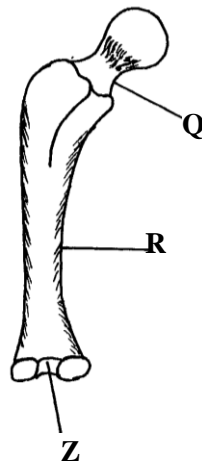25. The diagram below shows a bone of the hind limb. Study it and answer the questions that follow.

(a) Name the bone   (1mk)

    ……………………………………………………………………………………………….

(b) Name the parts labelled **Q** and **A**   (2mks)

    Q…………………………………………………

    A………………………………………………….

(c) Name the structure that articlualtes with the part labelled **Z** and the joint formed?   (2mks)

    Structure ……………………………………………………………………………………………

    Joint ………………………………………………………………………………………………………

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26. List **two** functions of inter-vertebral discs between two adjacent vertebrae.   (2mks)

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27. Explain why it is becoming more difficult to treat malaria using chloroquine?   (4mks)

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28. State **four** ways by which the ileum is adapted fro absorption of food materials?   (4mks)

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29. Name **two** processes that contribute to variation during gamete formation?   (2mks)

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231/2
BIOLOGY
PAPER 2
THEORY
TIME: 2 HOURS

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

2312
Biology
Paper 2

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.
- This paper consists of two sections A and B
- In section B answer questions 6 compulsory and either question 7 or 8 in the spaces provided after question 8
- Answer *all* the questions in the spaces provided.
- Candidates should answer all the questions in English

For Examiners 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		80	

This paper consists of 8 printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.

1. The flow diagram below represents passage of a meal through the human digestive system. Study the diagram and answer the questions that follow.

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┌────────────────────┐      ┌────────────────┐      ┌──────────────────┐
│ Ugali and Meat stew│ ───▶ │  Mouth cavity  │ ───▶ │ Digestive juice A│
└────────────────────┘      └────────────────┘      └──────────────────┘
                                    │                         │
                                    ▼                         ▼
                            ┌────────────────┐      ┌──────────────────┐
                            │    Stomach     │ ───▶ │ Digestive juice B│
                            └────────────────┘      └──────────────────┘
                                    │                         │
                                    ▼                         ▼
                            ┌────────────────┐      ┌──────────────────┐
                            │     Ileum      │ ───▶ │ Digestive juice C│
                            └────────────────┘      └──────────────────┘
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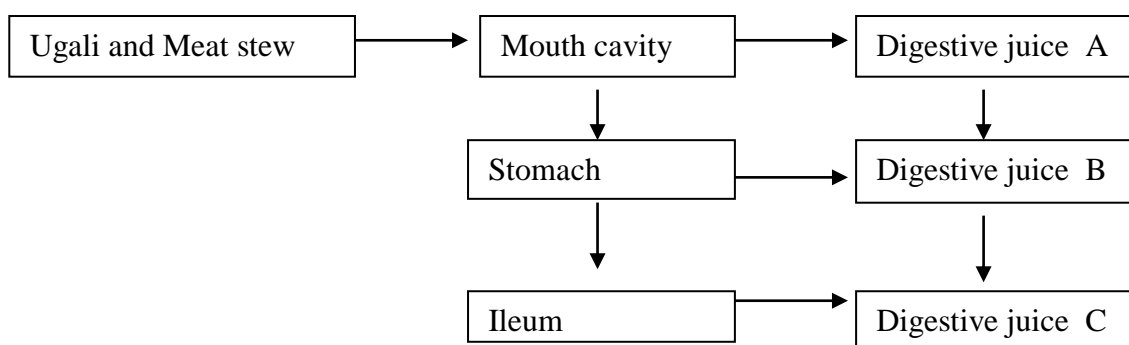
(a) Name the physical process that will occur in mouth cavity   (1mk)

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(b) Name the digestive juices **B** and **C**   (2mks)

   B………………………………………………………….

   C………………………………………………………….

(c) Explain **two** ways in which the digestive system is protected from corrosive effects of digestive juices.   (2mks)

   …………………………………………………………………………………………………….

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   …………………………………………………………………………………………………….

(d) Name the hormone that stimulate secretion of juice **B**.   (1mk)

   …………………………………………………………………………………………………….

(e) Identify **two** contents of digestive juice **A**   (2mks)

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   …………………………………………………………………………………………………….

2. The diagram below represents an experimental set up to investigate the effect of light and gravity on a growing seedling.

2
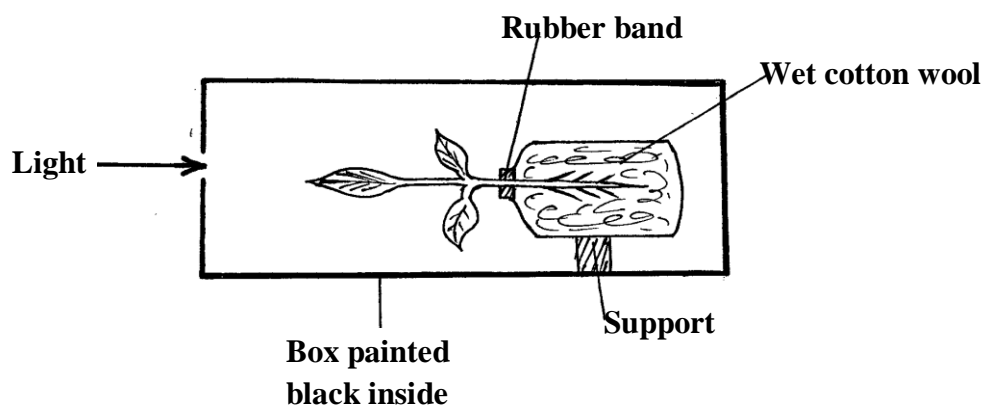
(a) Draw a diagram of the seedling to represent the expected results after three days.   (2mks)

(b) (i) State a control experiment for the effect of gravity in this experiment.   (1mk)

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…………………………………………………………………………………………….

(ii) Explain the results that would be obtained in the control experiment.   (2mks)

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(c) State **three** differences between Endocrine and Nervous responses.   (3mks)

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3.   (i) State **four** structural differences between skeletal muscles bicips and smooth muscles e.g gut
        muscles.   (4mks)

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(ii) Name the cartilage found between the bones of the vertebral column.   (1mk)

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(iii) What are the functions of the cartilage named in d (ii) above   (3mks)

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3

4. The set of apparatus was assembled by a group of students to investigate some physiolocal process.
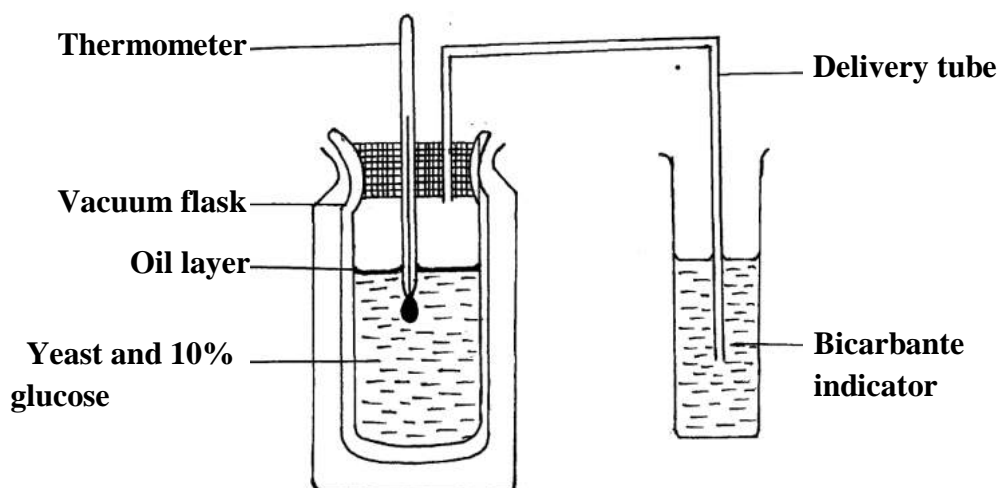
(a) (i) Give **two** aims of the experiment. (2mks)

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…………………………………………………………………………………………………….

(ii) Explain observations expected after 24 hrs (2mks)

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(b) Before the experiment., the glucose was boiled then cooled.

(i) Why was it necessary to boil the solution (1mk)

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…………………………………………………………………………………………………….

(ii) What was the importance of oil layer in the experiment? (1mk)

…………………………………………………………………………………………………….

…………………………………………………………………………………………………….

(c) Describe a control experiment for the set up? (1mk)

…………………………………………………………………………………………………….

…………………………………………………………………………………………………….

(d) Suggest one industrial application of the process being investigated ? (1mk)

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5. (a) Human somatic cells had 46 chromosomes in their nucleus. State the number of sex chromosomes out of the 46 and name them in male human beings. (2mks)

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…………………………………………………………………………………………………….

(b) Haemophiliac is due to recessive gene. The gene is sex linked and located on the **x** chromosome.

A phenotypically normal parents gave birth to one boy who is haeophiliac .

(i)   What are the possible parental genotypes.   (2mks)

………………………………………………………………………………………….

………………………………………………………………………………………….

(iii)   Work out the genotypes of off springs using the pinnate square.   (4mks)

SECTION B (40 MARKS)

Answer questions 6 (compulsory) and either question 7 or 8 in the spaces provided after question 8

6. The length of a grasshopper femur and internode of a seedling were recorded in a period of 24 weeks. The results are recorded in the table below.

Week	1	3	5	7	10	13	16	18	20	24
Average length of femur	8.0	9.0	9.0	9.0	13.0	13.0	15.0	19.0	19.0	19.0
Average length of internode(mm)	5.0	6.5	10.5	16.5	24.5	27.5	32.5	34.5	36.0	37.5

(a)Plot a graph of length of femur and internode against time on the same axis   (7mks)

5
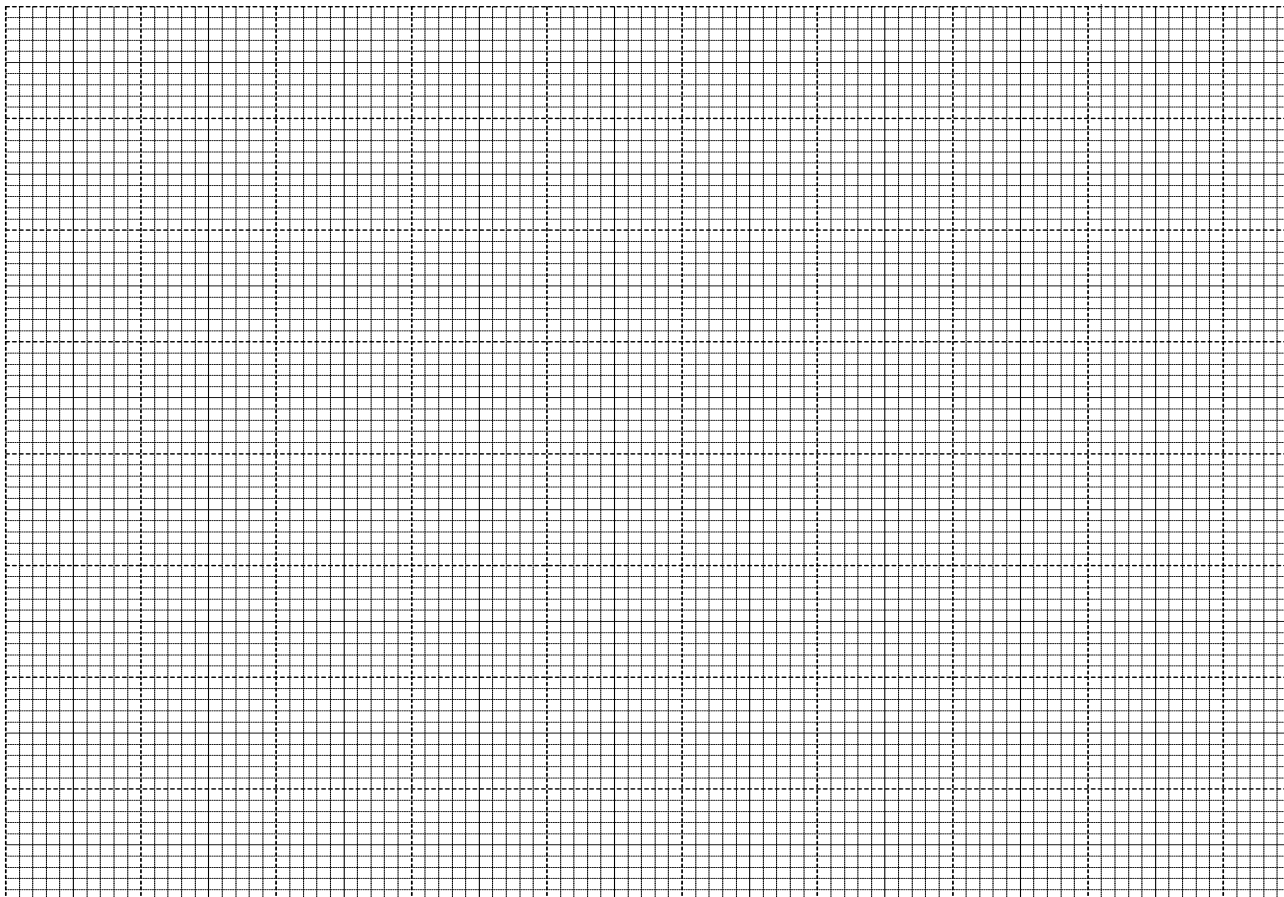
(b) (i)What was the average length of internode in the 8th week? (1mk)

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…….

(ii)Suggest how average length of internodes was obtained. (2mks)

…….

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(c) Name the type of growth curve shown by

(i) Grasshopper (1mk)

…….

(ii) Seedling (1mk)

…….

(d) Account for the change in length for fermur between

(i) 3rd and 7th week (2mks)

(ii)   16th and 20th week   (2mks)

(e) (i)   State what causes increase in length of internodes in the seedling.

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………………………………………………………………………………………………….

(ii)   Which animal phylum exhibits the growth pattern of the fermur.

………………………………………………………………………………………………….

………………………………………………………………………………………………….

(iii)   Name the hormone responsible for the growth pattern in grasshopper.

………………………………………………………………………………………………….

………………………………………………………………………………………………….

(iv)   Work out the rate of growth of the seedling between week 7 to 10   (2mks)

………………………………………………………………………………………………….

………………………………………………………………………………………………….

7. Describe the structure and function of various parts of the skin   (20mks)

8. (a) During a voting exercise tension was high one of the aspirants was furious and wanted to
       face a very aggressive opponent. Explain the physiological changes that occur in his body to
       prepare him for the fight.   (14mks)
    (b) (i) Identify each of the following responses described below.
            (a) A person coughs whenever a foreign body irritates the respiratory tract   (1mk)
            (b) Whenever a bell is rung, a dog is presented with a meal. After several days of
                practice, the dog salivates once the bell is rung even if food is not available   (1mk)
        (ii) State the difference between the two responses identified in (b) above   (4mks)

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231/3
BIOLOGY
PAPER 3
PRACTICAL
TIME: 1 ¾ HOURS

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

231/3
Biology
Paper 3
1 ¾ Hours

<u>INSTRUCTIONS TO CANDIDATES</u>

- Write your **name** and **indexnumber** in the spaces provided above
- **Sign** and write the **date** of examination in the spaces provided.
- Answer *all* the questions in the spaces provided.
- You are requiredtospend the first 15 minutes of the 1 ¾ hours allowed for this paper reading the whole paper carefully before commencing your work.
- Additional pages must not be inserted.
- Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.
- candidates must answer all questions in English

For Examiners Use Only

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

This paper consists of 4 printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.

1. Take 2 clean test tubes and into each add $5cm^3$ of dilute hydrogen peroxide. Label the test tubes as **A** and **B**.
   Cut 2 cubes of irish potato measuring $1cm^3$ each. Boil one cube in a boiling tube with some water for about 5 minutes.
   Drop the boiled cube into test tube **A** and unbolied cube in test tube **B**. State your observations

   (a) Test tube **A**   (1mk)
   ………………………………………………………………………………………………….
   ………………………………………………………………………………………………….
   Test tube **B**   (1mk)
   ………………………………………………………………………………………………….
   ………………………………………………………………………………………………….

   (b) Account for your observations in
   Test tube **A**   (1mk)
   ………………………………………………………………………………………………….
   ………………………………………………………………………………………………….
   Test tube **B**   (2mks)
   ………………………………………………………………………………………………….
   ………………………………………………………………………………………………….

   (c) Take a small piece of substance **Z** provided and add to it $2cm^3$ of sodium hydrogen carbonate.
   (i) State your observations   (1mk)
   ………………………………………………………………………………………………….
   ………………………………………………………………………………………………….
   (ii) Which physiological process in the body is illustrated above   (1mk)
   ………………………………………………………………………………………………….
   ………………………………………………………………………………………………….
   (iii) State the part of the body where the process takes place.   (1mk)
   ………………………………………………………………………………………………….
   ………………………………………………………………………………………………….
   (iv)What is the significance of the process   (1mk)
   ………………………………………………………………………………………………….
   ………………………………………………………………………………………………….

   (d) Put $2cm^3$ of liquid labelled as **C** into a test tube. Squeeze some juice from specimen **X** into a beaker.
   Draw some of the juice into a dropper. Add 3 drops of the juice into the test tube with solution **C**.
   (i)   State your observation.   (1mk)
   ……………………………………………………………………………………………………….
   ……………………………………………………………………………………………………….
   (ii)   State the part of the human body where the physiological process demonstrated above occurs
           and the enzyme that carriers out the process.   (2mks)
           Part of body
           ……………………………………………………………………………………………………….
           Enzyme
           ……………………………………………………………………………………………………….

(iii)   Which gland produces the enzyme stated in (ii) above.   (1mk)

………………………………………………………………………………….…………

(iv)   Which hormone stimulates the production of the enzyme stated in (II) above.   (1mk)

………………………………………………………………………………………….

2.   The diagram below shows an electron micrograph of across section of a part of a plant.

a)   State the class of the plant from which the section was obtained.   (1mk)

………………………………………………………………………………………….

b)   Give a reasons for your answer   (1mk)

………………………………………………………………………………………….

c)   Label the structures labelled **A, B**, and **C** and state **one** functions in each   (6mks)

A……………………………………………………………………………………………

Function

………………………………………………………………………………………….

B……………………………………………………………………………………………

Function

………………………………………………………………………………………….

C……………………………………………………………………………………………

Function

………………………………………………………………………………………….

d)   The diagram below represents a longitudinal section of a fruit.
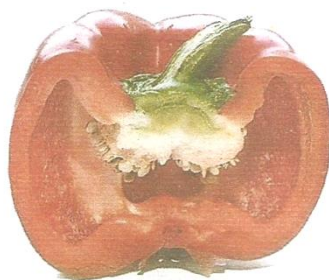
(i)   State the type of fruit   (1mk)

……………………………………………………………………………………….…….

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

……………………………………………………………….…………………….…………

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(iii)   State the type of placentation in the fruit and give a reason for your answer   (2mks)
Placentation

…………………………………………………………………………………………………….

Reason

…………………………………………………………………………………………………….

…………………………………………………………………………………………………….

3. The photographs below are bones from the same mammal. Examine the bones and answer the
questions that follow.
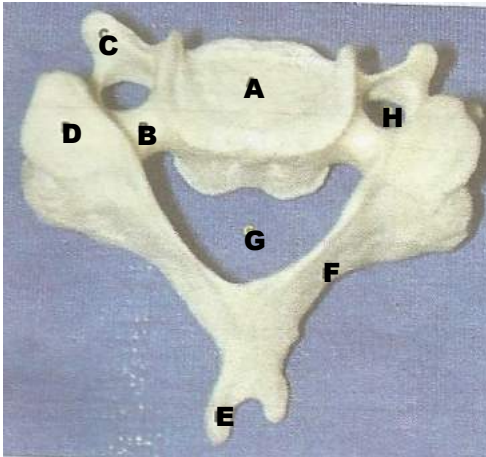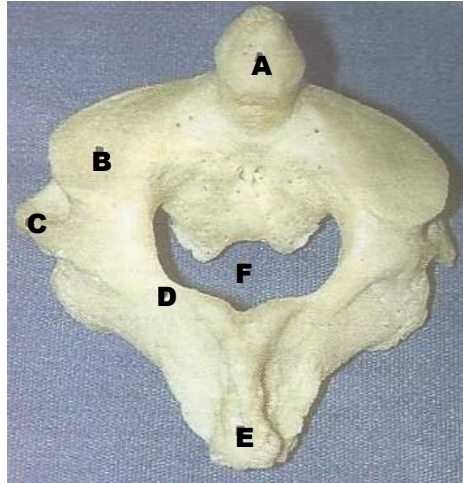
Photograph 3.03   **Photograph 3.02**   **Photograph 3.01**
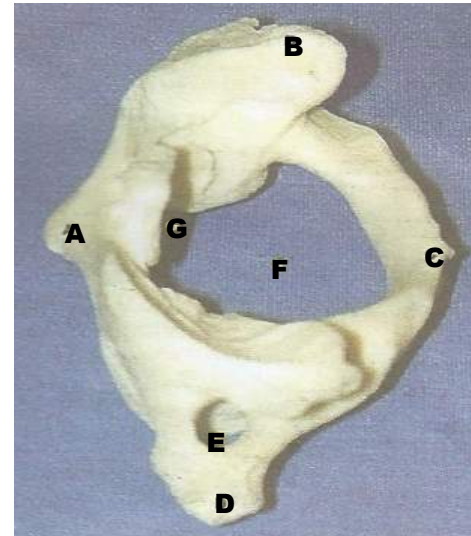
(a) Name the body region from which the bones were obtained.   (1mk)
…………………………………………………………………………………………………….

(b) Name the bones in terms of 3.01, 3.02 and 3.03 in the correct order from anterior to posterior. (1mk)
…………………………………………………………………………………………………….

(c) Name and state the function of the following part labelled as

(i) **F** in photograph 3.02   (2mks)
…………………………………………………………………………………………………….

(ii) **H** in photograph 3.03   (2mks)
…………………………………………………………………………………………………….

(iii) **A** in photograph 3.02   (2mks)
…………………………………………………………………………………………………….

(d) Identify the bones in photograph   (3mks)
3.01   …………………………………………………………..

3.02   …………………………………………………………..

3.03   ……………………………………………………………

(e) Name the bones that articulate with bone in photograph 3.03 in the distal end   (1mk)
………………………………………………………………………………………………….

(f)   How is structure labelled C in photograph 3.03 adapted to its function   (2 mks)

………………………………………………………………………………………………….

………………………………………………………………………………………………….

4

565/1
BUSINESS STUDIES
PAPER 1
TIME: 2 HOURS.

Kenya Certificate of secondary Education (KCSE)

565/1
Business Studies
Paper 1
2 hours.

INSTRUCTIONS TO CANDIDATES

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

(b) **Sign** and **write** the **date of examination** done.

(b) Answer **all** questions provided.

(c) All answers must be written in the spaces provided in the booklet.

FOR EXAMINERS 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 [ ]

*This paper consists of **7** printed pages. Candidates should check the question paper to ensure that all pages are printed as indicated and no questions are missing*

1

1. State **four** characteristics of money   (4msrk)

    (a)…………………………………………………………………………………………..

    (b)…………………………………………………………………………………………..

    (c)…………………………………………………………………………………………

    (d)…………………………………………………………………………………………..

2. State **four** external factors that may adversely affect the efficient operations of a business enterprise.

                                                                                                                (4mrks)

    (a)…………………………………………………………………………………………..

    (b)…………………………………………………………………………………………..

    (c)…………………………………………………………………………………………

    (d)…………………………………………………………………………………………..

3. Under what **four** circumstances would it be advisable for a business to use photocopying as a means of

    document reproduction.   (4mrks)

    (a)…………………………………………………………………………………………..

    (b)…………………………………………………………………………………………..

    (c)…………………………………………………………………………………………

    (d)…………………………………………………………………………………………..

4. Outline **four** ways through which an efficient transport system may promote trade in the society.

                                                                                                                (4mrks)

    (a)…………………………………………………………………………………………..

    (b)…………………………………………………………………………………………..

    (c)…………………………………………………………………………………………

    (d)…………………………………………………………………………………………..

5. Outline **four** benefit enjoyed by a large scale consumer who buys directly from the producer

                                                                                                               .(4mrks)

    (a)…………………………………………………………………………………………..

    (b)…………………………………………………………………………………………..

    (c)…………………………………………………………………………………………

    (d)…………………………………………………………………………………………..

6. ABC Ltd prefers to advertise their products through their website in the internet. Outline **four** benefits

   enjoyed by the firm as a result of this method of states promotion.   (4mrks)

    (a)…………………………………………………………………………………………..

    (b)…………………………………………………………………………………………..

    (c)…………………………………………………………………………………………

2

(d)…………………………………………………………………………………………………..

7. Outline **four** features of cooperative societies   (4mrks)

(a)…………………………………………………………………………………………………..

(b)…………………………………………………………………………………………………..

(c)……………………………………………………………………………………………………

(d)…………………………………………………………………………………………………..

8. Give **four** reasons why most Kenyans do not operate bank accounts.   (4mrks)

(a)…………………………………………………………………………………………………..

(b)…………………………………………………………………………………………………..

(c)……………………………………………………………………………………………………

(d)…………………………………………………………………………………………………..

9. State **four** advantages of indirect taxes.   (4mrks)

(a)…………………………………………………………………………………………………..

(b)…………………………………………………………………………………………………..

(c)……………………………………………………………………………………………………

(d)…………………………………………………………………………………………………..

10. In the space provided, indicate the effects of the transactions given on assets , liabilities and capital by writing increase, decrease or no effect in the appropriate column.

Transaction	Assets	Liability	Capital
(a) Bought news furniture and payment to be later.	………………….	…………………	………………
(b) Paid money owed to creditors by cheque.	………………….	…………………	………………
(c) The owner donated his Personal computer for business use	………………….	…………………	………………
(d)The owner used part of business goods for his sons birthday.	………………….	…………………	………………

11. Outline **four** contributions of the households to the national income of a country.   (4mrks)

(a)…………………………………………………………………………………………………..

(b)…………………………………………………………………………………………………..

(c)……………………………………………………………………………………………………

(d)…………………………………………………………………………………………………..

12. Identify **four** salient features of a monopolistic market. (4mrks)

(a)…………………………………………………………………………………………………..

(b)…………………………………………………………………………………………………..

(c)……………………………………………………………………………………………………

(d)…………………………………………………………………………………………………..

3

13. In the spaces provided in the table below, name the document Mumia Limited Company would issue

under circumstances described below.

Circumstance   **Document to issue**

(a) Mumia Ltd sold goods worth Ksh 100,000
On credit to Mama Tatoo Supermarket.   ……………………………………………

(b) Kukus traders paid Mumia Traders paid Ksh. 54,000
by cheque to Mumia Ltd for goods which
had been supplied.   ……………………………………………

(c) Agama enterprises which had bought goods
worth ksh. 17,000 was eroneously charged for
only Ksh. 15,000.   ……………………………………………

(d) Goods sold to mama Tatoo Supermarket
had been over priced by sh. 4,000   ……………………………………………

14. Identify **four** obstacles that may hinder the achievement of Kenya's Vision 2030.   (4mrks)

(a)…………………………………………………………………………………………………..

(b)…………………………………………………………………………………………………..

(c)………………………………………………………………………………………………….

(d)…………………………………………………………………………………………………..

15. State **four** benefits of entrepreneurship to the Kenyan government.   (4mrks)

(a)…………………………………………………………………………………………………..

(b)…………………………………………………………………………………………………..

(c)………………………………………………………………………………………………….

(d)…………………………………………………………………………………………………..

16. The following information was extracted from the books of Condo Traders as at 31st December, 2008.

Opening stock   2,500
Purchases   46,000
Closing stock   1,500
Mark – up   20%

Required : Prepare Condo Trader's trading account.   (4mrks)

4

17. List **four** rewards to land as a factor of production (4mrks)

(a)…………………………………………………………………………………………………..

(b)…………………………………………………………………………………………………..

(c)…………………………………………………………………………………………………

(d)…………………………………………………………………………………………………..

18. State **four** characteristics of a bonded warehouse. (4mrks)

(a)…………………………………………………………………………………………………..

(b)…………………………………………………………………………………………………..

(c)…………………………………………………………………………………………………

(d)…………………………………………………………………………………………………..

19. The average consumer price for a 20 – litre cooking oil for various years is shown in the table below.

Year	Consumer price	Consumer price index.
2000	474	100
2001	538	___
2002	625	___
2003	741	___
2004	866	___

Calculate the consumer price index using year 2000 as base year. (4mks)

20. Other than price mechanism, outline **four** methods used to determine the price of commodities in a market (4mrks)

(a)…………………………………………………………………………………………………..

(b)…………………………………………………………………………………………………..

(c)…………………………………………………………………………………………………

(d)…………………………………………………………………………………………………..

5

21. The information provided below indicates the closing balances of Wanda Wholesalers as at 31st December, 2009.

Land	430,000
Motor Vehicle	641,000
5-year ICDC loan	900,000
Bank	54,000
Stock	82,000
Accrued expenses	79,800
Creditors	120,000

Required: Using the information given above, prepare Wanda Traders General Journal.   (4mks)

22. Match the following terms with the statements below; over insurance, co-insurance premiums, policy, actuaries.

Statement	**Term applicable**
(a) The amount of money the insured Paid periodically	……………………………………..
(b) A person has insured his property For a higher value than its worth.	……………………………………..
(c) The contract document for insurance cover.	……………………………………..
(d) Several insurance companies share the burden of insuring a common property.	……………………………………..

23. State **four** reasons why the volume of exports from less developed countries to the developed countries tend to be low.   (4mrks)

(a)……………………………………………………………………………………………..

(b)……………………………………………………………………………………………..

(c)…………………………………………………………………………………………….

(d)……………………………………………………………………………………………..

6

24. Outline **four** non-monetary measures that an organization may use to motivate its employees. (4mrks)

(a)………………………………………………………………………………………………..

(b)………………………………………………………………………………………………..

(c)…………………………………………………………………………………………………

(d)………………………………………………………………………………………………..

25. The following figures relate to Westgate Company Limited as at 31st December, 2013. Use it to prepare a balance sheet as at 31st December, 2013.

Capital	sh. 50,000
2-year loan	sh. 30,000
Unpaid Salaries	sh. 15,000
Bank	sh. 25,000
Overdraft	5,000
Closing stock	sh.20, 000
Cash	sh.15, 000
Buildings	sh.32, 000
Creditors	sh.10, 000
Furniture	sh. 8,000
Machinery	sh. 10,000

7

565/2
BUSINESS STUDIES
PAPER 2
JULY/AUGUST 2014
TIME: 2 ½ HOURS

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

565/2
Business Studies
Paper 2
2 ½ Hours

INSTRUCTIONS TO CANDIDATES

- Write your **name** and **index number** on the answer booklet provided.
- This paper consists of **six** questions.
- Answer *any five questions*.
- All questions carry equal marks.

For Examiners Use Only

Question	1	2	3	4	**five**	6	TOTAL
Marks							

This paper consists of 2 printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.

Answer any five questions.

1. (a) Explain **five** importance of a business plan to an entrepreneur   (10 mks)
    (b) Explain **five** ways in which commercial banks help in facilitating business activities in a
        country   (10 mks)

2. (a) Describe **five** factors that contributes to increasing rate of inflation in Kenya today.   (10 mks)
    (b) Distinguish between public corporation and public limited company   (10mks)

3. (a) Under what **five** circumstances would an office manager replace existing machine with a
        modern one.   (10mks)
    (b) The following information relates to Mavuno Traders for the month of January 2014.
        2014

        Jan 1ˢᵗ : Bought goods on credit from Mwatate sh. 40,800 Longi sh.36,380.
            5ᵗʰ : Credited sales to Asumbi sh. 68,720 Tumo sh. 46,200
            7ᵗʰ : Returned goods to Londi sh: 4,200 Mwatate sh. 20**5**0
           12ᵗʰ : Bought goods on credit from Mawe sh. 16,**5**00.
            15ᵗʰ : Credited sales to Motomoto sh.37,100;Netto sh.7950.
            20ᵗʰ : Goods returned by Motomoto sh.1,900.
    (i)   Enter the above transactions in respective books of original entry,
    (ii)   Prepare general ledger extract.   (10mks)

4. (a)Under what **five** circumstance would a firm be located near the market for its products   (10mks)
    (b) Outline **five** factors that may lead to the shift of a demand curve from right to left.   (10mks)

5. (a) Highlight **five** advantages of government involvement in business   (10 mks)
    (b) Explain **five** reasons why businesses find it necessary to promote their products   (10mks)

6. (a) Explain factors that may lead to a rise in the level of a country's national income.   (10mks)
    (b) Kahawa Traders had the following balances as at 31ˢᵗ 03.2013

	Sh.
Capital	20,000
Sales	240,000
Purchases	90,000
Closing stock (31ˢᵗ03.2013)	70,000
7 years bank loan	30,000
General Expenses	12,000
Insurance	25000
Debtors	25,000
Cash at bank	20,000
Creditors	75,000
Cash at hand	10,000
Premises	95,000

Additional information:
Stock 1.4.2014   160,000

Calculate
(i)   Mark – up
(ii)   Margin
(iii)   Rate of stock turn – over
(iv)   Current ratio   (10 mks)

2

233/1
CHEMISTRY
PAPER 1
THEORY
TIME: 2 HOURS

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

233/1
Chemistry
Paper 1
2 Hours

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.
- Answer *all* the questions in the spaces provided.
- Mathematical table and silent electronic calculators may be used.
- All working **must** be clearly shown where necessary.

FOR EXAMINERS USE ONLY

Question	Maximum score	Candidate's score
1-29	80	

This paper consists of 11printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.

1

1. Atoms of element **X** exists as $^{14}_{6}X$ and $^{12}_{6}X$.

   (a) What name is given to the types of atoms. (1mk)

   ……….

   ……….

   (b) Draw a diagram to illustrate the atomic structure of **x**. (1mk)

   (c) Write the formula of the oxide of **x** .(Atomic number of O = 8) (1mk)

   ……

   ……

2. Describe how you would prepare a dry sample of lead (II) chloride with lead (II) carbonate. (3mks)

   ……….

   ……….

   ……….

3. What volume of 0.5M hydrochloric acid solution will neutralize 20cm^3 solution of sodium carbonate containing 5.3 of anhydrous sodium carbonate per litre of solution .
   (Na = 23.0   C = 12.0   O = 16.0   H = 1.0   Cl = 35.5) (3mks)

4. Study the equilibrium between gases **C** and **D** below:

   $C_{(g)}$ ⇌ $D_{(g)}$

   (a) Sketch the graph of the variation of the concentration of gas **D** with time. (2mks)

2

(b) Explain the shape of the curve you have drawn in 4 (a) above.   (1mk)

……………………………………………………………………………………………………….

……………………………………………………………………………………………………….

5. Give **two** reasons why dry ice (solid carbon (IV) oxide) is preferred in the preservation of perishable foodstuffs.   (2mks)

………………………………………………………………………………………………….

………………………………………………………………………………………………….

6. When 20.3g of a hydrated salt ($Y.6H_2O$) was heated to dryness,9.5 g of the anhydrous salt was obtained. Determine the relative formula mass of the hydrated salt. ($H = 1.0$ $O = 16.0$)   (3mks)

7. Study the set up below and answer the questions that follow.

Hydrogen chloride gas

Inverted funnel

Lead (II) nitrate solution
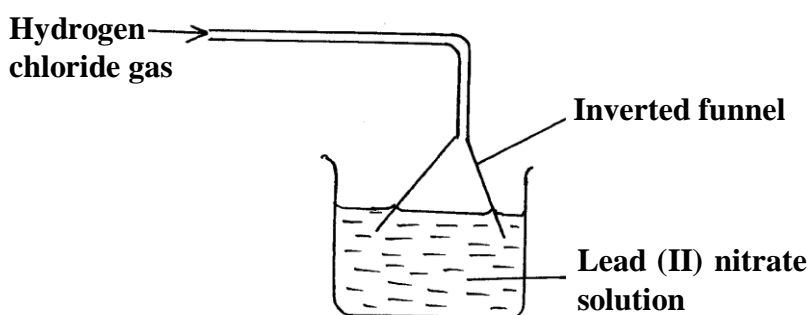
(a) Why is the gas dissolved using an inverted funnel?   (1mk)

……………………………………………………………………………………………………….

……………………………………………………………………………………………………….

(b) State and explain the observations that would be made in the beaker.   (2mks)

………………………………………………………………………………………………….

………………………………………………………………………………………………….

8. The information in the table below relates to the element in the same group of the periodic table Study it and answer the questions that follow.

Element	A	B	C
Atomic radius	0.18	0.23	0.15

Which element has the highest ionization energy?   Explain   (2mks)

……………………………………………………………………………………………………….

……………………………………………………………………………………………………….

3

9. The diagram below shows part of the structure of a polymer.

$$
-\left(\begin{array}{cccccc}
\text{H} & \text{H} & \text{H} & \text{H} & \text{H} & \text{H} \\
| & | & | & | & | & | \\
\text{C}-\text{C}-\text{C}-\text{C}-\text{C}-\text{C} \\
| & | & | & | & | & | \\
\text{H} & \text{H} & \text{H} & \text{H} & \text{H} & \text{H}
\end{array}\right)_n
$$
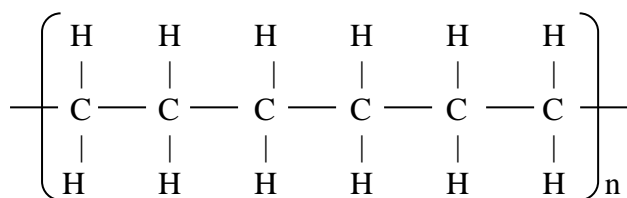
(a) Write the formula of the monomer. (1mk)

………………………………………………………………………………………………….

………………………………………………………………………………………………….

(b) If a sample of the polymer has a mass of 28125g, estimate the number of molecules of the monomer in it. (C=12.0   H = 1.0 Cl = 35.3) (2mks)

10. A solid mixture consists of substances **U** and **V**, whose solubility at 25ºC and 60ºC are shown in the table below.

Substance	Solubility at (g/100g of water)	
	25oC	60oC
U	70.00	0.02
V	63.00	82.00

Describe how you would separate **U** and **V**. (3mks)

………………………………………………………………………………………………….

………………………………………………………………………………………………….

………………………………………………………………………………………………….

11. Hydrogen sulphide gas is bubbled into two solutions of metallic nitrate as represented in the flow chart below:
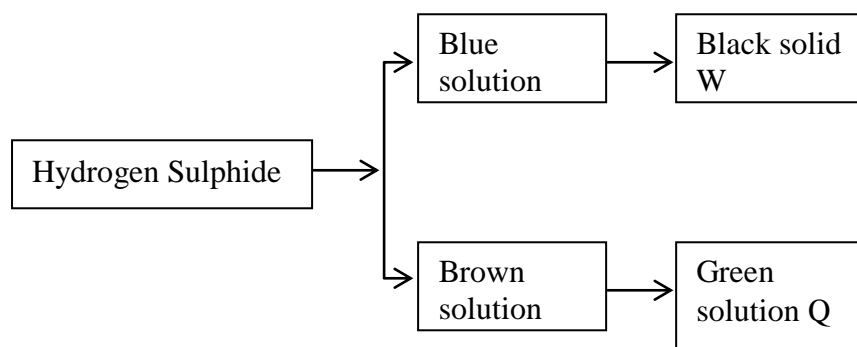
(a) Identify the cation present in:
(i) Blue solution (1mk)

………………………………………………………………………………………………….

(ii) Brown solution (1mk)

………………………………………………………………………………………………….

4

(b) Write an ionic equation for the formation of green solution Q. (1mk)

…………………………………………………………………………………………………….

12 (a) Using dots (●) and cross (x) shows the bonding in hydroxonium ion (H_3O^+)

(Atomic numbers H = 1 O = 8) (2mks)

(b) Chlorine has a very low melting and boiling points yet the atoms are joined by strong covalent bond. Explain. (1mk)

………………………………………………………………………………………………….

13. The table below gives the melting points of oxides of elements in period 3. Study it and answer the questions that follow.

Formula of oxide	Na_2O	MgO	Al_2O_3	SiO_2	P_4O_{10}	SO_3
Melting point (^oc)	1190	3080	2050	1730	560	-73

(a) Identify the compound in the above table that will dissolve in dilute hydrochloric acid and dilute sodium hydroxide. (1mk)

………………………………………………………………………………………………….

(b) Explain the difference in melting points of MgO and P_4O_{10} (2mks)

………………………………………………………………………………………………….

………………………………………………………………………………………………….

14   (a) Complete the following equations by showing the value of *x* and *y* (1mk)

$$^{32}_{16}S \; + \; ^{1}_{0}N \; \longrightarrow \; ^{x}_{y}D \; + \; ^{1}_{1}P$$

………………………………………………………………………………………………….
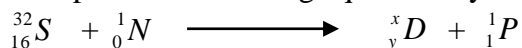
(b) Copper – 64 has half –life of 12.8days. What mass of copper – 64 will remain after 51.2 days starting with 20g of the isotope? (2mks)

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

5
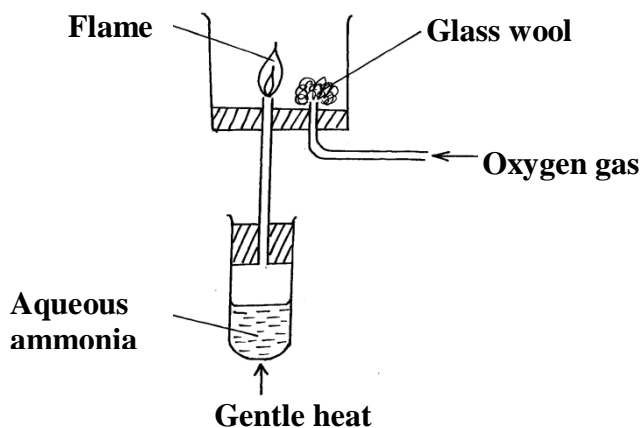
(a) Why is aqueous ammonia warmed gently ?   (1mk)

……………………………………………………………………………………………………….

(b) What is the colour of the flame?   (1mk)

……………………………………………………………………………………………………….

(c) Write an equation for the reaction that produces the flame.   (1mk)

……………………………………………………………………………………………………….

16. Use the information be low to answer the questions that follow:

$Q^{2+}_{(aq)} / Q_{(s)}$ $E^\theta = -0.76V$

$R^{2+}_{(aq)} / R_{(s)}$ $E^\theta = +0.34V$
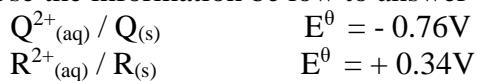
(a) Write the cell equation for the cell.   (1mk)

……………………………………………………………………………………………………….

(b) Calculate the E^θ value for the cell reaction.   (2mks)

……

……………………………………………………………………………………………………….

17. Given the following information about aqueous solutions of **y** and **x**

Aqueous solution	pH	Electrical conductivity
x	6	1.3
y	2	2.8

Explain why **y** has a higher electrical conductivity than **x**.   (2mks)

…….

…….

18. Study the flow chart below and answer the questions that follow:
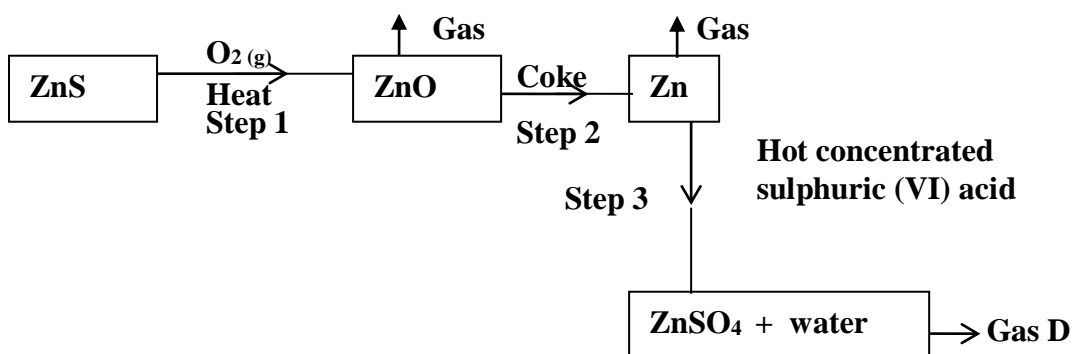
(a) State the condition necessary for the reaction in step 2 to occur   (1mk)

………

………

(b) Name:

(c) (i) Gas **D** ………………………………………………………………………….   (1mk)

    (ii) One use of zinc   …………………………………………………………..   (1mk)

19. Calcium carbonate decomposes on heating producing a gaseous product and a residue. What volume of gaseous product at s.t.p is produced from 2.5 g of the carbonate . (Ca = 40.0 C = 12.0 O = 16.0, molar gas volume at s.t.p = 22400cm³)   (2mks)

20. Study the scheme below and answer the questions that follow.

Solid S

Solid R

water

No white precipitate

Acidified Ba(NO₃)₂(aq)

Colourless solution Q

Dilute HCl(aq)

Excess NH₃(aq)

Excess NaOH(aq)

White precipitate insoluble in excess

White precipitate
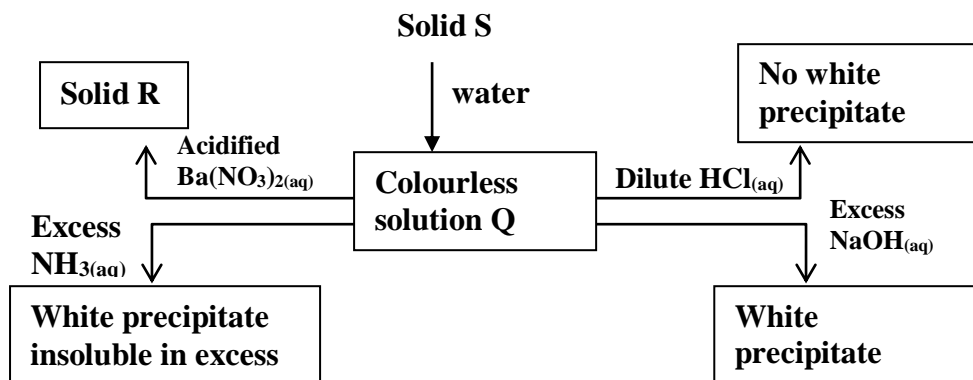
(a) Identify solution **Q** and solid **R**

   (i)   Solution **Q** …………………………………………………….....   (1mk)

   (ii)   Solid **R** …………………………………………………………   (1mk)

(b) Write an ionic equation for the reaction between solution **Q** and excess aqueous ammonia. (1mk)
   …………………………………………………………………………………………………….

21. Name the process which takes place when:
   (a) Iodine changes directly form solid to gas.   (1mk)
   …………………………………………………………………………………………………….
   (b) $Fe^{2+}_{(aq)}$ changes to $Fe^{3+}_{(aq)}$ (1mk)
   …………………………………………………………………………………………………….
   (c) White sugar changes to black solid when mixed with excess concentrated sulphuric (VI) acid. (1mk)
   …………………………………………………………………………………………………….

22. The equations below shows the molar enthalpies of combustion of carbon, hydrogen and methane.

   $C_{(s)} + O_{2\ (g)} \longrightarrow CO_{2(g)}$ $\Delta Hc = - 393.5\ KJmole^{-1}$

   $H_2 + ½\ O_{2\ (g)} \longrightarrow H_2O_{(l)}$ $\Delta Hc = - 393.5\ KJmole^{-1}$

   $CH_{4(g)} + O_{2(g)} \longrightarrow CO_{2(g)} + H_2O_{(g)}$ $\Delta Hc = - 393.5\ KJmole^{-1}$
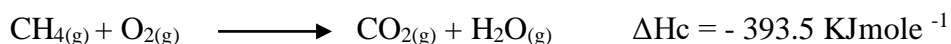
   Use an energy cycle diagram to calculate the heat of formation of methane.   (3mks)

23. In an experiment, soap solution was added to three separate sample of water. The table below shows the volumes of soap solution required to from lather, with 100cm³ of each sample of water before and after boiling.

	Sample I	Sample II	Sample III
Volume of soap before water is boiled (cm³)	27.0	3.0	10.6
Volume of soap after water is boiled(cm³)	27.0	3.0	3.0

(a) Which water is likely to be soft water? Explain   (2mks)

…………………………………………………………………………………………….

…………………………………………………………………………………………….

(b) Explain the change in the volume of soap solution used in sample III   (1mk)

…………………………………………………………………………………………….

24. 60cm³ of sulphur (IV) oxide diffuses through a porous pot in 4seconds. How long would it take 100cm³ of oxygen gas to diffuse through the same pot under the same conditions? (S = 32.0 O = 16.0)   (3mks)

25. Study the diagram below and answer the questions that follow:

Z ⟶ [   ] ⟶ Bleaching powder

↑
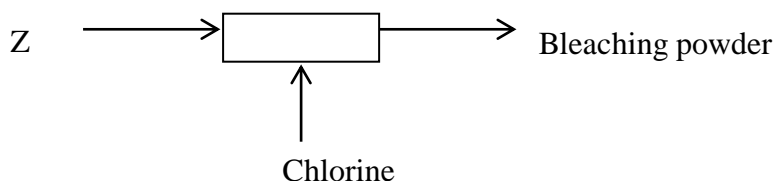
Chlorine

(a) Name substance **Z**   (1mk)

…………………………………………………………………………………………….

(b) Write an equation for the reaction between substance Z and chlorine gas.   (1mk)

…………………………………………………………………………………………….

26.   Ethene and ethyne are unsaturated hydrocarbons.
(a) Explain what is meant by unstauration in hydrocarbons   (1mk)

…………………………………………………………………………………………….

(b) Explain how you would distinguish between ethyne and ethane.   (2mks)

…………………………………………………………………………………………….

27. Nitrogen (IV) oxide gas can be obtained by thermal decomposition of lead (II) nitrate crystals.
(a) Write an equation for the thermal decomposition of lead (II) nitrate crystals.   (1mk)

…………………………………………………………………………………………….

(b) Explain how nitrogen (IV) oxide can be separated from the mixture of gases liberated.   (2mks)

…………………………………………………………………………………………….

…………………………………………………………………………………………….

28. (a) Name **two** allotropes of carbon.   (1mk)

…………………………………………………………………………………………….

…………………………………………………………………………………………….

8

(c) Give **two** reasons why carbon (IV) oxide can be used to extinguish fires. (2mks)

………………………………………………………………………………………………….

………………………………………………………………………………………………….

29. Name the apparatus below. (1mk)

……………………………………………………………………………………………………….

……………………………………………………………………………………………………….

9
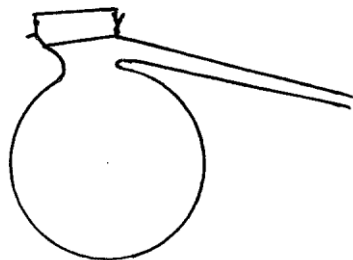
233/2
CHEMISTRY
PAPER 2
(THEORY)
TIME: 2 HOURS

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

233/2
Chemistry
Paper 2
2 hours

INSTRUCTIONS TO CANDIDATES

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

FOR EXAMINERS USE ONLY

Question	Maximum score	Candidate's score
1	13	
2	12	
3	15	
4	12	
5	08	
6	10	
7	10	
Total score	**80**	

This paper consists of 10 printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.

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

				Q				
O						R	S	
T							U	
V							Z	

(i) Which element will require the least amount of energy to remove one of the outermost electrons. (1mk)

…….

(ii) Select the most reactive non-metal   (1mk)

…….

(iii)   Which of the elements has the greatest tendency of forming covalent compounds? Explain   (2mks)

…….

…….

(iv)   What name is given to the family of elements to which elements **O,T** and **U** belong?

…….

(v) An element W has atomic number 15 .Indicate the position of **W** on the grid .   (1mk)

…….

(vi)   Explain why the atomic radius of **S** is smaller than that of **R**   (2mks)

…….

(vii)   Explain why the atomic radius of **Z** is smaller than its ionic radius.   (1mk)

…….

(b) Study the information given in the table below and answer question that follow.

Formular of compound	NaCl	MgCl$_2$	AlCl$_3$	SiCl$_4$	PCl$_5$	SCl$_2$
Boiling point ºC	1470	1420	Sublimes at 180ºC	60	75	60
Melting point ºC	800	710		-70	-90	-80

(i)   Give **two** chlorides that are liquids at room temperature. Give a reasons for your answer.   (2mks)

…….

…….

(ii)   Give a possible reason why AlCl$_3$ has much lower boiling point that MgCl$_2$ although both Aluminium and Magnesium are metals.   (2mks)

…….

………………………………………………………………………………………………………

2

2. A student set-up the following apparatus to prepare carbon (II) oxide from charcoal in the laboratory.
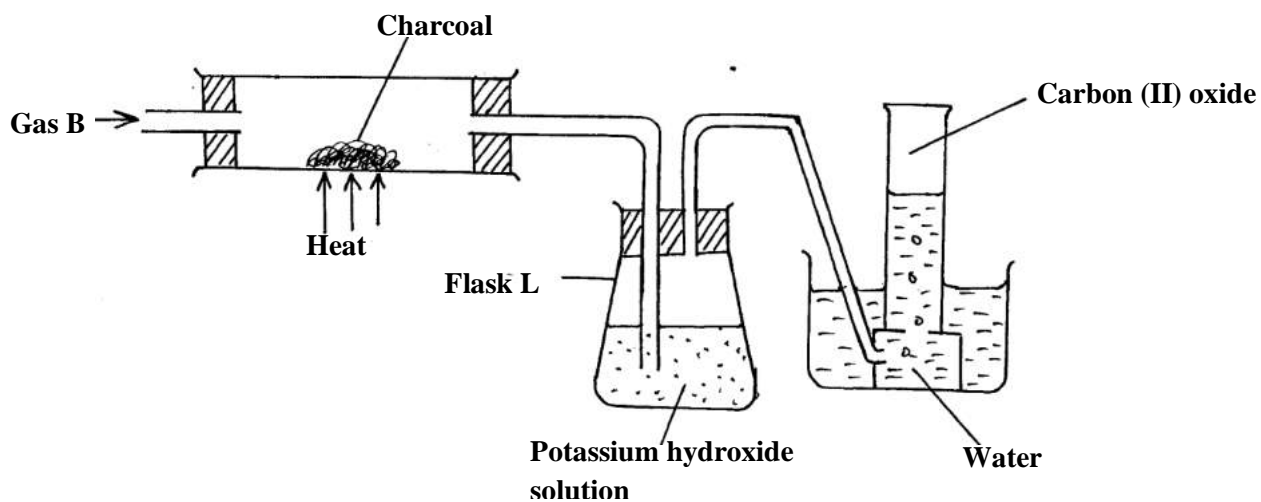
(a) (i)   State the purpose of potassium hydroxide solution.   (1mk)

    …………………………………………………………………………………………………….

    (ii)   Name **two** substances that react together to produce gas B   (1mk)

    …………………………………………………………………………………………………….

(b) Write balanced equations for reactions in:
    (i)   Combustion tube   (1mk)

    …………………………………………………………………………………………………

    (ii)   Flask **L**   (1mk)

    …………………………………………………………………………………………………….

(c) Describe **two** simple tests that you would use to distinguish between carbon (IV) oxide and carbon (II) oxide   (2mk s)

    …………………………………………………………………………………………………….
    …………………………………………………………………………………………………….

(d) In another experiment, the student reacted charcoal with excess concentrated nitric (v) acid.
    (i)   State **two** observations made: (1mk)

    …………………………………………………………………………………………………
    …………………………………………………………………………………………………….

    (ii)   Write balanced equation for the reaction   (1mk)

    …………………………………………………………………………………………………
    …………………………………………………………………………………………………….

(e) Carbon (II) oxide can also be prepared in the laboratory by reacting thanedioc acid and another substance.
    (i) Name this substance and its role in this reaction   (2mks)

    …………………………………………………………………………………………………….
    …………………………………………………………………………………………………….

    (ii) State **two** uses of carbon (II) oxide   (2mks)

    …………………………………………………………………………………………………….

3

....

3. Use the standard electrode potential for the elements **A,B,C** and **D** given below to answer the questions that follow. The letters do not represent the actual symbols of the elements.

$$\underline{E^\theta \text{ (volts)}}$$

$$A^{+2}_{(aq)} + 2e- \longrightarrow A_{(s)} \qquad -0.76$$
$$B^{+2}_{(aq)} + 2e- \longrightarrow B_{(s)} \qquad -0.44$$
$$C_{2(g)} + 2e- \longrightarrow 2C^-_{(aq)} \qquad +0.54$$
$$D^{+4}_{(aq)} + e- \longrightarrow D^{+3}_{(aq)} \qquad +1.61$$

a) Which element is the:
   (i) Strongest oxidizing agent. (1mk)

   ....

   (ii) Strongest reducing agent (1mk)

   ....

b) (i) Draw a labeled diagram of the electro chemical cell that would be obtained when half cell of element A and B are combined. (3mks)

   ....
   ....

   (ii) Calculate the E^θ value of the electrochemical cell constructed in 3b(i) above (1mk)

   ....
   ....

   (iii) Which two elements if used together in a cell would produce the largest e.m.f (1mk)

   ....
   ....

c) Calculate the number of faradays required to completely reduce 0.1 mole of Fe^{+3} to Fe (2mks)

d) One of the major application of electrolysis is electroplating .In chromium plating the steel article is usually plated first with nickel or copper then chromium in a plating bath which contain chromium compounds in sulphuric (VI) acid and water. Chromium deposits on the article.
   (i) Give a reason why steel parts are chromium plated. (1mk)

   ....
   ....

4

(ii) Why is it necessary for the steel to be mated first with nickel or copper before chromium is applied? (1mk)

…….

…….

(iii) Give an ionic equation for the process responsible for chromium plating (1mk)

…….

…….

(iv) If an electrical current of 4.5 amperes is passed through the chromium plating for 20hours, what would be the steel article? Cr = 52.0, 1 faraday = 96,500 coulombs) (3mks)

…….

…….

…….

…….

4 Study the flow chart below and answer questions that follow:
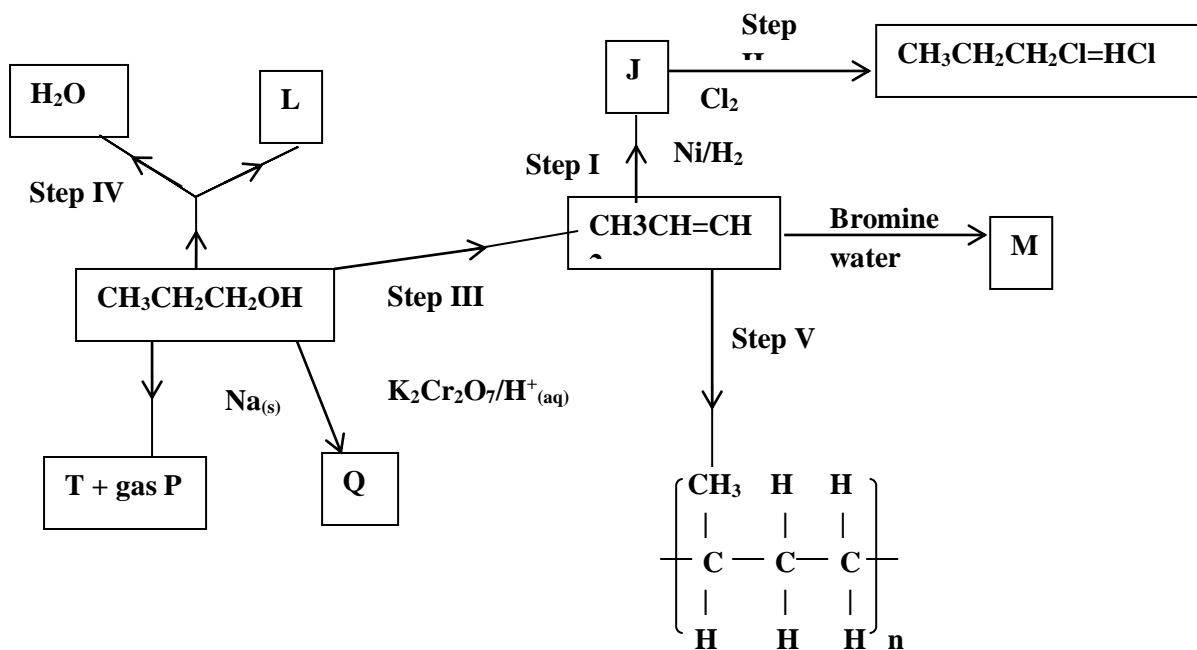
a) Name substance J and draw its structural formula (2mks)

Name : …………………………………………………………………..

Structural formula:…………………………………………………………

b) What reagents and conditions are necessary for: (2mks)
   (I) Step III
   Reagent………………………………………………………………………………………..
   Condition:…………………………………………………………………………………..
   (II) Step II
   Condition……………………………………………………………………………………….

5

c) Name the following:

    (i)   **L**: ……………………………………………………………   (1mk)

    (ii)   Gas **P**: …………………………………………………   (1mk)

    (iii)   **Q** ……………………………………………………………   (1mk)

    (iv)   **M**……………………………………………………..   (1mk)

d) Write the equation of the reaction that occur in step IV   (1mk)

…….

e) Give the name of Process in step **V**   (1mk)

…….

f) If the relative molecular mass of R is 21,000, determine the value of n. (C= 12.0, H = 1.0)   (2mks)

…….

…….

5. A student set-up the apparatus shown below in order to determine the percentage by volume of oxygen in the air. Study it and answer the questions that follow.
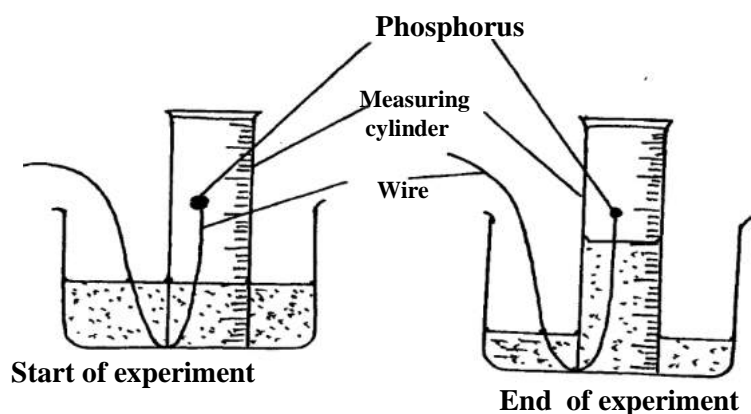
a) (i) State one observations made in the measuring cylinder at the start of the experiment. Explain (2mks)

…….

…….

    (ii)   The pH of the contents of the beaker at the end of the experiment was found to be 4. Explain the observation.   (2mks)

…….

…….

    (iii)   The volume of air in the measuring cylinder at the end f the experiment was measured study the data given below and answer the questions that follow.

        Volume of air at start of the experiment = 30.65 cm^3

        Volume of air at the end of the experiment = 24.28 cm^3

        Determine the percentage volume of oxygen in the air.   (1mk)

b) State and explain the observation made when a mixture of magnesium powder and copper (II) oxide is heated in a crucible (2mks)

………………………………………………………………………………………………….

………………………………………………………………………………………………….

c) State **two** air pollutants produced by motor vehicles. (1mk)

………………………………………………………………………………………………….

………………………………………………………………………………………………….

6. (a) The results below were obtained in an experiment conducted by form 3 students from Ratansi secondary School using magnesium

Mass of the crucible + Lid = 19.52g

Mass of the crucible + Lid + magnesium ribbon = 20.36g

Mass of the crucible + Lid + magnesium oxide = 20.92g

(i) Use the results to find the percentage mass of magnesium and oxygen in magnesium oxide. (2mks)

………………………………………………………………………………………………….

………………………………………………………………………………………………….

(ii) Determine the empirical formula of magnesium oxide. (Mg = 24.0, O = 16.0) (2mks)

b) Sodium hydroxide pellet were accidentally mixed with sodium chloride, 8.8g of the mixture were dissolved in water to make one litre of solution. $50cm^3$ of the solution was neutralized by $20.0cm^3$ of 0.25M sulphuric (VI) acid.

(i) Write an equation for the reaction that took place. (1mk)

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(ii) calculate the:

I. Number of moles of the substance that reacted with sulphuric (VI) acid (2mks)

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………………………………………………………………………………………………….

II. Number of moles of the substance that would react with sulphuric (VI) acid in the one litre solution (1mk)

………………………………………………………………………………………………….

………………………………………………………………………………………………….

(iii) The percentage of sodium chloride in the mixture. (2mks)

….……………………………………………………………………………………………….

………………………………………………………………………………………………….

7. (a) Use the bond energies given in the table below to calculate the enthalpy change for the reaction

$C_2H_{6(g)} + Br_{2(g)} \longrightarrow C_2H_5Br_{(g)} + HBr_{(g)}$
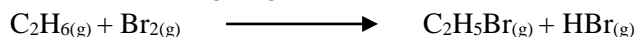
Bond	C – H	C – Br	Br – Br	H – Br
Bond energy KJ/mol	413	280	193	365

(b) On the space provided below, sketch the cooling curve that would be obtained when a boiling tube containing water at 80°C is immersed in a freezing mixture maintained at – 10°C   (2mks)

(c) Butane C_4H_{10} cannot be prepared directly from its elements but its standard heat of formation (ΔH_f^{θ}),

can be obtained indirectly.
The following heats of combustion are given

ΔH_C^{θ} (Carbon) = - 393 kJ/mol

ΔH_C^{θ} (Hydrogen) = - 286 kJ/mol

ΔH_C^{θ} (Butane) = - 2877 kJ/mol

(i) Draw an energy cycle diagram linking the heat of formation of butane with its heat of combustion and the heat of combustion of its constituents elements.   (2mks)

(ii) Calculate the heat of formation of butane ΔH_f^{θ} (C_4H_{10})   (2mks)

d) Given that the lattice enthalpy of potassium chloride is + 690 kJ/mol and hydration enthalpies of K^+ and Cl^- are -322kJ and – 364kJ respectively. Calculate the enthalpy of solution of potassium chloride.   (2mks)

233/3
CHEMISTRY
PAPER 3
PRACTICAL
TIME: 2 ¼ HOURS

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

233/3
Chemistry
Paper 3
2 ¼ Hours

INSTRUCTIONS TO CANDIDATES

- Write your **name** and **index number** in the spaces provided.
- **Sign** and write the **date** of examination in the spaces provided.
- Answer *all* the questions in the spaces provided in the question paper.
- You are not allowed to start working with the apparatus for the first 15 minutes of the 2 ¼ hours allowed for this paper. This time is to enable you to read the question paper and make sure you have all the chemicals and apparatus you need.
- All working **must** be clearly shown where necessary.
- Mathematical tables and electronic calculators may be used.

For examiners use only

Question	Maximum Score	Candidate's Score
1	19	
2	15	
3	06	
Total	40	

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

1

Question 1 (20marks)

You are provided with;
- Solid **A** in a boiling tube
- Solution **B**, sodium hydroxide
- 0.125M.monobasic acid, solution **C**

You are required to;
(i)   Determine molarity of solution **B**
(ii)   Determine solubility of solid **A**

Procedure I
(i)   Using a measuring cylinder ,place 50cm^3 of solution **B** into an empty 250ml beaker. Add 100cm^3 of distilled water to the solution. Labe this solution as solution **D**.
(ii)   Fill the burette with solution **C**
(iii)   Using pipette filler, place 25cm^3 of solution d into a 250ml conical flask. Add two drops of phenolphathatlein indicator.
(iv)   Titrate solution **D** with solution **C**
(v)   Record your results in table 1 . repeat the titration two more times and complete table 1.

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

(4mks)

(a) (i) Calculate average volume of solution **C** used. (1mk)

(ii)   Calculate moles of solution **C** used in the experiment. (1mk)

(iii)   Calculate moles of solution **D** used. (1mk)

(iv)   Calculate molarity of solution **D** (1mk)

(v)   Calculate molarity of solution **B**. (2mks)

2

Procedure II

(i)   Using measuring   cylinder add 20cm^3 of distilled water to solid **A** in the boiling tube. Suing a glass rod, stir the mixture thoroughly for about three minutes.

(ii)   Filter the mixture obtained into a dry 250ml volumetric flask. Label the filtrate solution **A**.

(iii)   Clean the burette and fill it with solution **A**.

(iv)   Using a pipette and pipette filler, place 25cm^3 of solution **D** into a 250ml conical flask . Add two drops of phenolphthalein indicator.

(v)   Titrate solution **D** with solution **A**. record your results in table 2

(vi)   Repeat the titration two more times and complete table 2.

Table 2

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

(4mks)

(b) Calculate;

(i)   Average volume of solution **A** used   (1mk)

(ii)   Moles of solution **D** used   (1mk)

(iii)   Moles of solution **A** used given that 2 moles of solution A requires 1 mole o f solution **D** for complete neutralization   (1mk)

(iv)   Solubility o solid A given that density of the solution formed is 1g/cm^3 and RFM of **A** = 126.
                                                                                               (2mks)

2 You are provided with solid **D**. perform the following test and write the observations and inferences.

(a) Place solid **D** into a boiling tube and add 10cm3 of distilled water. Shake the boiling tube and filter. Keep the residue for test (b). Divide the filtrate into four portions.

Observation	Inferences
(1mk)	(1mk)

(i)   To the first portion, add sodium hydroxide dropwise until in excess.

Observation	Inferences

3

(1mk)	(1mk)

(ii)   To the second portion, add ammonioa solution dropwise until in excess.

Observation	Inferences
(1mk)	(1mk)

(iii) To the third portion, add a few drops of Lead(II) nitrate solution

Observation	Inferences
(½ mk)	(½ mk)

(iv) To the fourth portion, add a few drops of barium nitration solution followed by dilute nitric (v) acid.

Observation	Inferences
(1 mk)	(1mk)

(b) Place the residue into attest tube and add $10cm^3$ of dilute nitric (v) acid and shake until the solid dissolves.

Observation	Inferences
(½ mk)	(½ mk)

(i)   To the first portion, add sodium hydroxide dropwise until in excess.

Observation	Inferences
(1 mk)	(1mk)

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

Observation	Inferences
(1 mk)	(1mk)

4

(iii)   To the third portion, add a few drops of sodium sulphate solution.

Observation	Inferences
(½ mk)	(½ mk)

3.   You are provided with solid L . Carry out the tests below and record your observation and inferences in the space provided.

(a) Heat half spatula of solid L in a non-luminous flame of aBunsen burner.

Observation	Inferences
(1 mk)	(1mk)

(b) Add 5cm^3 of distilled to the remaining solid L and shale well. Divide the solution into two portion.
(i) To the first portion, add a few drops of acidified potassium manganate (VII) and warm

Observation	Inferences
(1 mk)	(1mk)

(ii)   To the second portion, add a quarter spatula and fill of sodium hydrogen carbonate.

Observation	Inferences
(1 mk)	(1mk)

5

313/1
CHRISTIAN RELIGIOUS EDUCATION
PAPER 1
TIME: 2 ½ HOURS

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

313/1
C.R.E
Paper 1
2 ½ Hours

INSTRUCTIONS TO CANDIDATES

- Write your **name** and **index number** in the booklet provided.
- The paper consists of **six** questions , answer **only 5** questions.
- All answers **must** be in the booklet provided.
- Each questions totals to 20 marks.

For Examiners Use Only

Question	Maximum score	Candidate's score
1	20	
2	20	
3	20	
4	20	
5	20	
6	20	
Total score		

This paper consists of 2 printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.

1. (a) Describe the second account of creation as given in *Genesis 2 : 4b – 25*   (8mks)

   (b) Outline the **six** ways God's love for human beings is manifested after the fall of human

   Kind   (6mks)

   (c) Identify **six** ways used by the church to fight evil today.   (6mks)

2. (a) Describe the making of the Sinai covenant *Ex. 24: 1-8*   (8mks)

   (b) Give **seven** conditions given to the Israelites during the renewal of the Sinai covenant   (7mks)

   (c) Give **five** reasons why Christians repent toady.   (5mks)

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

   (b) State **seven** failures of King Solomon.   (7mks)

   (c) Identify **six** factors that hinder political leaders from performing their roles effectively (6mks)

4. (a) Explain **seven** ways in which prophets of God were important in life of the nation of

   Israel.   (6mks)

   (b) Explain the teachings of Amos on the day of the Lord.   (8mks)

   (c) State **six** factors that lead people away from the worship of God in modern society.   (6mks)

5. (a) Describe personal life of prophet Jeremiah.   (7mks)

   (b) State the contents of Jeremiah's letter to the exiles.   (7mks)

   (c) How can Christians avoid God's Judgement and punisment.   (6mks)

6. (a) Describe the Traditional African understanding of the meaning and wholeness of life.   (6mks)

   (b) Explain **four** reasons why disputes over ownership of property was rare in the Traditional

   African Communities.

   (c) Give **six** moral values that contributes to harmonious living in the Traditional African

   Community.

313/2
CHRISTIAN RELIGIOUS EDUCATION
PAPER 2
TIME: 2 ½ HOURS

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

313/2
C.R.E
Paper 2
2 ½ Hours

INSTRUCTIONS TO CANDIDATES

- Write your **name** and **index number** in the booklet provided.
- The paper consists of **six** questions , answer **only 5** questions.
- All answers **must** be in the booklet provided.
- Each questions totals to 20 marks.

For Examiners Use Only

Question	Maximum score	Candidate's score
1	20	
2	20	
3	20	
4	20	
5	20	
6	20	
Total score		

This paper consists of 2 printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.

1. (a) Outline Nathan's prophecy about the messiah (7mks)
   (b) Describe the role of John the Baptist as a for runner of Jesus. (7mks)
   (c) Give **six** reasons why Christians find it difficult to apply Johns teachings in their lives today. (6mks)

2. (a) Describe the raising of Jairus daughter *lk 8 40 – 56* (8mks)
   (b) State **seven** reactions of the people towards the miracles of Jesus. (7mks)
   (c) How does the church continue with the healing ministry of Jesus. (5mks)

3. (a) Explain the teachings of Jesus about eschatology as recorded in lukes gospel (7mks)
   (b) Outline **seven** ways in which Jesus gives hope to Christians . (7mks)
   (c) Highlight **six** ways on how Christians should prepare themselves for the second coming
       of Jesus Christ. (6mks)

4. (a) State five symbolic expressions used in teaching unity of believers. (5mks)
   (b) How did the church in the new testament demonstrate unity. (8mks)
   (c) State **seven** ways in which Christians can promote unity in the church today. (7mks)

5. (a) Outline **five** basis of Christian Ethics. (5mks)
   (b) Explain **four** reasons why some Christians choose to live a celibate life. (8mks)
   (c) Give **seven** reasons why some marriages are not formalized in Kenya today. (7mks)

6. (a) Give **six** reasons why it is important to have laws in a country. (6mks)
   (b) Explain the Christian teaching on work. (8mks)
   (c) How is the church helping to reduce the rate of crime in Kenya today. (6mks)

2

101/1
ENGLISH
PAPER 1
Time: 2 ½ HOURS

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

101/1
ENGLISH
Paper 1
2 ½ Hours

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.
- Answer *all* the questions in the spaces provided.
- All working **must** be clearly shown where necessary.

For Examiners Use Only

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

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

FUNCTIONAL WRITING (20MKS)

1. Bidii investment Company would like to employ John Onyango as storekeeper after a successful interview. Write a confidential report about him and send it by e-mail to the personal manger of the above company.

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2.   **CLOZE TEST (10MKS)**

Read the passage below and fill in the blanks with the most appropriate word.
One can (1)_____ wonder why there should be two (2)_____ in the same location. Of (3)_____ it would be naïve to expect retrenchment (4)_____ the political and social (5)_____. A good (6)_____ would be to (7)_____ the people from the provincial (8)_____ into the county governments. County government can (9)_____ the terms of service for the current(10)_____of chiefs.

(the standard March 12, 2014)

3.   **ORAL SKILLS (30MKS)**
(a) Read the poem below and answer questions that follow(18mks)
   THE CROW
   Crows on the wing!
   What grace as they swim
   Rising and diving
   Like fish in the billows
   In the willowy air
   Or softly as feathers
    Fran broken- pillows.

   Crows on the wing.
   What a symphony sings
   The wind in their wings
   As they swoop as the rise
   To the sea; to the skies
   As they float in the light
   Air ,like fragments of night.

(Barnabas J. Ramon Fortune)

Questions

(a) Describe the rhyme schemes of the poem.   (2mks)

…….
…….
i.   Apart from rhyme, identify **three** sound patterns evident in the poem.   (3mks)

…….
…….
…….
……

4

ii. Which words would you stress in the first two lines of the poem and why?   (3mks)

………………………………………………………………………………………………….
………………………………………………………………………………………………….
………………………………………………………………………………………………….
………………………………………………………………………………………………….

iii. How would you perform line (ii) of this poem?   (3mks)

………………………………………………………………………………………………….
………………………………………………………………………………………………….
………………………………………………………………………………………………….
………………………………………………………………………………………………….

iv. Imagine you are on stage performing this poem and you suffer from stage fright, how would you over come it?   (4mks)

………………………………………………………………………………………………….
………………………………………………………………………………………………….
………………………………………………………………………………………………….
………………………………………………………………………………………………….

v. For the following words from the given poem, identify another that is similar in pronunciation.

(3mks)

    (a)   Air   …………………………………………………………

    (b)   Sea   …………………………………………………………

    (c)   Night   ………………………………………………………….

(b) With a reason, say whether or not courteous language has been used in the following dialogue.

(3mks)

John :   *(greeting Hillary)* excuse me please?

Hillary : Yes

John   Would you kindly direct me to the Deputy president's office

Hillary: By all means. It is next to that building.

John   What building, Please?

Hillary: Oh, sorry for may lack of manners. That tall building just ahead of you on your right is Harambee House. The next building to it is painted in orange colours is BP House and that is where the Deputy Presidents office are.

John: *(with a smile and handshake)* Thank you so much for your help.

Hillary   (nodding) you are welcome.

(c) Read the proverb below and answer the questions that follow.   (4mks)
   "Slipperiness knows no King"
   (i)   Classify the above proverb.   (1mk)

……………………………………………………………………………………………………….
……………………………………………………………………………………………………….
   (ii)   What type of audience is the proverb suitable for   (1mk)

……………………………………………………………………………………………………….
……………………………………………………………………………………………………….

   (iii)   What is the social set up of the community from which this proverb is derived.   (2mks)

……………………………………………………………………………………………………….
……………………………………………………………………………………………………….

(d) Read the telephone conversation below and fill in the blanks.

   Secretary : Hallo! Jaribuni Secondary school. How may I help you.

   Student: ……………………………………………………………..   (2mks)

   Secretary: I a sorry the principal is away. Would you leave a message.
   Student :……………………………………………………………..   (2mks)

   Secretary: The KCSE results for the 2013 candidates are already here in school and
                    you can come and collect them after clearing with the relevant departments.

   Students …………………………………………………………….   (1mk)

101/2
ENGLISH
PAPER 2
TIME: 2 ½ HOURS

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

101/2
ENGLISH
Paper 2
2 ½ Hours

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.
- Answer *all* the questions in the spaces provided.
- All working **must** be clearly shown where necessary.

For Examiners Use Only

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

This paper consists of 10 printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.

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

As we stand, the HIV/Aids pandemic is on the rampage; ravaging the young and the old alike. It is time for people to decide for themselves what is good and what is not. And the earlier they do this the better.

The youth , for instance, can rise up with the message of hope and assure everybody that it is possible for a remnant to remain by just abstaining from premarital sex. And how will they abstain if everywhere they look images of sex stare at them, **beckoning alluringly**?

The thing to remember is that it is their responsibility to censor the stuff that gets into their minds because this will definitely affect the kind of decisions and lifestyle they adopt. Before reading a pornographic book or magazine, they should pause and ask themselves, " Do I hope to become better after reading this?" the same consideration should be made before watching certain movies and listening to offensive music. Guarding one's mind against trash requires laying down very clear principles. Discipline is imperative,

For young people , it is important to choose friends wisely. They should determine what they will be doing when they come together. If a friend is not building them up, or is causing them undue pressure, they should shun him or her. This pressure often takes the form of making those who choose to abstain from pre-marital or illicit sex inadequate.

Avoiding idleness is equally important. The wise say an idle mind is the devil's workshop. The solution is to get busy with constructive activities be they academic, economic, physical or spiritual. Trying out new hobbies such as gardening playing football, swimming, basket weaving, baking and volunteer work is a step in the right direction.

Parents must also take full responsibility of bringing up their children. They are the first counselors of their children especially in the formative stages. Unless they do something in good time, they will cry alone when the disaster of teenage pregnancies, abortion and HIV/Aids happens right under their own roofs. The onus is upon them to freely discuss issues of sexuality with their children.

Teachers too have a very crucial role to play in the lives of their students. The youth spend a bigger percentage of their waking moments with their teachers. The teachers not only equip them with academic knowledge but also with the right attitudes and behavior. And it is a good thing that sex education has been introduced in the school curriculum. Studies by AMREF have shown that, contrary to popular belief, sex education does not promote promiscuity. Rather it enlightens its recipients health issues.

Moreover, places of worship must pitch in with their contributions. They are in an excellent position of imparting the correct moral values to their **adherents**. Besides, they can provide social and religious activities that will build the youth up spiritually and mentally.

Finally, it is **incumbent upon** the government to put in place legislation governing what the citizens, especially the youth, are exposed to in the form of print or electronic media.

In conclusion, the future generation is keenly watching us to see if we will wreck or salvage the boat of their survival. Every member of our society has a part to play in enhancing morality. It is only by doing this that we can hope to check the **onslaught** of HIV/Aids.

2

Questions

1. Why is there need to make a decision soon? (2mks)

    …….

    …….

2. Rewrite the following sentence in the past:

    The youth , for instance, can rise up with the message of hope and assure everybody that it is possible for a remnant to remain by just abstaining from premarital sex. (1mk)

    …….

    …….

3. What is pornography and how do you think it influences one's behavior. (3mks)

    …….

    …….

    …….

4. Rewrite the following sentence in indirect speech

    They should pause and ask themselves, " Do I hope to become better after reading this?"

    …….

    …….

5. Which words does the author use to show displeasure with some kinds of films and music? (2mks)

    …….

    …….

6. What sort of friend does the author appear to recommend? (2mks)

    …….

    …….

7. In note from, give evidence to show that every member of society has role to play in enhancing morality. (5mks)

    …….

    …….

    …….

    …….

    …….

2. ***Read the following extract and answer the questions that follow:***

"Mother, I have decided to seek the new religion which you have heard about. You know my life is a painful wound to me and much as I try my heart fills with bitterness- for me and for you".

" My child, do not feel bitterness for me for I am an old woman who has lived her life. As for you it is better that you seek this new way. It might give you hope and rescue you from bitterness. Bitterness is poison to the spirit for it breeds nothing but vipers some of which might consume your very self. Pain and sorrow all human being feel; but bitterness drops on the spirit like aloes- causing it to wither. I give you my blessing my child. If you are walking along and you find your path leading nowhere, then it is only wise to try some other path."

" Thank you mother. I will bring you news as soon as I can. May Were protect you."

Questions.

(i) Place the above extract to its immediate context. (6mks)

……….

……….

……….

……….

(ii) "You know my life is painful wound." What made Nyabera regard her life as a painful wound? (4mks)

……….

……….

……….

……….

(iii) In what way was Nyabera's life similar to that of Akoko according to the rest of the novel. (3mks)

……….

……….

……….

(iv) Identify and illustrate one characters trait of Akoko and Nyabera as brought out in this extract.

    (i)   Akoko (2mks)

……….

……….

    (ii)   Nyabera (2mks)

……….

……….

(v) Identify **two** features of style used in this extract (4mks)

………

………

(vi) Pain and sorrow all human being feel. Rewrite this sentences making "human" the subject of the sentence. (1mk)

……….

(vii) Briefly explain **one** theme that is brought out in this extract. (2mks)

……….

……….

3. ORAL LITERATURE

Read the following story and answer the questions that follow.

One day elephant came across squirrel on the path to the river. The proud and lordly elephant swept squirrel of the path with his trunk, rumbling," out of my way, you of no importance and tiny size."

Squirrel was most offended, as he had every right to be. Stamping his little feet in a rage, he decided that he was going to try and teach Elephant some manners.

4

"Ho!" shouted Squirrel indignantly, " you may be very tall, any you may be very proud and I bet you think you're the greatest animal on earth, but you are much mistaken!"

Elephant looked around in surprise. " I an not mistaken, Squirrel," he rumbled, " I am the greatest, and everyone know it."

"Let me tell you something, Elephant," said Squirrel, chitterling angrily and flicking his tail, " I may be small, but I can eat ten times as much as you! I challenge you to an eating contest and I bet you that I, Squirrel can eat more palm nuts, and for longer time, than you, high and mighty Elephant!".

Elephant roared with laughter. He was so amused, in fact that he accepted creature's challenge. Besides, he was rather fond of palm nuts.

So both animals collected a huge pile of palm nuts and agreed to start the contest the very next morning at the first light. Elephant could hardly wait. He even skipped his evening meal of acacia pods so as to be truly empty for the morning. He intended to put Squirrel firmly in his place, once and for all.

The next dawned fine and sunny, as it often does in Africa, and the two contestant started to eat. Elephant munched steadily through his pile, with fine appetite. Squirrel nibbling away furiously, was soon full to bursting. Quietly, he slipped away, sending a cousin who was hiding nearby to take his place. Elephant was so absorbed in his greedy task that he didn't even notice. Brothers, sisters, Cousins, uncles, aunts, -one hungry Squirrel after another took a turn at the pile of palm nuts.

Eventually, at midday, Elephant looked up, "Well, Squirrel, have you had enough yet?" he asked, surprised to see his small adversary still busy eating. Not only was he stil eating, but his pile of palm nuts was disappearing almost as fast as Elephant's own.
"Not yet", rumbled Squirrel, his mouth full' " and you? " "Never!" replied Elephant scornfully. And he started to eat a little faster. By the time the sun was setting, elephant was so full he could hardly stand. He looked over to where Squirrel (the original Squirrel, who had come back after a day of sleeping in a nearby tree) was still eating more palm nuts. Elephant groaned.

"Truly you are amazing, Squirrel" he said." I cannot go on, and I'm forced to admit that you have won the contest." And he lifted his trunk in salute. Squirrel hopping with delight, thanked elephant and told him not to be so proud in future, and from that day to this, Elephant has always shown great respect for squirrel.

Questions
(a) Classify this narrative. (2mks)
……….
……….
(b) Give **four** features that show that his is an oral narrative. (8mks)
……….
……….
……….
……….

5

(c) Describe **one** economic activity of the community from which this story is taken.   (2mks)

…….

…….

(d) Identify and illustrate one character trait of: (4mks)

    (i)   Elephant

…….

…….

    (ii)   Squirrel

…….

…….

(e) Identify **two** moral lessons one can learn from this story.   (4mks)

    ……

    ……

    …………………………………………………………………………………………………….

    …………………………………………………………………………………………………….

4.   GRAMMAR

(a) *Rewrite each of the following sentences according to instructions each. Do not change the meaning.*   (3mks)

    (i)   We attended both the reception and the evening party. (**Begin: Not only…**)

        ………………………………………………………………………………………………

        ………………………………………………………………………………………………

    (ii)   The convicts had scarcely left the courtroom when one of them snatched the guard's gun and started running. (**begin Scarcely…**)

        ………………………………………………………………………………………………

        ………………………………………………………………………………………………

    (iii)   Ann returned my book to the library (**change into passive**)

        ………………………………………………………………………………………………

        ………………………………………………………………………………………………

(b) *Write one word to replace the underlined words in the following sentences.*   (3mks)

    (i) The head boy reproduced the headmaster's speech <u>word for word</u>.

    ………………………………………………………………………………………………

    ………………………………………………………………………………………………

    (ii) Mr. Ngei is <u>unable to pay his debts.</u>

    ………………………………………………………………………………………………

    ………………………………………………………………………………………………

    (iii)We cannot say that the pope is <u>incapable of error.</u>

    ………………………………………………………………………………………………

    ………………………………………………………………………………………………

(c) **Fill in the blank in each sentences with an appropriate preposition** (3mks)

(i)The electorate want no one_____me.

(ii) After a delicious lunch, they left_____ the game park.

(iii) I dropped that extra change_____my mum's purse.

(d) *Complete each blank space in the following sentences with appropriate choice from: few, a few, little a little, some* (3mks)

(i) If there is tea left in that flask, I would like to have_____

(ii) Since animal proteins are very expensive_____people eat enough.

(iii)Mary got _____ presents in her birthday.

(e) Choose the correct pronoun in the following sentences.

(i)   She knew allbout my friend and _____(I/me)

(ii)   What would you do if you are_____? (she/her)

(iii)   David and _____went to the Library. (I/me)

101/3
ENGLISH
PAPER 3
TIME: 2 ½ HOURS

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

101/3

ENGLISH
PAPER 3

<u>INSTRUCTIONS TO THE CANDIDATES</u>

- *Answer **three** questions only*
- *Questions **one** and **two** are compulsory. In question one, choose to answer either 1a or 1b not both*
- *In question **three** choose **only one** of the optional texts, for which you have been prepared.*
- *Where a candidate presents work on more that one optional text, only the first to appear will be marked*
- *Each of your essay must not exceed **450** words*

This paper consists of 2 printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.

1

Answer Three Questions Only

1.   *IMAGINATIVE COMPOSITION (COMPULSORY)*

   Either

   (a) Write a composition to illustrate the saying; one good turn deserves another.:

   Or

   (b) Write a composition explaining why students cheat in National Exams.   (20mks)

2.   **The play**
   Bertolt Brecht; The Caucasian Chalk Circle
   " Human weaknesses affect characters negatively". Write a composition in support of the above statement
   drawing your illustrations from The Causasian Chalk Circle,

3. **Optional set texts**   **(20mks)**
    Answer any one of the following three questions
       Either

   (a) **The short story**
        Iliera, E and Olembo: When The Sun Goes Down and other stories from Africa and Beyond
        With illustrations from " Two stories of a House" by Leila Abouzeid (morocco) Justify the statement
        Ingratitude breeds   conflicts in a society.

   (b) **The novel,**
        Witi Ihimaera, The Whale Rider,
        Basing your illustrations on the text, 'The whale rider' by Witi Ihimaera, show how gender discrimination has
        been brought out in the novel.

   (c)   **The Drama**
        Francis Imbuga, Betrayal in the City.
        " The government of Kafira is founded on corruption'. Using illustrations from Francis Imbuga's   **Betrayal
        in the city**, write an essay in support of this statement.

2

312/1
GEOGRAPHY
PAPER 1
TIME: 2 3/4 HOURS

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

312/1
Geography
Paper 1
2 ¾ Hours

INSTRUCTIONS TO CANDIDATES

- This contains **two** sections **A** and **B.**
- Answer all questions in section **A,** In section **B q**uestions **6** and **two** other question.
- All answers must be written on booklet provided.

This paper consists of 4 printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.

SECTION A
Answer all questions in this section.

1. a) Give **three** examples of mechanically formed sedimentary rocks. (3mks)
    b) State **two** changes that occur in sedimentary rocks when they are subjected to intense heat and pressure. (2mks)

2. The diagram below represents the earth on its axis. Use it to answer question (a)
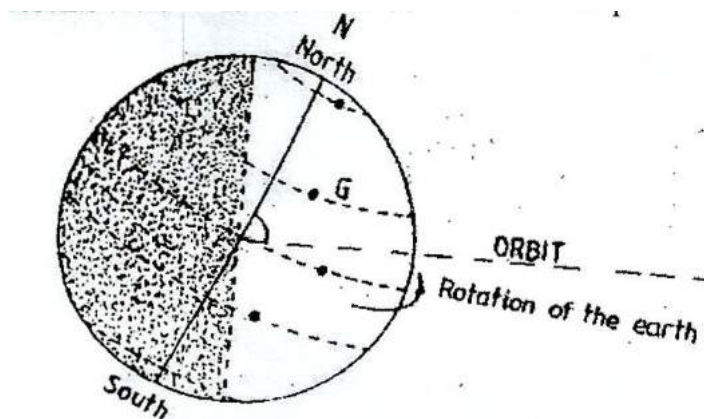
    (a) (i) Name the latitude marked **G** (1 mk)
        (ii) What is the angle of inclination of the earth's axis from it orbit? (1 mk)
    (b) State **three** ways that make the earth as a planet different from other planets (3mks)

3. (a)Name **three** external land forming processes that leads to the formation of lakes (3mks)
    (b) State **three** ways in which lakes influence the natural environment (3 mks)

4. The diagram below represents the flow of air current. Use them to answer question
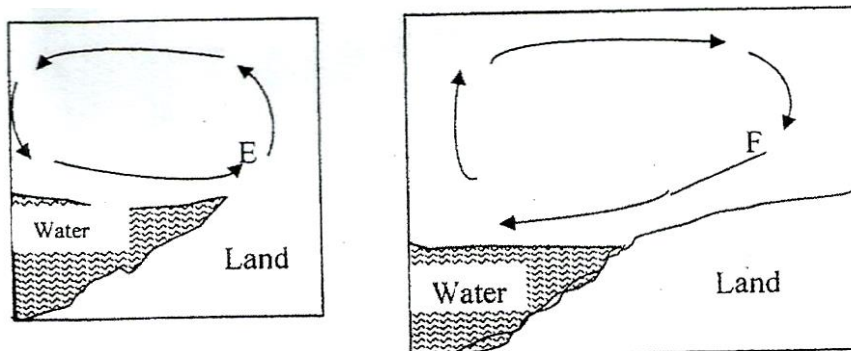
    (a) In your answer booklet, name the air current marked **E** and **F** (2 mks)
    (b) Give the reason why air cools as it rises (2mks)

2

5. The diagram below represents a coastal landform
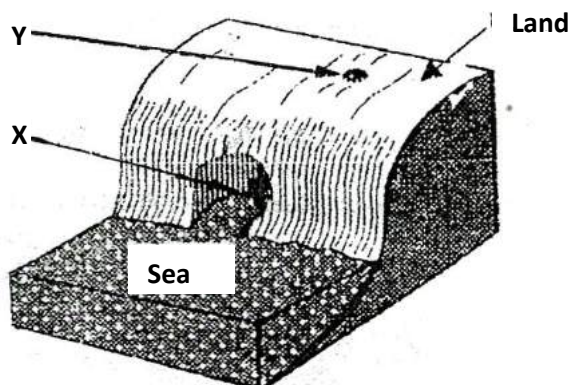
(a) Name the features marked **X** and **Y**   (2mks)

(b) State **three** conditions necessary for the formation of a sand spit.   (3mks)

SECTIONS B
Answer questions 6 and any other two questions from this section.

6. Study the map of Karatina 1:50,000 (sheet 121/3) provided and answer the following questions.

(a) (i) Give **two** methods used to show relief on the map   (2mks)

   (ii) Give the names of the adjoining map sheets 120/4 and 135/2   (2mks)

   (iii) Convert the map scale into a statement scale.   (1mk)

   (iv) State the height of the highest point on the area covered by the map.   (2mks)

   (v) Calculate the area of the forest in Kirinyaga District (give your answer in square kilometers)

                                                                              (2mks)

(b) (i) Name **two** human features found in grid square 8052   (1mk)

   (iii) Draw a rectangle measuring 16cm by 12 cm to represent the area enclosed by

      Easting's 97 to 05 and Northings 45 to 51   (1mk)

   • On the rectangle mark and name the following features:

   • The tree swamp   (1mk)

   • The district boundary   (1mk)

   • All weather road (bound surface) to Kirinyaga   (1mk)

(c) Describe the drainage of the area covered by the map   (4mks)

(d) Citing evidence from the map, explain **three** factors that influence the distribution of

   settlements in the area covered by the map.   (6mks)

7. (a) (i) A part from the Rift Valley name **two** other relief features that were formed as a result

      of faulting.   (2mks)

   (ii) With the aid of a well labelled diagram, describe how a rift Valley is formed by tensional

      forces.   (8mks)

(b) Explain **four** effects of faulting   (8mks)

(c) Students are planning to carry out a field study of an area affected by faluting.

   (i) State **four** reasons why it is important for the students to have a pre-visit of the   area   (4mks)

3

(ii) One of the ways they would use to collect data is through direct observation. Give **three** disadvantages of direct observation in the study of such an area. (3mks)

8. (a) (i) What is glaciations? (1mk)
(ii) Give **three** differences between glacial trough and river valley (3mks)

(b) (i) State **two** ice ages (4mks)
(ii) Describe **two** ways in which ice moves (4mks)
(c) (i) State **two** characteristics of a pyramid peak (2mks)
(ii) Name **three** types of Maraines (3mks)
(d) With a well labeled diagrams, describe the processes involved in the formation of a corrie lake. (6mks)
(e) Outline **four** ways in which glaciated landscape is of negative significance to human activities. (4mks)

9. (a) Describe how a river erodes its channels by the following process.
(i) Hydraulic action (2mks)
(ii) Abrasion (2mks)

(b) (i) Explain **three** factors that lead to rejuvenation of a river (6mks)
(ii) Describe the process of a river capture. (6mks)
(c) Some students carried out a field study on the feature found a long a river.
(i)   List **three** features formed as a result of river erosion. (3mks)
(ii)   State **three** methods that students may have used to record their data (2mks)
(iii)   Explain **two** ways in which features resulting from river deposition are of significance to human activities. (4mks)

10. (a) (i) Differentiate between weathering and denudation (2mks)
(ii) State **three** factors that influence the rate at which weathering occur. (3mks)
(b) Explain how the following processes of weathering occur in arid areas.
- Crystal growth (2mks)
- Expoliation (2mks)
- Block disintegration (2mks)
- Granular disintegration (2mks)
(c) (i) A part from soil creep, name **three** other types of slow –mass wasting (3mks)
(ii) State **three** causes of soil creep (3mks)
(d) Students from a school in Rachuonyo South sub county carried out a field study on land slides.
(i) Identify **two** ways they must have prepared for the filed study. (2mks)
(ii) Name **two** types of rapid mass movement they could have identified. (2mks)
(iii) State **two** effects of rapid- mass wasting they came across. (2mks)

4

312/2
GEOGRAPHY
PAPER 2
TIME: 2 3/4 HOURS

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

312/2
Geography
Paper 2
2 ¾ Hours

INSTRUCTIONS TO CANDIDATES

- This contains **two** sections **A** and **B.**
- Answer all questions in section **A,** In section **B q**uestions **6** and **two** other question.
- All answers must be written in the booklet provided

This paper consists of 5 printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.

SECTION A
Answer all questions from this section in the answer booklet provided

1. (a) Name **two** international airports in Kenya. (2mks)
   (b) Give **three** advantages of using mobile ph**one**s. (3mks)

2. (a) Apart from flooding name **two** climatic hazards that occur in Kenya. (2mks)
   (b) State **three** measures used to control floods in Kenya. (3mks)

3. (a) What is a cottage industry? (2mks)
   (b)Give **four** reasons why the government of Kenya encourages the establishment of Jua
   Kali industries. (4mks)

4. (a) Name **two** exotic breeds of commercial beef cattle reared in Kenya. (2mks)
   (b) Outline **two** similarities of commercial beef cattle in Kenya and Argentina. (2mks)

5. (a) What is mixed farming? (2mks)
   (b) State **three** physical conditions that favour cocoa growing in Ghana. (3mks)

SECTIONS B
Answer questions 6 and any other two questions from this section in the answer booklet provided.

Study the photographs provided and use it to answer the following.

6. (a) Name the type of photograph shown above. (2mks)

   (b)(i) Draw a rectangular measuring 8cm and 5cm to represent the area of the photograph (1mk)
      (ii) On the rectangular sketch, name and labell **four** main features shown on the
         photograph. (4mks)
   (c) (i) Describe the scene in the photograph. (4mks)
       (ii) Name **two** types of fish caught in the North east Atlantic fishing ground. (2mks)
       (iii) Describe trawling as a fishing method . (4mks)
   (d) Explain **four** factors that have made Japan to be a leading fishing nation. (8mks)

2

7. (a) (i) Apart from draining of swamps, give **two** other methods through which land has been reclaimed in Kenya. (2mks)

   (ii) Give **two** methods that are used to drain swamps in Kenya. (2mks)

  (b) (i) Name **two** rivers that supply water to the Mwea Tabera irrigation scheme. (2mks)

   (ii) Explain how the following factors influence the establishment of Mwea irrigation schemes.

- Topography (2mks)
- Soils (2mks)
- Population (2mks)
- Government policy (2mks)

  (c) (i) Name **three** areas which make up the Zuider Zee reclamation project in the Netherlands (3mks)

   (ii) Give **four** differences between land reclamation in Kenya and the Netherlands. (8mks)

8. (a) What is ecotourism ? (2mks)

  (b) (i) Give **four** tourist attraction found at the coast of Kenya

   (ii) State **five** problems associated with tourism in Kenya (5mks)

  (c) State **four** ways in which game reserves are of benefits to the communities living near them. (4mks)

  (d) (i) Explain **three** differences in which tourism in Kenya differ from Switzerland.

   (ii) Your geography class carried out a field study in a game park.

- State **two** methods the class may have used to collect data. (2mks)
- During the field study the class collected data on the number of tourists visiting a game park. State **two** methods the class may have used to present the data.

9. (a) (i) differentiate between indigenous and exotic forests. (2mks)

  (ii) The map below shows Kenya's forest **Zone**s. Study and use it to answer the questions that follow.
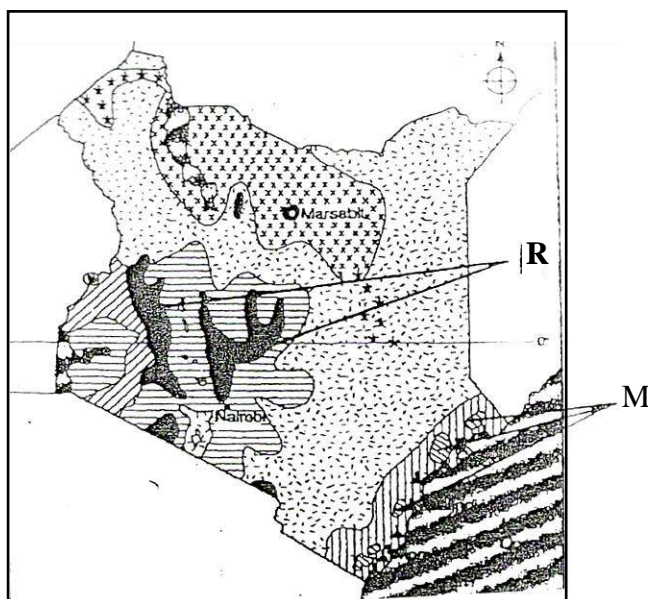
   Identify   forests marked **M** and **R**

(2mks)

  (iii) State **three** factors that lead to depletion of forests in Kenya. (3mks)

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

  (c) Compare forestry in Kenya and Canada under the following headings:

(i) Distinction of forests (2mks)
(ii) Mode of exploitation (2mks)
(iii) Transport (2mks)
(d) (i) State **three** factors favouring the development of softwood forests in Canada. (3mks)
(ii) Give **three** measures used to conserve forests in Kenya. (3mks)

10. (a) (i) Give **four** factors common to Kenya and the Netherlands that have favoured horticultural farming (4mks)
(ii) State **three** features of Horticultural farming in the Netherlands. (3mks)

(b) The table below shows the quality and value of Kenya's horticultural exports between June 2008 and June 2009. Use it to answer questions (b)

Month	Quantity (Metric tonnes)	Value (ksh in millions)
June 2008	15,300	3,480
July	15,600	3,900
August	14,000	4,000
September	14,900	3,500
October	15,600	4000
November	14,700	4,020
December	14,000	4,000
January 2009	15,900	4,700
February	16,000	4,100
March	17,500	4,400
April	14,900	3,700
May	15,190	3,800
June	14,600	3,600

(i) What was Kenya's total value of exports from Horticulture between June 2008 and June 2009? (2mks)
(ii) Comment on the trend of the quantity of Kenya's horticultural exports between June 2008 and 2009.
(iii) Using the data provided, draw a simple line graph to represent the quantity of Kenya's horticultural export.
Use a vertical scale of 1 cm to represent 500 metric t**one**s (5mks)
(c) Explain **four** difficulties that farmers in Kenya experience in marketing horticulture. (8mks)

4

311/1
HISTORY & GOVERNMENT
PAPER 1
TIME: 2 ½ HOURS

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

311/1
History & Government
Paper 1
2 ½ HOURS

INSTRUCTIONS TO CANDIDATES

- This paper consists of **three** sections; **A, B** and **C.**
- Answer ALL the questions in section **A, THREE** questions from section **B** and **TWO** questions from section **C.**
- Answers to all the questions **MUST** be written on the answer sheets provided.

FOR EXAMINER'S USE ONLY

	QUESTION	SCORE
SECTION A	1 - 17	
SECTION B	18	
	19	
	20	
	21	
SECTION C	22	
	23	
	24	
TOTAL SCORE		

This paper consists of 2 printed pages .Candidates should check the question paper to ensure that all pages are printed as indicated and no questions are missing

SECTION A: (25 MARKS)

Answer all the questions in this section in the answer booklet provided.

1. Identify **two** aspects of history. (2mks)
2. Where is the original homeland of River-lake Nilotes of Kenya? (1mk)
3. State **two** units of political administration of the pre-colonial Borana. (2mks)
4. Give the main factor that led to the growth of forms along the Kenyan Coast before 19th Century. (1mk)
5. State **two** advantages of using arbitration as a method of solving Conflicts. (2mks)
6. Name **two** areas acquired by the British as a result of Anglo-German treaty of 1890. (2mks)
7. Give **two** reasons why the Akamba resistance was defeated by the British during colonization. (2mks)
8. State **two** reasons why Africans were reluctant to provide labour in European farms during the colonial period. (2mks)
9. State **one** positive result of Mau mau uprising. (1mk)
10. Name the trade union which organized the workers strike of 1947 in Kenya. (1mk)
11. Give the main reason why Kenya African National union (KANU) refused to from the government after 1961 election. (1mk)
12. Identify the political challenge president Moi faced in 1982. (1mk)
13. State **two** external factors that led to growth of multiparty system in Kenya in the early 1990's. (2mks)
14. Outline **two** reasons why cultural activities are important in Kenya. (2mks)
15. Name **one** class of human right. (1mk)
16. Identify **one** type of government expenditure. (1mk)
17. Who is the chief executive officer in the country?

SECTION B: (45 MARKS)
Answer any three questions from this section.

18. (a) State **five** social functions of the Orkoryot among the Nandi in the (3mks)
    (b) Describe the political organization of the Nandi in the pre-colonial Kenya. (12mks)
19. (a) Give **five** reasons why Christians missionaries established missions in Kenya during the colonial period. (5mks)
    (b) Explain **five** factors that undermined Christians missionary activities in Kenya in 19th Century. (10mks)
20. (a)State **three** methods used by the colonial government to acquire labour for the settlers in Kenya. (3mks)
    (b) Explain the impact of the colonial land policies in Kenya . (12mks)
21. (a) Identify **five** reasons why the government of Kenya adopted the session; paper No 10 of 1965. (5mks)
    (b) Discuss **five** challenges that have faced opposition parties in Kenya since 1992. (10mks)

SECTION C: (30 MARKS)
Answer any two questions from this section

22. (a) Identify **three** aspects of democracy. (3mks)
    (b) Discuss **six** benefits of democracy. (12mks)
23. (a) List **three** superior courts in Kenya. (3mks)
    (b) Explain **six** functions of chief Justice. (12mks)
24. (a) State **three** organs of national security in Kenya. (3mks)
    (b) Describe **six** roles played by correctional services in Kenya. (12mks)

311/2
HISTORY & GOVERNMENT
PAPER 2
TIME: 2 ½ HOURS

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

311/2
History & Government
Paper 2
2 ½ HOURS

INSTRUCTIONS TO CANDIDATES

- This paper consists of **three** sections; **A, B** and **C.**
- Answer ALL the questions in section **A, THREE** questions from section **B** and **TWO** questions from section **C.**
- Answers to all the questions **MUST** be written on the answer sheets provided.

FOR EXAMINER'S USE ONLY

	QUESTION	SCORE
SECTION A	1 - 17	
SECTION B	18	
	19	
	20	
	21	
SECTION C	22	
	23	
	24	
TOTAL SCORE		

This paper consists of 2 printed pages .Candidates should check the question paper to ensure that all pages are printed as indicated and no questions are missing

SECTION A: (25 MARKS)

Answer all the questions in this section in the answer booklet provided.

1. What is anthropology as a source of information on History and Government. (1mk)
2. Identify **two** activities that influenced early man to set up permanent settlement. (2mks)
3. Name **two** inventories that made early agriculture in Egypt to succeed. (2mks)
4. State **two** characteristics of silent trade. (2mks)
5. State **one** political factor that led to the decline of trans-saharan trade. (1mk)
6. Identify **two** improvements that have been made on modern road from macadamied roads. (2mks)
7. Which is the quickest traditional method of sending a message to many people over a wider area? (1mk)
8. State the main use of steam energy during the Industrial revolution. (1mk)
9. Give **two** scientific inventions of the twentieth century which has led to the reduction in death rates. (2mks)
10. Give **one** reason for the decline of Athens as an early urban centre. (1mk)
11. Identify **one** territorial dispute that made it necessary to convene the Berlin conference. (1mk)
12. State **two** reasons why Britain used direct rule in Zimbabwe. (2mks)
13. State **two** roles played by the united states of America to end the first world war. (2mks)
14. Identify **two** treaties signed between Lobengula and the British. (2mks)
15. Identify the main difference between membership into the House of Lords and the House of Commons in Britain. (1mk)
16. Give **one** agency of the United Nations Organizations that deals with the Welfare of children in the world. (1mk)
17. Which organ of the African Union is in charges of the day to day running of the operations of the organization? (1mk)

SECTION B: (45 MARKS)

Answer any three questions from this section.

18. (a) State **three** effects of land endosure system in Britain during the agrarian-revolution. (3mks)
    (b) Explain **six** disadvantages of open filed – system on agriculture before the agrarian revolution. (12mks)
19. (a) Identify **five** factors for the growth of the Asante empire. (5mks)
    (b) Explain **five** social feature of the Baganda Kingdom. (10mks)
20. (a) Name **three** countries in North Africa Colonized by the French. (3mks)
    (b) Explain **six** factors that facilitated European colonization of Africa. (12mks)
21. (a) State **three** ways used by Nationalists in Ghana to fight for independence. (3mks)
    (b) State **six** factors that led to Africa –nationalism in Ghana (12mks)

SECTION C: (30 MARKS)

Answer any two questions from this section

22. (a) State **three** benefits of the East African community to the member states upto 1977 (3mks)
    (b) Explain **six** factors that made pan-Africanism popular in Africa After 1945. (12mks)
23. (a) Give **three** political challenges which Tanzania has faced since independence. (3mks)
    (b) Explain **six** effects of the cold war in the world. (12mks)
24. (a) Give **three** functions of the Monarchy in Britain. (3mks)
    (b)Explain the functions of federal government of the united state of America. (12mks)

2

102/1
KISWAHILI (INSHA)
KARATASI YA 1
Muda: Saa 1¾

Hati ya kuhitimu kisomo cha Sekondari Kenya (K.C.S.E)

102/1
Kiswahili (Insha)
Karatasi ya 1
Saa: 1¾

MAGIZO

- *Andika insha **mbili**. Insha ya kwanza ni ya **lazima***
- *Kisha chagua insha nyingine moja kati ya ya hozi tatu zilizobakia.*
- *Kila insha isipungue maneno **400***
- *Kila insha ina alama 20*
- *Kila insha lazima iandikwe kwa lugha ya Kiswahili.*

*Karatasi hii inakurasa **2** zilizopigwachapa.Watahiniwa ni lazima waangalie kama kurasa zote za karatasi hii zimepigwa chapa sawasawa na kuwa maswali yote yamo.*

1. Wewe ni rais wa muungano wa viranja jimboni mwako, umehudhuria semina ya viranja wakuu ulioandaliwa shuleni mwenu kujadili chngamoto zinazowakabili viranja kutekeleza wajibu wenu shuleni. Andika hotuba ambayo ungetoa kwa walimu wakuu kuhusu changmaoto hizo na mapendekezo yenu wakati wa kikao cha walimu wakuu jimboni.

2. Kenya ni mmoja wa inchi zinazowania kuwa mbele katika ulimwengu wa kisasa. Wewe ukiwa mzalendo fafanua vipingamizi au vijanzo vya ongezeko la bei ya bidhaa Nchini huku ukionyesha athari za ongezeko hili.

3. Mzigo wa mwenzio kanda la usufi.

4. Tunga kisa kinachoanza kwa maneneo yafuatayo:

5. Baada ya matokeo ya mtihani wa mwaka uliotangulia kutangazwa na katibu mkuu katika wizara ya elimu, iliniwia vigumu kusadiki ukweli wa mambo lakini nilielewa fika kuwa kuanguka mtihani siyo mwihso wa maisha…..

2

102/2
KISWAHILI
LUGHA
KARATASI YA 2
MUDA: 2 ½

Hati ya Kuhitimu Elimu ya Sekondari Kenya.(K.C.S.E)

102/2
Kiswahili
Karatasi YA 2
Muda: 2 ½

MAAGIZO

- Andika **jinalako** na **nambari yako** ya mtihani katika nafasi ulizoachiwa hapo juu.
- Tia **sahihi yako** kisha uandike **tarehe** ya mtihani katika nafasi ulizoachiwa hapo juu.
- Jibu maswali yote.
- Majibu yote yaandikwe katika nafasi zilizoachwa katika kijitabu hiki cha maswali.
- Majibu yote ni lazima yaandikwe kwa lugha ya kiswahili
- Usitoe ukurasa wowote kutoka kwenye kijitabu hiki.

KWA MATUMIZI YA MTAHINI PEKEE.

SEHEMU	ALAMA	TUZO
1	15	
2	15	
3	40	
4	10	
JUMLA	80	

*Karatasi hii ina kurasa **11** zilizopigwa chapa. Watahiniwa ni lazima waangalie kama kurasa zote za karatasi hii zimepigwa chapa sawasawa na kuwa maswali yote yamo.*

UFAHAMU (ALAMA 15)

Soma makala yafuatayo kisha ujibu mswali

Mafuta yanayopatikana kwenye fukwe za bahari, moshi wa magari, takataka na bidhaa nyinginezo zinazotupwa hapa na pale ni vichafuzi vya mazingira. Vichafuzi huathiri afya zetu na kuathiri wanyama pamoja na mimea. Wanadamu wanyachafua mazingira yao kwa kila aina ya bidhaa mbaya zakikemikali zinazotoka viwandani au kwenye viwanda vya kawi au nguvu. Bidhaa hizo ni matokeo ya maisha ya siku hizi anayosihi binadamu.

Licha ya ukweli huu, ni muhimu kujua kuwa uchafuzi wa mazingira haukuanza leo. Miaka na miaka iliyopita, viwanda vimekuwa vikitoa mawingu makubwa ya moshi wenye sumu. Hata hivyo, uchafuzi wa mazingira umeongezeka maradufu kutokana na kuongezeka kwa viwanda. Uchafuzi umesambaa ardhini, kwenye anga na majini. Msambao huu unapatikana katika pembe zote za ulimwengu wetu. Je, kuna aina zipi za uchafuzi?

Kwanza kuna uchafuzi wa halianga. Huko juu angani kuna tabaka linalojulikana kama ozoni. Tabaka hili huwa ni ama ya gesi ya oksijeni na linaunda kinga fulani dhidi ya miale ya jua. Miale hiyo ya jua huweza kusababisha saratani ya ngozi inapomfikia binadamu. Hata hivyo, uchafuzi wa mazingira unaelekea kuliathiri tabaka hili. Vilevile baadhi ya kemikali zinazotumiwa katika friji au jokofu au kwenye mikebe ya marashi ya kupulizia na upakiaji bidhaa, huu haribu ukanda huo.

Aina nyingine ya uchafuzi ni ile tunayoweza kuuita uchafuzi wa kiajali. Huu ni uchafuzi ambao hutokea kama ajali, yaani binadamu hatendi kimakusidi. Mfano mzuri ni meli inayovuja mafuta baharini. Mafuta haya huwaathiri na kuwaua wanyama wanaoishi baharini kama samaki na ndege na hata kuyaharibu mazingira yenyewe.

Miji mikubwa hukumbwa na uchafuzi mwingine unaohusiana na kuwako kwa idadi kubwa ya magari. Magari haya hutoa moshi unaochanganya gesi ambazo huungana na nyingine zinazoletwa na viwanda vikubwa. Mchanganyiko huu unapoungana na maji, husababisha mvua ya asidi. Mvua hili huweza kuiua mimea. kuathiri majengo na hata kuwaua wanyama wa pori ambao huenda wakayatumia maji hayo. Magari hutoa moshi uliochanganyika na madini aina ya risasi ambayo huweza kuathiri siyo tu mazingira bali pia mfumo wa akili wa binadamu.

Uchafuzi mkubwa unaopatikana katika mazingira mengine yetu ni utupwaji ovyo wa takataka. Fauka ya hayo, watu hufukia ardhini takataka ambazo huweza kuwa na matokeo mabaya kwa sababu ya kupenyeza kwenye udongo na maji yanayotumiwa na watu na mimea. Kila siku tunatupa takataka bila ya kujali wala kubali. Takataka hizi ni kama makopo, mifuko ya plastiki,mabaki a sigara au maganda ya matunda. Baadhi ya takataka ni hatari kwa wanyama na nyingine huweza pia kusababisha majanga kama moto. Aidha, takataka hizi hufanya mazingira yetu yaonekane machafu.

Sote tunajukumu kubwa la kuchangia kupunguza uchafuzi wa kimazingira ya kwanza ni kuelimishana na kutambua umuhimu wa usafi wa mazingira yetu. Tunapaswa kutia takataka zetu katika vijalala maalum au mahali tunapoweza kuzichoma na kuziteketeza. Njia nyingine ni kuhakikisha kuwa tunatunza vitu kama mifuko, chupa na kadhalika ambavyo huweza kuunda upya na kutumiwa tena. Hali kadhalika, katika miaka ya hivi karibuni. kumekuwapo na juhudi za kuwahimiza wenye magari kutumia mafuta ya gari ambayo

hayana madini ya risasi. Kwa njia hii tutasaidia kuyaboresha mazingira yetu. Vilevile pana umuhimu wa kutilia mkazo utumiaji wa bidhaa ambazo zinaweza kuoza na kuvunjikavunjika au kusagika na kuwa sehemu ya udogo. Hatua ya kwanza ya kupambana na uchafuzi wa mazingira ni kujielimisha na kuwajibika. Kila mmoja akitoa mchango wake tutafanikiwa. Kumbuka kuwa kinga na kinga ndipo moto uwakapo.

Maswali :

(a) Vichafuzi ni nini ? (alama 1)

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(b) Ongezeko la viwanda limechangaije uchafuzi wa mazingira ? (alama 2)

……

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(c) Tabaka la ozoni huathiriwaje na uchafuzi? (alama 2)

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(d) Athari zipi zitatokea iwapo mazingira hayatatunzwa ? Fafanua. (alama 4)

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(e) Kwa nini miji mikubwa hukumbwa na uchafuzi kuliko sehemu zingine ? (alama 2)

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(f) Eleza nui mbili za uchafuzi wa mazingira zilizotajwa katika kifungu hiki. (alama 2)

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(g) Eleza maana za misamiati ifuatayo kama ilivvotumiwa katika kifungu. (alama 2)

(i) Msambao

………………………………………………………………………………………………………

(ii) Mazingira

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2. UFUPISHO

Soma taarifa ifuatayo kisha jibu maswali yanayofuata kulingana na maagizo.

Utoaji wa Huduma ya Kwanza.

Inaaminika kuwa majeruhi wengi katika mikasa ya ajali huaga au huathirika vibaya zaidi kutokana na hali mbaya ya uokoaji. Watu wengi ambao hujitolea kutoa majeruhi baada ya ajali kama za barabarani, maporomoko ya ardhi au

3

nyumba huwa hawangamui hata chembe jinsi ya kukabiliana na uokoaji. Hatima ya juhudi zao ambazo hulenga kutenda mema ni kuathirika zaidi kwa majeruhi.

Hali ya ukoaji inaweza kurekebishwa kwa kutoa elimu ya huduma ya kwanza kwa umma. Elimu hii yahitajika na kila Mkenya kwani mikasa ya ajali za barabarani na nyinginezo inaendelea kutokea kila siku.

Ajali zinazotokea, si ajabu kuona makundi ya waokoaji wakibeba majeruhi hobelahobela bila kuzingatia madhara wanayoweza kuwaongezea kutokana na ubebaji wao. Kutojua namna ya kumbeba majeruhi kunaweza kumhatarisha na hata kusababisha kifo.

Kuna mambo mbalimbali ambayo makundi ya waokoaji yanatakiwa kuzingatia wakati yanatoa huduma ya kuokoa. Kwanza ni muhimu kuchunguza kama kuna hatari yoyote inayoweza ikatokea na kuwatia majeruhi na waokoaji hatarini zaidi. Makundi ya waokoaji yameweza kwa kuliingilia eneo la ajali mbumbumbu kama mzungu wa reli.

Hatua ya pili ni kutafuta idadi ya majeruhi. Pana uwezekano wa majeruhi kutupwa mbali na eneo la ajali. Vivyo hivyo, kuna majeruhi ambao huweweseka haada ya ajali na kuanza kutembea wasijue wanakoelekea. Wengi wao huaanguka karibu na eneo la ajali au wakaenda mbali.

Hatua ya tatu ni kuchunguza kama majeruhi amezimia. moyo unapiga riajinsi anavyopumua. Ili kuhakikisha kuwa majeruhi anapumu, mwokoaji atazame kama kifua kinapanda na kushuka. Halikadhalika, mwokoaji anaweza kusikiliza au kuguza kifua na kuona kama kuna ishara za kupumua. Iwapo majeruhi anapumua. mokoaji ameke katika hali ambayo itaimarisha kupumua kwake. Anaweza akamlaza chali au kumgeuza kwa pamoja na kichwa chake ili kufungua mkondo wa hewa. Pia mwokoaji ahakikishe hamna chochote kinywani kinachoweza kumsakama. Ikiwa hapumui, mwokoaji anaweza kujaribu kumfanya apumue kwa kupuliza hewa mdomoni mwake.

Fauka ya hayo, Upulizaji wa hewa utahakikisha kuwa damu inazunguka mwilini vizuri.

Hatua nyingine ni kuchunguza vile amejeruhiwa. Chunguza kama majeraha ni vidonda tu au kuna kuvunjika kwa mfupa na kubainisha ni mfupa upi. Haya yatamwezesha mwokoaji kujua jinsi ya kumbeba majeruhi. Pakiwa na kuvunjika kwa mfupa, ni muhimu kutotumia kiungo kiliehovunjika anapobebwa.

Pia kuchunguza vile majeruhi amejeruhiwa, humwezesha mwokoaji kujua huduma ya dharura atakayotumia. Majeruhi akiwa anavuja damu sana, ni muhimu kuzuia uvujaji huu. Iwapo ni kidonda kidogo, kinahitaji kufungwa ili kuzuia uambukizaji. Mwokoaji anaweza kutumia kifaa chochote kilicho karibu kutolea huduma hizi. Kwa mfano, anaweza kupasua nguo ya majeruhi iii apate kitambaa cha kusaidia kuzuia kuvuja kwa damu au kumfunga kidonda.

Hatua inayofuata ni kumhamisha majeruhi toka eneo Ia ajali hadi hospitalini. Mwokoaji anaweza kuwatumia watu wengine kutafuta msaada. Wanaweza kupiga simu wakitumia nambari za simu za dharura kama zile za polisi, wazimamoto au makundi ya wataalamu wa shughuli za ukoaji. Nambari hii ya simu huwa 999 popote na huwa haina malipo. Wanaopiga simu ni vyema kutoa maelezo ya mahali ambapo ajali imetokea, ama ya ajali na huduma za dharura zinazohitajika

pamoja na idadi ya majeruhi. Iwapo makiindi haya ya ukoaji yameahidi kufika bora kuwasubiri.

4

Ikiwa makundi ya wataalamu wa ukoaji hayakupatikana, ni jukumu Ia mLoai hakikisha majeruhi wamehamishwa na kupelekwa hospitalini. Majeruhi wakiwa wengi. ni born kuanza na wale waliozimia au wenye matatizo ya kupumua kisha kuwaendea wanaovuja damu sana. Baadaye mwokoaji awasaidie waliovunjika mifupa huku akimalizia na wenye majeraha yasiyohatarisha maisha. Ni muhimu kuwabeba majeruhi kwa kutumia machela. Hii hupunguza kuathirika zaidi kwa majeruhi. Iwapo hamna machela karibu, mwokoaji anaweza kuunda moja kwa kutumia vipande viwili vya mbao, blanketi. shuka au makoti.

Ujuzi wa huduma ya kwanza ni mojaapo a mambo muhimu ambavo kila mtu anapaswa kuwa nayo.

Maswali :

(a) Fupisha aya tatu za kwanza kwa maneno 50 – 60   (alama 5 ut.1)

Nakala chafu

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Nakala safi

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(b) Eleza kwa kutumia maneno 90-100, hatua zinazotakiwa kufuatwa wakati wa uokoji.   (alama 7 ut.2)

Nakala chafu

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Nakala safi

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3**.   MATUMIZI YA LUGHA (ALAMA 40)**

(a) (i) Taja vigezo viwili vya kizingatiwa katika kuweka konsonanti katika makundi   (alama 2)

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……

(ii)Taja sifa bainifu ya sauti za vokali   (alama 1)

……

(b) *Tambua jinsi neno mgeni lilivyotumika katika sentensi zifuatazo.*   (alama 4)

(i)   Mwanafunzi mgeni amesajiliwa shuleni

……

(ii)   Mwanafunzi aliyesajiliwa shuleni ni mgeni

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6

(c) *Tunga sentesi mojamoja kubainishi :* (alama 4)

    (i)   Kiwakilishi huru (ngeli ya li-ya wingi)

……

    (ii)   Kiwakilishi kiambata nafsi ya kwanza wingi

……

(d) *Andika sentensi ifuatayo upya ukibadilisha vitenzi vilivyopigiwa mstari katika kinyume* (alama 2)

    Mwanafunzi <u>alisimama</u> kisha <u>akakitega</u> kitendawili.

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(e) *Tugna sentensi yenye maneno uliyopewa hapa* (alama 3)

    W + U+ N + T + T + E

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(f) *Andika sentensi ifuatayo katika hali ya wastani umoja.* (alama 2)

    Vijibwa vya walowezi viliuawa na watoto ya maskini

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(g) Tumia hali ya –po- kutunga sentensi ili kuleta dhana ya

    (i) Wakati maalum (alama 2)

……

    (ii) Wakati usiodhihirika (alam 2)

……

(h) *Eleza tofauti kati ya sentensi hizi :* (alama 4)

    (i)Nisingelifika mapema ningelimkuta mwalimu darasani.

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    (ii) nisisgenelifika mapema nisingelimkuta mwalimu darasani.

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(i)   Tunga sentensi mojamoja kwa kunyambua vitenzi ulivyopewa kulingana na hali kwenye mabano

    - fa (kutendea) (alama 2)

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    - la (kutendesha) (alama 2)

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7

(j) *Changanua sentensi ifuatayo kwa njia ya matawi.*

Rais na naibu wake wameahidi kupunguza mishahara yao.   (alama 4)

(k) *Andika sentensi ifuatayo katika usemi halisi :*

Watahiniwa wa kidato cha nne walikumbushwa na mwalimu mkuu kuwa mtihani wao wa mwigo ungeanza mwezi wa Agosti, kisha akawahimiza wasome kwa bidii.

(alama 3)

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(l) *Tumia kiambishi ndi kutunga sentensi ili kuonyesha dhana ya msisitizo katika ngeli k i-zi wingi*.(alama 2)

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4. ISIMU JAMII (ALAMA 10)

(a) Eleza maana ya sajili ya lugha   (alama 2)

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(b) Fafanua mambo manne yanayosababisha kuibuka kwa sajii tofauti.   (alama8)

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102/3
KISWAHILI
FASIHI
MUDA : Saa 2½

Hati ya Kuhitimu Elimu ya Sekondari Kenya. (K.C.S.E)

102/3
Kiswahili
Fasihi
Saa : 2½

MAAGIZO:

1) Jibu maswal **Manne** pekee.

2) Swali la **kwanza** ni la **Lazima**.

3) Maswali hayo mengine matatu yachaguliwe kutoka sehemu nnez ilizobaki, yaani; Tamthilia, Ushairi,Riwaya na Fasihisimulizi.

4) Usijibu maswali **Mawili** kutoka **Sehemu moja**.

5) Maswali yote yajibiwe kwa lugha ya Kiswahili

*Karatasi hii inakurasa **4** zilizopigwa chapa. Watahiniwa ni lazima waangalie kama kurasa zote za karatasi hii zimepigwa chapa sawasawa na kuwa maswali yote yamo.*

SEHEMU YA A : HADITHI FUPI
DAMU NYEUSI NA HADITHI NYINGINE.

Swali la lazima

1. Ndoa ni asasi inayokumbwa na changamoto kadhaa katika Jamii ya leo. Jadili ukweli wa kauli hii kwa kurejelea hadithi zifuatazo :   (al.20)
   (a) Mke wangu
   (b) Maeko
   (c) Mwana wa Darubini
   (d) Maskini Babu yangu

SEHEMU YA B :TAMTHILIA
MSTAHIKI MEYA: Timothy Arege.

Jibu swali la 2 au la 3

2. Tamthilia ya **Mstahiki Meya** inasawiri Picha halisi ya mataifa mengi barani Afrika. Dhihirisha.   (al.20)
3. "Wakisubiri ugonjwa nao utasubiri ? ''
   (a) Fafanua muktadha wa dondoo hili.   (al. 4)
   (b) Tambua kwa kutolea mifano tamathali mbili za usemi zinazojitokeza katika dondo hili. (al. 4)
   (c) Eleza sifa na umuhiu wa mzungumzaji katika dondoo hili.   (al.12)

SEHEMU YA C : RIWAYA
KIDAGAA KIMEMWOZEA: Ken Walibora

Jibu swali la 4 au la 5

4. Asasi ya ndoa katika riwaya ya **Kidagaa Kimemwozea** inakabiliwa na changamoto nyingi fafanua.
                                                                              (al. 20)
5. "Ndio, Mtu hujikuna ajipatapo. Sina hela za nauli wala za chumba cha kulala''
   (a) Eleza muktadha wa maneno haya.   (ala. 4)
   (b) Ni masaibu gani mengine yaliyomkumba msemaji wa maneno haya ?   (ala. 10)
   (c) Fafanua sifa zozote **nne** za msemewa.   (al. 4)
   (d) Eleza maudhui yanayojitokeza katika dondoo hili   (ala. 2)

SEHEMU YA D : FASIHI SIMULIZI

6. (a)Maigizo ni nini ?   (ala. 2)
   (b) Eleza aina **mbili** kuu za maigizo   (al. 2)
   (c) Eleza sifa zozote **nne** za maigizo   (al.8)
   (d) Fafanua majukumu ya tamasha za maigizo nchini Kenya.   (ala. 8)

SEHEMU YA E : USHAIRI

7. *Soma shairi lifuatalo kisha ujibu maswali yanayofuatia.*

1. Sina ni kukosekana, si kuwa ni ubahili,
   Watu hutarajiana, kupana zao fadhili,
   Kiwapo chapatikana, chenye kuzidi shughuli,
   Sina si kuwa bahili, sina ni kukosekana.

2. Iwapo mwenzio hana, cha ziada kukujali,
   Ndipo anenapo sina, kukuafu yako hali,
   Usidhani ni hiyana, chake kuwa hakubali,
   Sina si kuwa bahili, sina ni kukosekana.

3. Yapasa kukumbukana, tuishipo mbali mbali,
   Kila mtu jambo yuna, limtialo thakili,
   Akawa ni mwenye dhana,la kesho kulikabili,
   Sina si kuwa bahili, sina ni kukosekana.

4. Na pindi anapoona, tarehe mno i mbali,
   Na katika muawana, punje ya rasilimali,
   Nyumbani kiwa hakuna, kukupa rntu muhali,
   Sina si kuwa bahili, sina ni kukosekana.

5. Kutaka ungekazana, nasaha na tafadhali.
   Endapo hana namna. mwenzio lile na hili
   Bora ni kuombeana, Mungu awape sahali
   Sina si kuwa bahili, sina ni kukosekana.

6. Wajua watu hupana, kiasi cha kuhimili,
   Mioyo kukunjuana, imani kuwa kamili.
   Akwambaye leo sina, kesho kweli takujali,
   Sina si kuwa bahili, sina ni kukosekana.

7. Hasa munaopendana. pendo lisotamthili,
   Kichache na zaidana. furahani na madhili
   Daima mwaambatana. leo ni gani ajili,
   Sina si kuwa babili, sina ni kukosekana.

Maswali

1. Lipe shairi hili kichwa mwafaka.   (al. 2)
2. Taja na ueleze bahari **mbili** zinazojitokeza katika shairi hili.   (al.4)
3. Eleza umbo la shairi hili.   (al. 4)
4. Andika ubeti wa 6 kwa lugha nathari   (ala.4)

5.Taja mifano **mitatu** ya maneno ambayo yameandikwa kishairi na kisha uyandike kisanifu. (al. 3)

6. Eleza maana ya msamiati ufuatao kama ulivtotumiwa katika shairi

    (a) Bahili   (al 1)

    (b) Fadhili   (al.1)

    (c) Thakili   (al.1)

8. ***Soma shairi kisha ujibu maswali yanayofuatia.***

Mgomba umelala chini hauna faida tena

Baada ya kukatwa na kufanya kazi

Wa bustani kwa kusita

Watoto, kwa wasi wasi wanasubiri wakati wao

Watoto hakuna kitu

Isipokuwa upepo fulani wenye huzuni

Unaotikisa majani na kutoa sauti ya kilio

Hivyo ndivyo ufalme wa mitara uliyvo

<u>Mti wa mji umelala chini</u> hauna faida tena

Baada ya kukatwa na wafanyakazi

Wa bustani kwa kusita

Chumbani hakuna kitu

Isipokuwa upepo fulani wenye huzuni utingishao

Wenye hila waliozunguka kitanda na kulia

Machozi yenye Matumaini ya piga.

Mbiu ya hatari ya magomvi nyumbani.

      M ago mvi

Kati ya wanawake

      Magomvi

Kati ya watoto kwa ajili ya vitu na uongozi

Ole! Milki ya 'Lexanda imekwisha!

<u>Vidonda vya ukoma visofunikwa</u>

Ambavyo kwa muda mrefu vilifichana

Sasa viko nje kufyonzwa nzi kila aina

Na vinanuka vibaya

Lakini inzi kila mara hufyonza wakifikiri

Nani watamwambukiza.

Maswali

a) Lipe shairi hili kichwa mwafaka   (al. 2)

b) Taja wahusika wanaojitokeza katika shairi   (al.2)

c) Yataje mambo **manne** yanayotendeka baada ya mgomba kuka twa   (al.4)

d) Tambua sifa zozote **nne** zinazokifanya kifungu hiki kuwa shairi.   (al. 4)

4

e) Onyesha kwa tafsiri mbinu ya lugha ya uandishi katika shairi hili ukiondoa mifano mwafaka   (al. 4)

f)Andika methali **tatu** zinazoweza kurejelewa katika shairi hili.   (al.3)

g) Kwa kutolea mifano taja na ufafanue mbinu **mbili** za Uhuru wa ushairi katika shairi hili   (al. 4)

h) Eleza maana ya mafungu yafuatayo yaliyotumiwa kama mafumbo katika shairi   (al.2)

    i) Vidonda vya ukoma

    ii) Mti wa mji umelala chini

5

121/1
MATHEMATICS
 Paper 1
Time: 2^1/$_2$ Hours

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

MATHEMATICS

Paper 1

INSTRUCTIONS TO THE CANDIDATES

- *Write **your name** and **index number** in the spaces provided above*
- *This paper contains two sections; **Section** 1 and **Section 11**.*
- *Answer all the questions in **section 1** and only **five** questions from **Section 11***
- *All workings and answers must be written on the question paper in the spaces provided below each question.*
- *Marks may be given for correct working **even if** the answer is wrong.*
- *Calculations and KNEC Mathematical tables may be used **EXCEP**T where stated otherwise.*
- *Show all the steps in your calculations, giving your answers at each stage in the spaces below each question.*

FOR EXAMINERS'S USE ONLY

Section 1

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

Section 1I

Question	17	18	19	20	21	22	13	24	**Total**
Marks									

GRAND TOTAL

This paper consists of 16 printed pages. Candidates should check carefully to ascertain that all the pages are printed as indicated and no questions are missing.

1

SECTION I (50 MARKS)
Answer all questions in this section in the spaces provided.

1. Without using a calculator, evaluate

$$\frac{\frac{3}{4} + 1\frac{5}{7} \div \frac{4}{7} \, of \, 2\frac{1}{3}}{\left(1\frac{3}{7} - \frac{5}{8}\right) x \frac{2}{3}}$$ Giving your answer as mixed fraction (3mks)

2. Two boys and a girl shared some money. The younger boy got $\frac{5}{18}$ of it; the elder boy got $\frac{7}{12}$ of the remainder and the girl got the rest. Find the percentage share of the younger boy to the girl's share. (4mks)

3. Three numbers, 1400, 1960 and **n** have a G.C.D and L.C.M of 70 and 2^2 X 5^2 x 7^2 x 11 respectively. Find the least possible value of **n** (3mks)

4. A bus starts off from Kitale at 9. a.m and travels towards Kakamega at a speed of 60km/hr. At 9.50 a.m, a matatu leaves Kakamega and travels towards Kitale at a speed of 60Km/h. How far from Kitale will the two vehicles meet. (3mks)

2

5. Find the equation of a straight line which is equidistant from the points **A**(2,3) and **B** (6,1) (3mks)

6. Simplify the expression completely   (3mks)

$$\frac{12x^2 - 16x}{20 - 11x - 3x^2}$$

7. Given that sin $\theta = \frac{2}{3}$ and θ is an a cute angle, find without using tables $tan^2\,\theta + Cos^2\,\theta$. Give your answer as a mixed fraction.   (3mks)

8. Solve for **y** in the equation below.   (4mks)

   $8(2^2)^y = 6\,(2^y) - 1$

3

9. Using a ruler, a pair of compasses only and (proportional) a set square, construct on the upper side division of line **BC**, a line **BD** such that $\angle$**DBC** = 37.5°. Use the line **BD** to divide **BC** into 4 equal portions. (3mks)

10. Sketch the net of the solid below. (2mks)
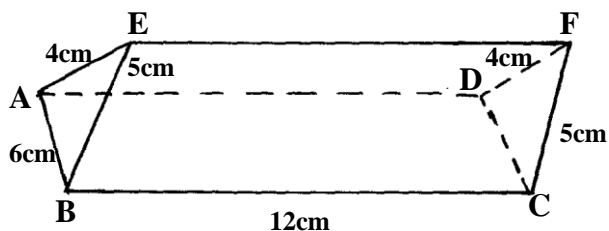
11. In a regular polygon, each interior angle is x^o and each exterior angle is $\left(\dfrac{x-36}{3}\right)^o$

    (i)   Find angle X^o (1mk)

    (ii)   Find the number of sides of the polygon (2mks)

4

12. The figure below represents a plot of land **ABCD** such that **AB**= 85m, **BC** 75m **CD**= 60m **DA** = 50m and angle **ACB** = 90º. (not drawn to scale)
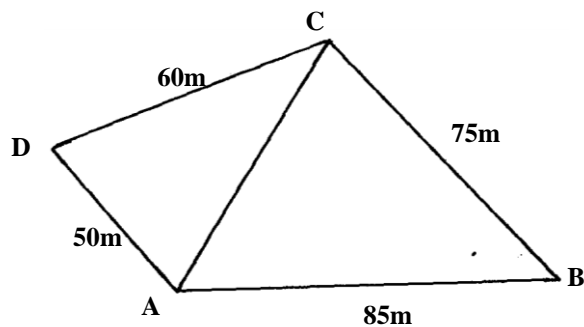
Determine the area of the plot, in hectares correct to two decimal places. (4mks)

13. An open rectangular box measures externally 32cm long , 27cm wide and 15cm deep. The box is made up of metal 1cm thick. If it has a mass of 1.5kg, what is the density of the box to 4 significant figures? (3mks)

14. Find the integral values of x which satisfy the following inequalities;
   2x + 3 > 5x – 3 > -8 (3mks)

5

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

	Buying Ksh	Selling Ksh
1 US dollar ($)	63.00	63.20
1 UK pound (£)	125.00	125.95

    A tourist arrived in Kenya with £ 9600 which he converted into Kshs at a commission of 5%. He later used ¾ of the money before changing the balance of dollars at no commission calculate ; to the nearest dollar, the amount he received.   (3mks)

16. The histogram shown below represents the distribution of marks obtained in attest. The bar marked A has a height of 3.2 units while **B** has a height 1.2 units. If the frequency of the class represented by **B** is 6, find the frequency of the bar represented by **A**.   (3mks)
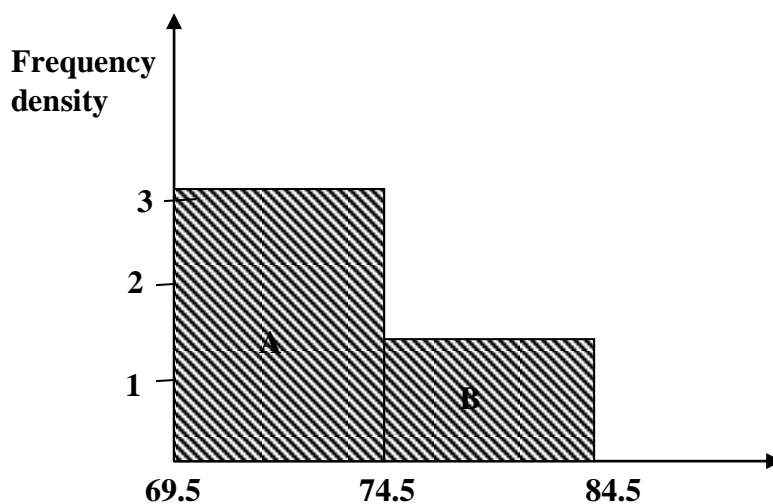
6

SECTION II (50 MARKS)
Answer any five questions in this sections in the spaces provided.

17. The figure below (not drawn to scale) shows a quadrilateral **ABCD** inscribed in a circle. **AB** = 5cm, **BC** = 8cm, **CD** = 7cm and **AD** = 8cm. **AC** is one of the diagonals of length 10cm.
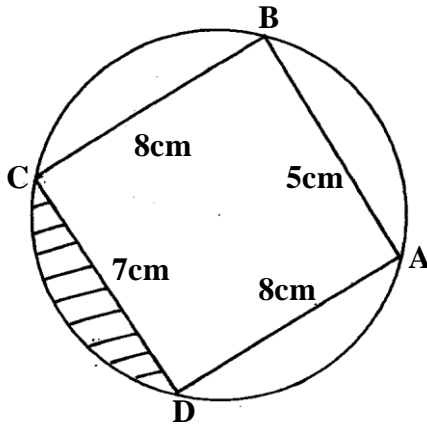
(a) Find the size of angle **ABC**.   (3mks)

(b) Find the radius of the circle.   (2mks)

(c) Hence, calculate the area of the shaded region.   (5mks)

7

18. In the figure below $\overrightarrow{OB} = \underset{\sim}{b}$, $\overrightarrow{OC} = 3\overrightarrow{OB}$ and $\overrightarrow{OA} = \underset{\sim}{a}$

   (a) Given that $\overrightarrow{OD} = 1/3\ \overrightarrow{OA}$ and $\overrightarrow{AN} = \frac{1}{2}\ \overrightarrow{AC}$, $\overrightarrow{CD}$ and $\overrightarrow{AB}$ meet at **M**. Determine in terms of $\underset{\sim}{a}$ and $\underset{\sim}{b}$
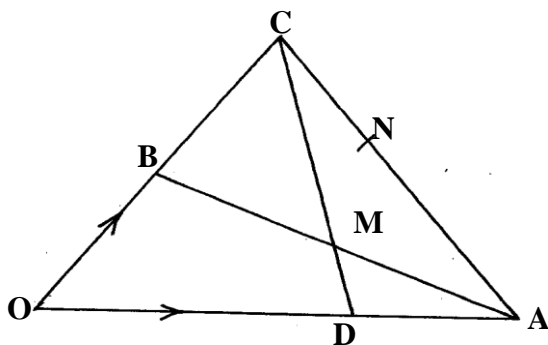
   (i) $\overrightarrow{AB}$ (1mk)

   (ii) $\overrightarrow{CD}$ (1mk)

   (b) Given that $\overrightarrow{CM} = \mathbf{k}\ \overrightarrow{CD}$ and $\overrightarrow{AM} = \mathbf{h}\ \overrightarrow{AB}$ determine the values of the scalars **k** and **h**   (5mks)

   (c) Show that **O**, **M** and **N** are collinear.   (3mks)

8

19. The table below shows the analysis of examination marks scored by 160 candidates.

Marks %	1-10	11-20	21- 30	31 – 40	41- 50	51 – 60	61 – 70	71 – 80	81- 90	91-100
No. of candidates	2	6	15	22	36	34	20	15	6	4

(a) Using an assumed mean of 45.5 , calculate

   (i)   The mean   (3mks)

   (ii)   The standard deviation   (4mks)

(b) Calculate the minimum mark for grade **A** if 40 students got grade **A-**   (3mks)

20. **ABCD is** a quadrilateral with vertices as follows: **A**(3,1), **B** (2,4) **C** (4,3) and **D** (5,1)

(a) (i) On the grid provided draw the quadritoral **ABCD** and the image **A'B'C'D'** under a transformation

with matrix $\begin{bmatrix} 0 & -1 \\ 1 & 0 \end{bmatrix}$. Find the co-ordinates of **A'B'C'D'**   (3mks)

Describe the transformation that maps **ABCD** onto **A'B'C'D**' fully   (1mk)

(b) A transformation represented by the matrix $\begin{bmatrix} 1 & 0 \\ 0 & -1 \end{bmatrix}$ maps **A'B'C'D'** onto **A''B''C''D''** find the co-ordinates of **A''B''C''D''.** Plot **A''B''C''D''** on the same grid.
(3mks)

(c) Determine a single transformation that maps **A''B''C''D''** onto **ABCD**. Describe this transformation fully.   (3mks)

10
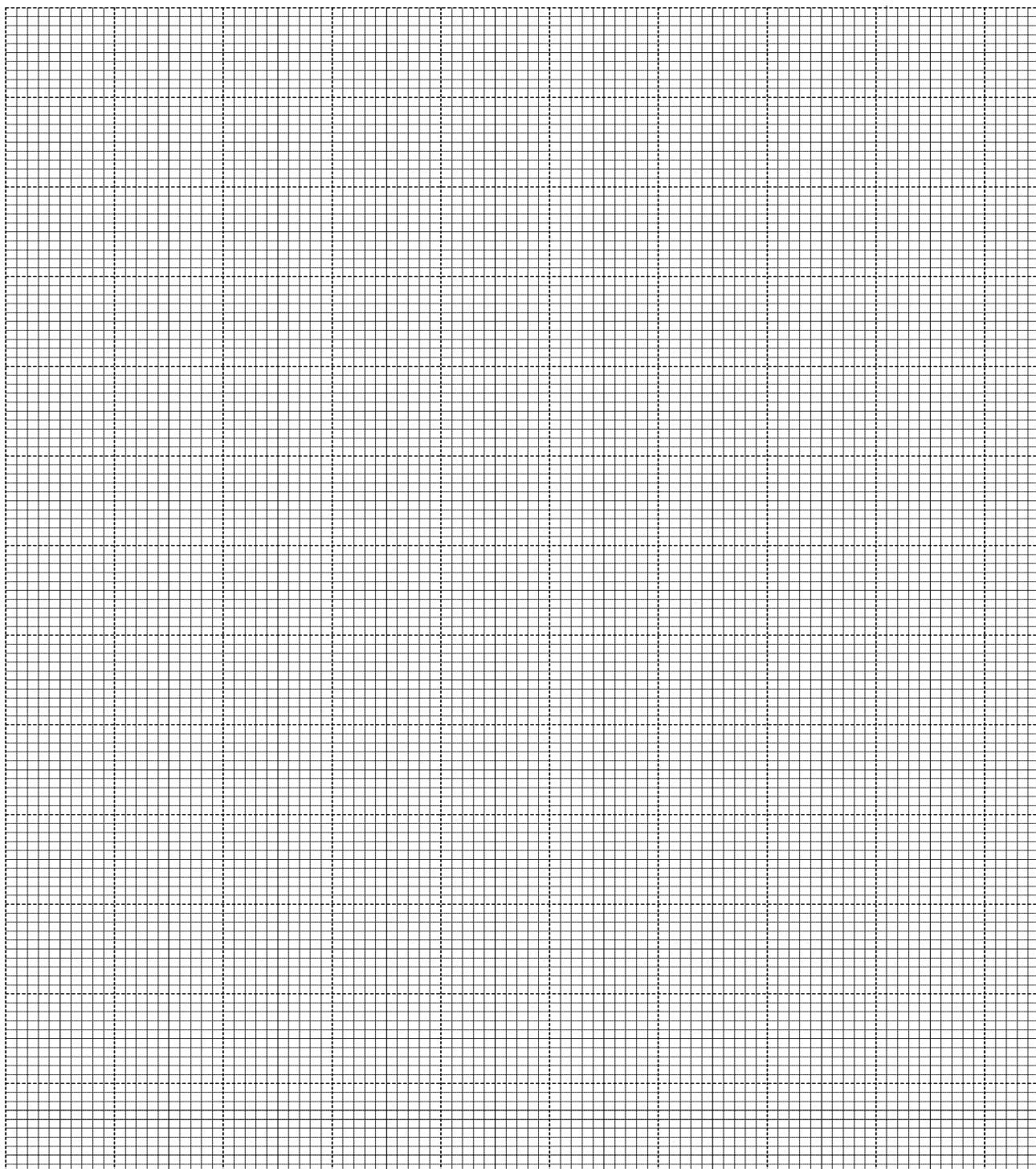
21. Four towns **P,Q, R** and S are such that **Q** is 1500 km due east of town **P**. Town R is 1080 km due North of town **Q**. Town S is on a bearing of 330° from P and on a bearing of 300° from **R**.
    (a) Use a ruler and a pair of compasses and show the positions of town **P, Q,R** and **S.** (take a scale of 1cm = 3000km)   (5mks)

(b) (i)   Determine the distance of **PS** in Km   (2mks)

   (ii)   Determine the distance **RS** in km.   (2mks)

   (iii)   Determine the bearing of town **S** from **Q**   (1mk)

11

22. The diagram below represents two vertical watch – towers **AB** and **CD** on a level ground. **P** and **Q** are two points on a straight road **BD**. The height of the tower **AB** is 20m and road **BD** is 200m
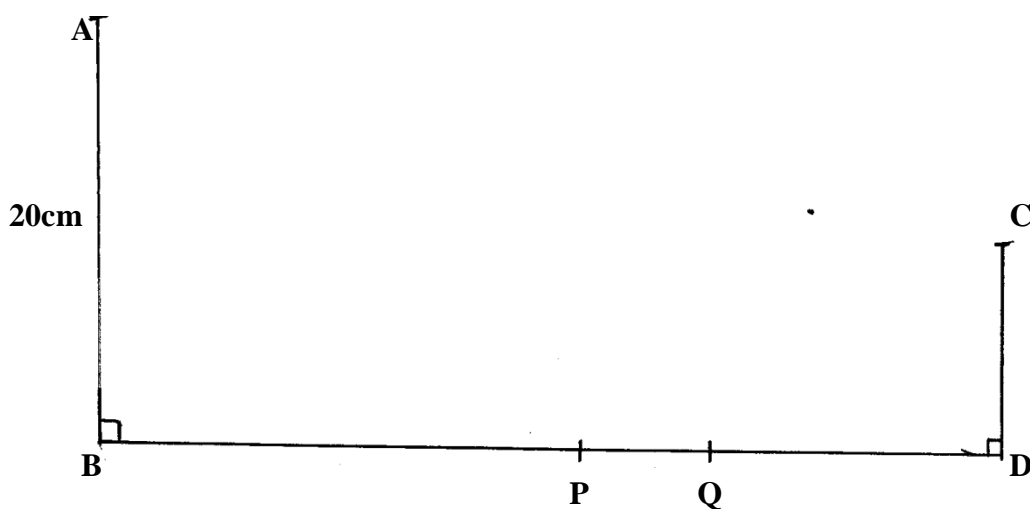
(a) A car moves from **B** towards **D**. At point **P,** the angle of depression of the car from points **A** is 11.3º Calculate the distance **BP** to 4 significant figures.   (2mks)

(b) If the car takes 5 second to move from **P** to **Q** at an average speed of 36km/hr, calculate the angle of depression of **Q** from **A** to 2 decimal places.   (3mks)

(c) Given that **QC** = 50.9 cm, calculate
    (i) The height of **CD** in meters to 2 decimal places;   (2mks)

    (ii) The angle of elevation of **A** from **C** to the nearest degree.   (3mks)

12

23. The parents of a certain mixed secondary school decided to buy a school van worth Ksh. 900,000. Each student was to contribute the same amount of money. 50 students were transferred from the school; as a results each f the remaining students had to pay Ksh. 600 more.

(a) Find the original number of the students in the school.   (5mks)

(b) Find the percentage change in contributions per student.   (3mks)

(c) If the ratio of boys to girl in the school was 11: 7 find the amount money contributed by boys alone.

(2mks)

13

24. The distance **S** metres from a fixed point ,covered by a particle after **t** seconds is given y the equation;
$S = t^3 - 6t^2 + 9t + 5$

(a) Calculate the gradient tot the curve at **t** = 0.5 seconds. (3mks)

(b) Determine the values of **S** at the maximum turning points of the curve. (4mks)

(c) On the space provided, sketch the curve of **$S = t^3 - 6t^2 + 9t + 5$** (3mks)

14

121/2
MATHEMATICS
PAPER 2
TIME: 2 ½ HOURS

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

121/2
Mathematics
Paper 2
2 ½ Hours

INSTRUCTIONS TO CANDIDATES

- Write your **name** and **index number** in the spaces provided at the top of the page.
- The paper contains two sections; section I and II.
- Answer *all* the questions in section I and any five questions from section II.
- All answers and working **Must** be written on the question paper in the spaces provided below each question.
- Non- programmable silent electronic calculators and **KNEC** mathematical tables may be used except where stated otherwise.
- Mark may be given for correct working even if the answer is wrong. .

For Examiners Use Only

Section I

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

Section II

GRAND TOTAL

Question	17	18	19	20	21	22	23	24	Total

This paper consists of 16 printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.

1

SECTION I (50 MARKS)
Answer all questions in this section in the spaces provided.

1. Use logarithms in all steps to evaluate. (4mks)

$$\frac{2.53^2 \, x83.45}{\sqrt{0.4562}}$$

2. By using completing square method, solve for x in $4x^2 - 3x - 6 = 0$ (3mks)

3. Make **p** the subject in $\quad T = \sqrt[3]{\dfrac{p^2 + n}{m^2}} + R$ (3mks)

4. If $\dfrac{\sqrt{14}}{\sqrt{7}-\sqrt{2}}$ - $\dfrac{\sqrt{14}}{\sqrt{7}+\sqrt{2}}$ $= a\sqrt{7} + b\sqrt{2}$

Find the value of **a** and **b** where **a** and **b** are rational numbers. (3mks)

5. (a) Find the first three terms in ascending powers of x of $(2-x)^5$ (1mk)

(b) Hence find the value of the constant **k**, for which the coefficient of x in the expansion of
$(k+x)(2-x)^5$ is -8 (2mks)

6. $\mathbf{OA} = 3\,\underset{\sim}{i} + 4\,\underset{\sim}{j} - 6\,\underset{\sim}{k}$ and $\mathbf{OP} = \underset{\sim}{i} + 15\,\underset{\sim}{k}$. **P** divides **AB** in the ratio $3 : -2$. Write down the coordinates of **B**. (3mks)

3

7. Solve the following equation giving answer in degrees for $0^o \le x \le 360^o$
   $5 - 4 \cos^2 x = 4 \sin x$ (4mks)

8. Find the relative error in the area of a parallelogram whose base is 8cm and height 5cm.   (3mks)

9. Three people **A, B** and **C** can do a piece of work in 45 hours, 40 hours and 30 hours respectively. How long can B take to complete the work when he starts after **A** and **C** have worked for 13 hours each.   (3mks)

4

10. Two line $x + 2y = -1$ and $2x + 3y = 3$ intersect at point **T.** Find the equation of circle **T** and radius 5 units giving your answer in the form $x^2 + y^2 + g + fy + c = 0$ where **g, f**, and **c** are constants. (3mks)

11. The figure below shows a square based pyramid **ABCD**. **AV** = **BV** = **DV** = 18cm. **AB** = 10cm. calculate the angle between the planes **BVC** and **AVD** (3mks)
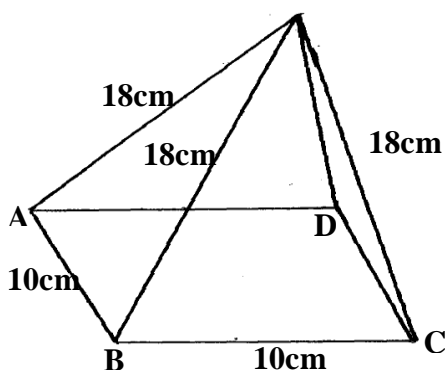
12. Find the equation of the normal to the curve $y = x^3 - 2x^2 + 3x - 1$ at the point (2,5) (3mks)

13. The figure below shows a circle with centre **O** and diameter **AB** is parallel to **CD**. Given that **AB** = 8cm and Chord **CD** is 6cm.Calculate the distance of the chord from **O** to 2 significant figures. (2mks)

14. A quantity P varies partly as the cube of **Q** and partly varies inversely as the square of **Q**. when **Q** = 2, **P** = 108 and when **Q** = 3, **P** = 259. Find the value of **P** when **Q** = 6. (3mks)

15. Solve for *y* in the following equation below: (4mks)

$$\log_4 y + \log_y 4 = 2$$

16. The data below shows marks scored by 8 form four students in Rachuonyo district mathematics contest. 44,32,71,52,28,39,46,64. Calculate the mean absolute deviation (3mks)

6

SECTION II (50 MARKS)
Answer any five questions in this sections in the spaces provided.

17. The table below show income tax rates

Monthly taxable income	Rate of tax(Ksh/£)
1 – 435	2
436 – 870	3
871 - 1305	4
1306 – 1740	5
Excess over 1740	6

An employee earns a monthly basic salary of sh. 30,000 and is also entitled to taxable allowances amounting to Ksh. 10,480.

(a) Calculate the gross income tax   (4mks)

(b) The employee is entitle to a personal tax relief of Ksh. 800 per month. Determine the net tax. (2mks)

(c) If the employee received a 50% increase in his total income, calculate the parentage increase on the income tax.   (4mks)

7

18. An aeroplane that moves at a constant speed of 600knots flies from town **A** (14°N, 30°W) southwards to town **B** (X°S,30°W) taking 3 ½ hrs. It then changes direction and flies along latitude to town **C** (X°S,60°E). Given $\pi = 3.142$ and radius of the earth **R** = 6370km
   (a) Calculate
      (i)   The value of **X**   (3mks)

      (ii)   The distance between town **B** and town **C** along the parallel of latitude in km. (2mks)

   (b) D is an airport situated at (5°N, 120°W) , calculate
      (i) The time the aeroplane would take to fly from **C** to **D** following a great circle through the South pole.   (3mks)

      (ii) The local time at **D** when the local time **A** is 12.20 p.m   (2mks)

19. Three darts players Jane, Kelly and Brony are playing in a completion the probability that Jane, Kelly and Brony hit the bull's eyes is $\frac{1}{5}$, $\frac{2}{5}$ and $\frac{3}{10}$ respectively.
    (a) Draw a probability tree diagram to show all the possible outcomes for the players.　　(4mks)

    (b) Calculate the probability that :
    　　(i)　　Jane or Brony hit the bull's eye.　　(2mks)

    　　(ii)　　All the three fail to hit the bull's eye.　　(2mks)

    　　(iii)　　Only two fails to hit the bull's eye.　　(2mks)

9

20. The voltage **V** and the resistance **R** in certain corductor are correction by the equation **RV+ a + bv** where **a** and **b** are constant. The values of **R** and **V** are given is the table below.

V	0.25	0.13	0.08	0.06	0.05	0.04
R	1	2	3	4	5	6

(a) Re write the above equation in the form **y = mx + c**   (1mk)

(b) Using the above table and equation obtained in (a) above, draw a straight line graph using scale of 1 cm 5 units on x axis and 1cm for 1 unit on y axis   (5mks)

10
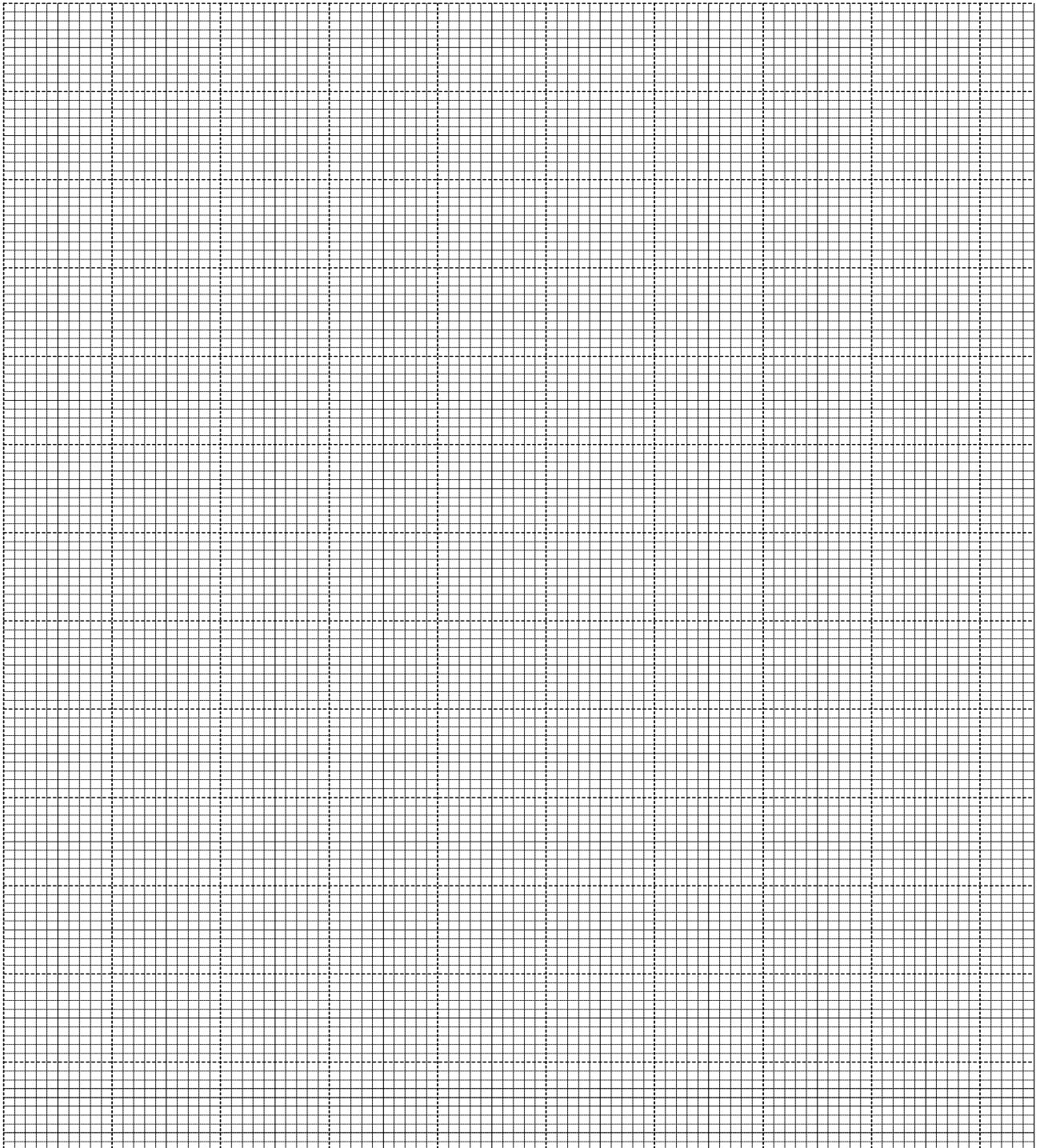
(c) Use your graph to estimate
    (i)   The value of **a**   (2mks)

    (ii)   The value of **b**   (1mk)

11

21. The fourth, seventh and sixteenth term of an arithmetic progression are in geometric progression. The sum of the first six terms of the arithmetic progression is 12.

   Determine the
(a) First term and the common difference of the arithmetic progression.   (6mks)

(b) Common ratio of the geometric progression.   (2mks)

(c) Sum of the first six terms of the geometric progression.   (2mks)

12

22. Use a ruler and compass only for all construction in this question.
   a) (i) Construct a triangle **ABC** in which **AB** = 8cm **BC** = 7.5 and ∠ **ABC** = 112 ½°   (3mks)
   b) By shading the unwanted regions show the locus of P within the triangle **ABC** such that
      (i) **AP** ≤ **BP**
      (ii) **AP** ≥ 3cm mark the required as **P**.   (3mks)
   c) Construct a normal from **C** to meet **AB** produced at **D**.   (1mk)
   d) Locate the locus of R in the same diagram such that the area of triangle **ARB** is ¾ the area of
      triangle **ABC**.   (2mks)

13

23. Sarger makes two types of wedding cakes. Types **A** and **B**. type **A** requires 200g of flour and 80g of cooking oil. Type **B** requires 400g of flour and 50g of cooking oil. On a particular day, they had 16000g of flour and 400g of cooking.
    (a) If they make **x** cakes of type **A** and **Y** cakes of type **B**, write down inequalities in **x** and y to represent the above conditions. (4mks)

    (b) Graph the inequalities in (a) above. (4mks)

14
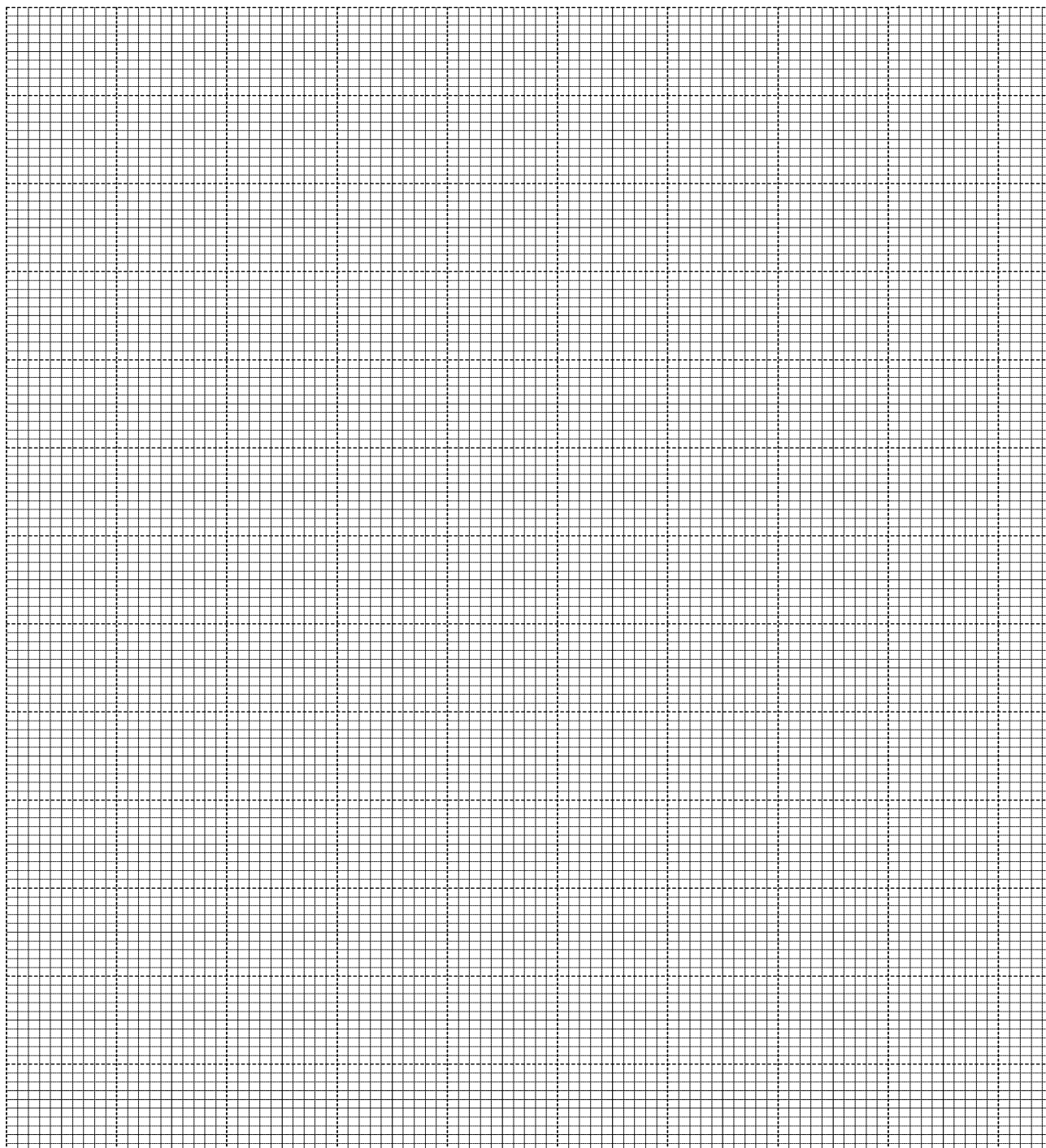
(c) The profit on type **A** cake is sh. 30 and the profit n type **B** cake in sh. 40. Determine the number of cakes of each type he should make to maximize profits.   (2mks)

24. A ball is thrown upward and its height after **t** seconds is **S** metres ,where
$$S = 30\,t - 5t^2$$

Find

a) The greatest height reached by the ball and the time when it is reached.   (4mks)

b) The time it returns to the original level.   (2mks)

c) Its velocity after 4 seconds.   (2mks)

d) The acceleration when **t** = 1.8 seconds   (2mks)

16

232/1
PHYSICS
THEORY
PAPER 1
TIME: 2 HOURS

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

232/1
PHYSICS
Paper 1
2 hours

INSTRUCTIONS TO CANDIDATES

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

For Examiners Use

SECTION	QUESTIONS	MAXIMUM SCORE	CANDIDATE'S SCORE
A	1 – 14	25	
B	15	12	
	16	11	
	18	14	
	18	10	
	19	08	
	TOTAL	**80**	

This paper consists of 9 printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.

1

SECTION A (25MARKS)

Answer all questions in this in the spaces provided

1. Figure 1. Shows a glass beaker of cross sectional area 10.5cm^2

Fig 1

— Beaker
— Water
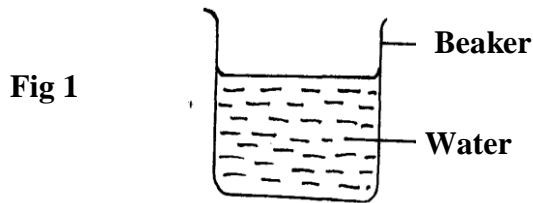
When a metal block of mass 250 g is immersed into the water, the level of water rises by 3.5 cm. determine the density of the metal block. Express your answer in S.I unit (3mks)

2. The figure 2 shows air flowing through a pipe of nonuniform cross sectional area. Two tubes **A** and **B** are dipped into the liquid as shown.

Air flow →

Tube B   **Tube B**

Fig 2   — **Liquid**   — **Liquid**
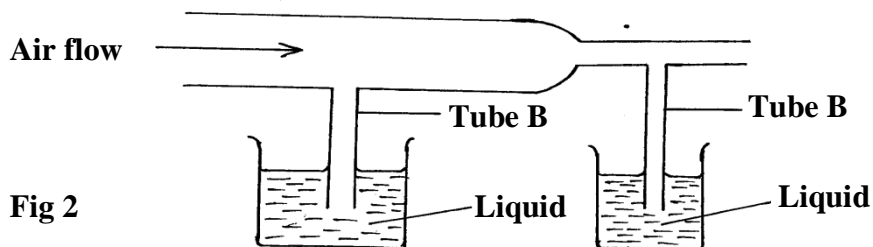
(a) Indicate the level of the liquid in tubes **A** and **B** (1mk)

(b) Explain your answer in part (a) above (1mk)
………………………………………………………………………………………………….

3. A motor cyclist wears a helmet in the inside with sponge. Explain how this minimizes injuries to the motorists head when involved in an accident. (2mks)
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4. A balloon is filled with a gas which is lighter than air. It is observed to rise in air up to a certain height state a reason why the balloon stops rising. (1mk)
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………………………………………………………………………………………………...……

5. Figure 3 shows two corks **P** and **Q** fixed on a polished and a dull surface with wax.

Fig 3
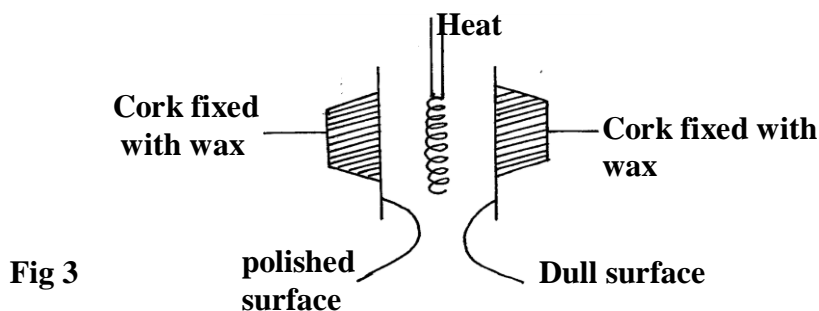
Explain the observation, when the heater is switched on for a short time given that the heater is equidistant from the two surfaces. (2mks)

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6. The air pressure at the base of Mt. Kenya is 70cmHg while at the top of the mountain is 55cmHg. Given that the average density of air is 130kg/m^3 and the density of mercury is 13600kg/m^3. Determine the height of the mountain. (3mks)

7. Figure 4 shows a store of weight **W** placed on an inclined plane. If the angle of inclination is θ
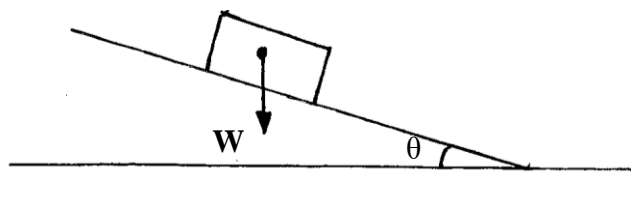
Fig 4

a) Indicate with arrows, two other forces acting on the stone. (1mk)

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b) State how each of the forces in (a) above is affected when the angle θ is increased. (1mk)

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8. State the reason why it is easier to separate water into drops than to separate a solid into smaller pieces. (1mk)

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9. Figure 5 shows a uniform beam held at equilibrium.

Fig 5
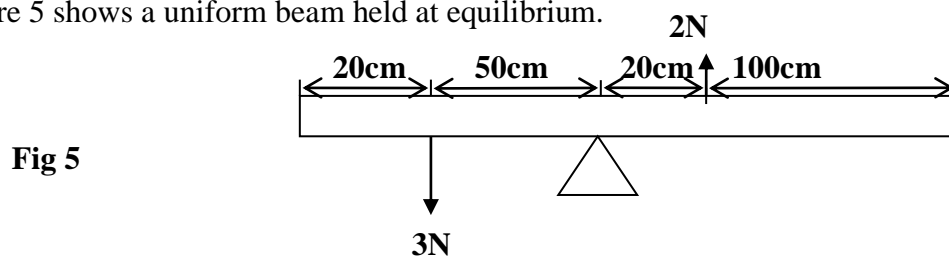
Determine the weight of the beam. (3mks)

10. Figure 6 shows a glass filled with ice placed on a bench.
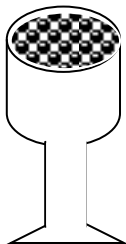
Fig 6

State the change on the stability of the glass when temperature increases. (1mk)

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11. State the fastest mode of heat transfer. (1mk)

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12. Explain how sensitivity of clinical thermometer can be improved. (1mk)

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13. Figure 7 shows a mass of 12g suspended on a set of 6 identical springs. When the mass was hanged on spring **A**, it extended by 5cm.
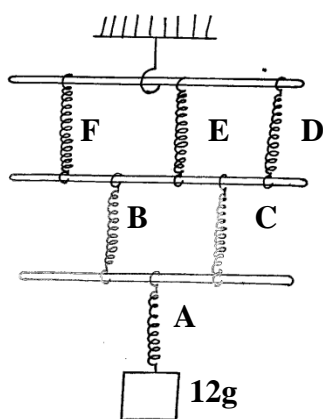
Determine the extension of the combination shown if each spring and rod has negligible weight.
(2mks)

14. Sketch a graph of volume of a fixed mass of a gas against pressure on the axes below.   (1mk)

SECTION B (55 MARKS)

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

15.   (a) State the law of inertia   (1mk)

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(b) A ball of mass 50kg is   thrown from the top of a cliff 20m high with a horizontal velocity of 20m/s. On reaching the ground it completely covered arm **X** of a hydraulic lift such that no water splashed out. The other arm **Y** has a weight of 25200N. Assuming the tap was opened when the ball struck the surface of water.
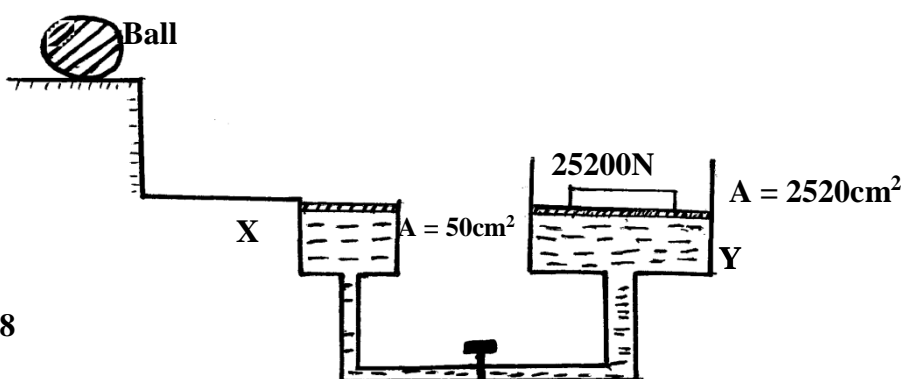
Fig 8

Determine

(i)   The time taken by the ball to strike the surface of water at arm **X**   (3mks)

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(ii)   The distance from the foot of the cliff to where the ball strikes the surface of water
                                                                                                                          (2mks)

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(iii)   The vertical with which it struck the surface of water at arm **X**   (2mks)

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(iv)   The force with which the ball struck the surface of water   (2mks)

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(v)   The distance moved by the 25200N load arm **Y** if the level of water in arm **X** and arm **Y**
        was initially the same.   (2mks)

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16. The graph shows the relationship between volume and temperature for an experiment.

Fig 9
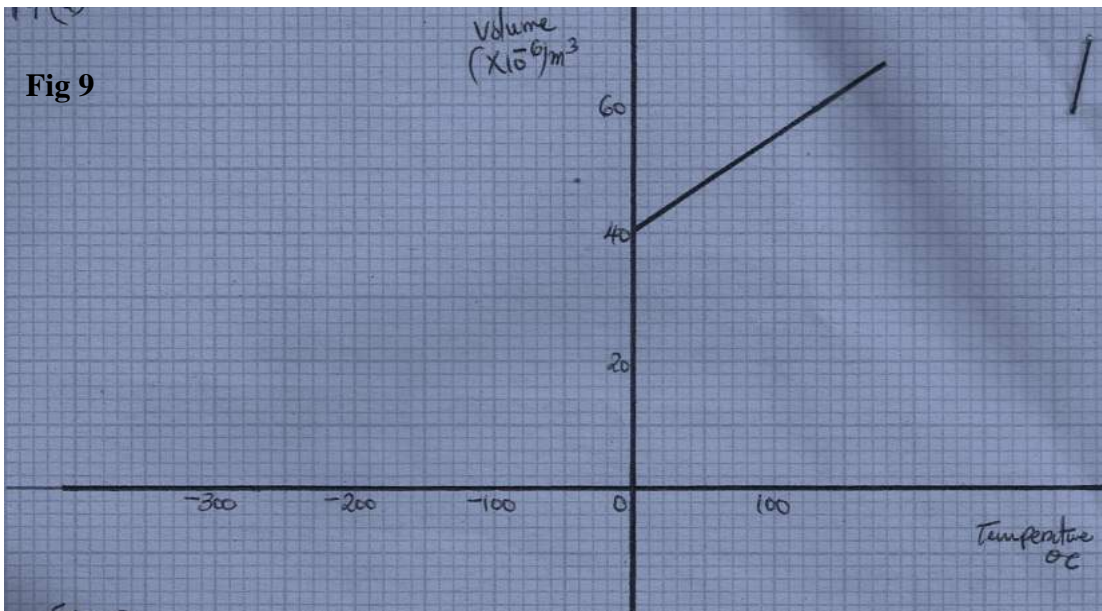
(i)   What was the volume of the gas at 0^oC (1mk)

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(ii)   At what temperature would the volume of the gas be Zero   (1mk)

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(iii)   Explain why the temperature is part (ii) above cannot be achieved.   (1mk)

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(b) A wooden block of mass 50g floats with 20% of its volume above the water surface and kept in
     place by a string as shown below. The tension in the string is 0.06N

Fig10

6
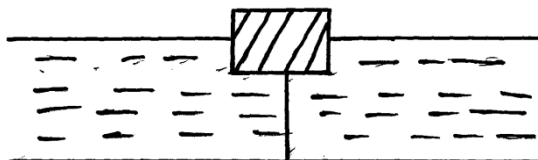
Determine

    (i)   The upthrust experienced by the object .   (2mks)

    (ii)   The volume of the displaced.   (2mks)

    (iii)   The density of the object   (3mks)

17. Figure 11 shows a car of mass, **m** moving along a curved part of the road with a constant speed.

Fig11
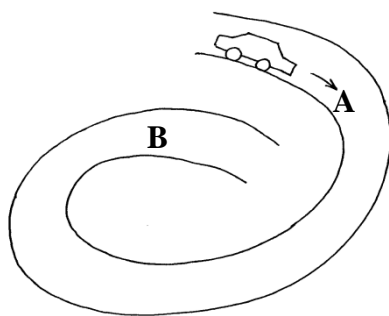
(a) (i) Explain why the car is more likely to skid at **B** than at **A**   (2mks)

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    (ii) If the radius of the path at **B** is 250m and the car has a mass of 6000kg, determine the maximum speed the a car can be driven while at **b** to avoid skidding if the co-efficient of friction between the road and the tyres is 0.3   (3mks)

(b) A string of length 70cm is used to whirl a stone of mass 0.5kg in a circle of a vertical plane at 5rev/s. determine:

    (i)   The period   (2mks)

    (ii)   The angular velocity   (3mks)

7

(c) The figure 12 shows a flywheel of radius 14cm suspended about a horizontal axis through its centre so that it can rotate freely about the axis. A thread is wrapped round the wheel and mass attached to its loose end so as to hang at a point 1.26m above the ground.

Fig12
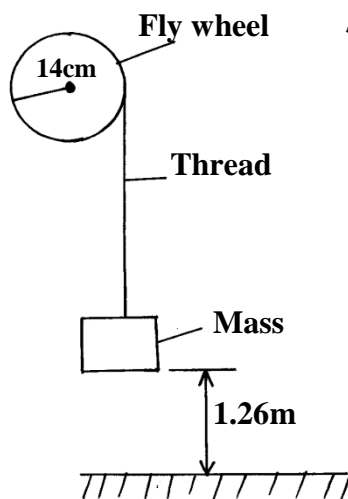
When the mass is released, it accelerates at $0.28m/s^2$ determine the angular velocity of the wheel just before the mass strikes the ground. (4mks)

18. (a) Define specific latent heat of vaporization. (1mk)

………………………………………………………………………………………………..……

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(b) Water of mass 200g and temperature 10^oC is put in a copper calorimeter of mass 80g. steam from boiler at normal pressure is passed into the calorimeter for some time. The total mass of the calorimeter and contents is 283g. the final temperature of the contents is measured and is **T**.

Determine :

(i) Heat lost by steam on condensing to water. (2mks)

(ii)   Heat lost by condensed water.   (2mks)

(iii)   Heat gained by the calorimeter and the cold water   (3mks)

(iv)   The value of **T**   (2mks)

(take specific heat capacity of water = 4200J/kg/k and copper = 900j/kg/k. specific latent heat of vaporization of steam = 2.26 x 10^6 J/kg)

19. (a) The figure 13 shows a pulley system used for lifting loads.

Fig13   Load
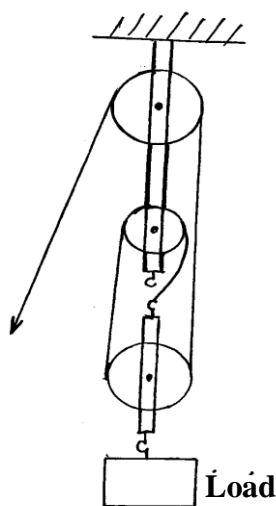
 (i)   What is the velocity ratio of the pulley system   (1mk)

(ii)   If it's efficiency is 80%. Determine its mechanical advantage.   (2mks)

(iii)   If the load is 300N, determine the effort.   (2mks)

(b) Derive an expression for the velocity ratio of the wheel and axle machine if the wheel has a
     radius of **R** and axle has a radius of **r**.   (3mks)

10

232/2
PHYSICS
THEORY
PAPER 2
TIME: 2 HOURS

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

232/2
PHYSICS
Paper 2
2 hours

INSTRUCTIONS TO CANDIDATES

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

For Examiners Use

SECTION	QUESTIONS	MAXIMUM SCORE	CANDIDATE'S SCORE
A	1 – 12	25	
B	13	10	
	14	10	
	15	07	
	16	09	
	17	09	
	18		
	TOTAL	**80**	

This paper consists of 9 printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.

1

SECTION A (25 MARKS)

1. The figure below shows a series of wavefronts one wavelength apart approaching a gap between two barriers in aripple tank
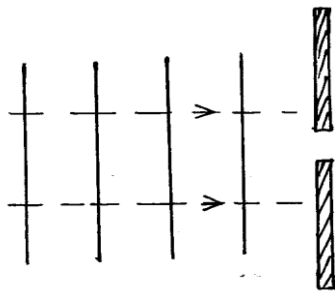
Show on the figure what happens as the waves pass the gap.   (1mk)

2. A mine worker stands between two vertical cliffs 400m from the nearest cliff. The cliff are x and metres apart. Every time he strike the rock once , he hears two echoes, the first one after 2.5 seconds, while the second follows 2 seconds later.
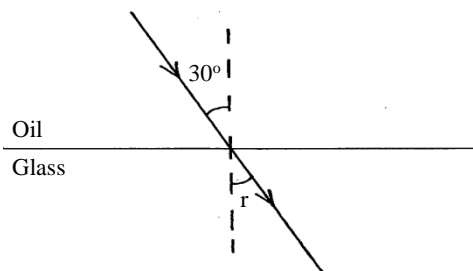   Calculate
    (i)   The speed of sound in air.   (2mks)

    (ii)   The value of x (3mks)

3. The coil of an electric motor is usually round on a soft iron armature. State the purpose of soft iron armature.   (1mk)
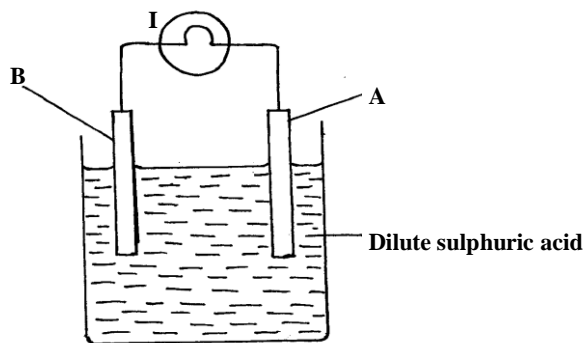   …………………………………………………………………………………………………….

4. The diagram below shows a ray of light incident on a glass-oil interface.

If the refractive indices of oil and glass are 6/3 and 3/2 respectively, determine the value of **r** (3mks)

2

5. The figure shows a simple cell.

Use the information on the figure to answer the questions below.
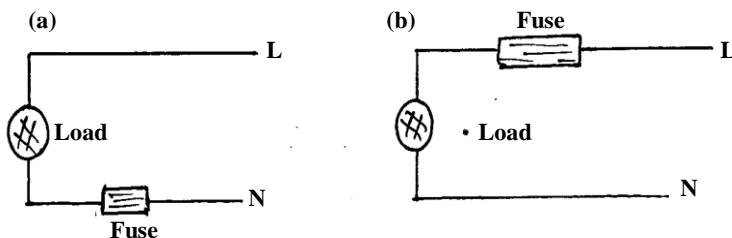
(a) Name the parts labeled **A** and **B** (1mk)

A……………………………………………………..

B……………………………………………………

(b) It is observed that the bulb goes off after a short time. Explain this observation (2mks)

……………………………………………………………………………………………………….

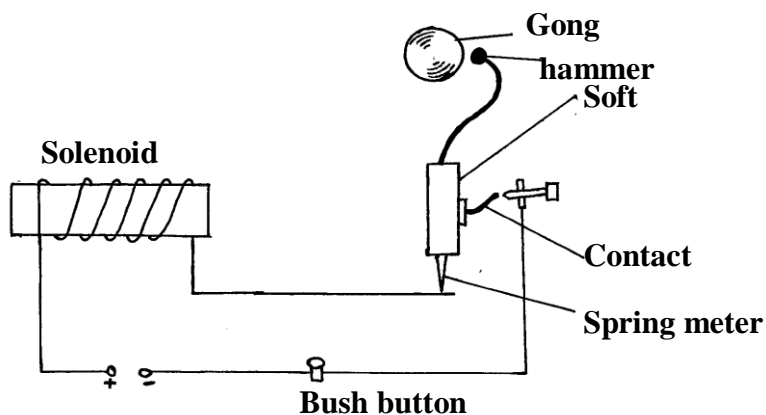……………………………………………………………………………………………………….

6. The figure below shows how a fuse may be connected in electric current

In either case the fuse blows out but (a) is dangerous while (b) is not. Explain (2mks)

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7. The figure shows a simple circuit diagram of an electric bell.

Explain how it works (2mks)

……………………………………………………………………………………………………….

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3

8. The figure shows part of electromagnetic spectrum

Ultra violet rays	Micro wave	x-rays	Red light

Arrange the electromagnetic waves in the order of decreasing energy. (1mk)

……………………………………………………………………………………………….

……………………………………………………………………………………………….

9. State **one** advantage of using optical fibres in communication. (1mk)

……………………………………………………………………………………………….

10. Find the current flowing and voltage across the 8Ω resister in the circuit. (3mks)
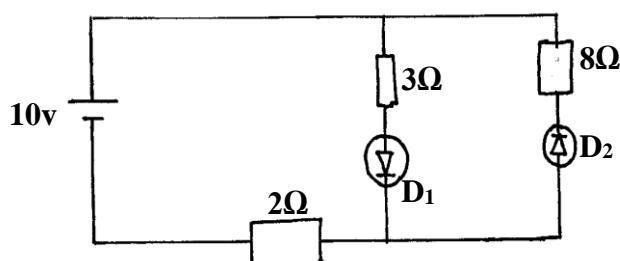
11. The following is part of radio active decay series. $_{83}^{234}Bi \xrightarrow{\beta} {}_{84}^{90}X \xrightarrow{\acute{\alpha}} {}_{b}^{230}Y$
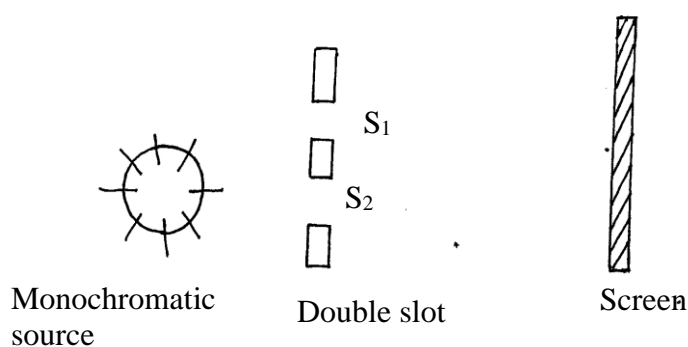
Determine the value of **a** and **b** (2mks)

12. State **one** property of cathode rays. (1mk)

……………………………………………………………………………………………….

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SECTION B (55MARKS)
Answer all the questions in this section

13. (a) In the experiment to observe interference of light waves a double slit is placed close to the source see figure.

Monochromatic source

Double slot

Screen

4

(i)   State the function of the double slit.   (1mk)

……………………………………………………………………………………………………….

……………………………………………………………………………………………………….

(ii)   State and explain what is observed on the screen.   (3mks)

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(iii)   State what is observed on the screen when:
        (I)   The slit separation S_1S_2 is reduced.   (1mk)

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        (II)   White light source is used in place of monochromatic source.   (1mk)

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(c) (i) The figure below shows a set up by a student.

Electric buzzer

Steam from boiling water
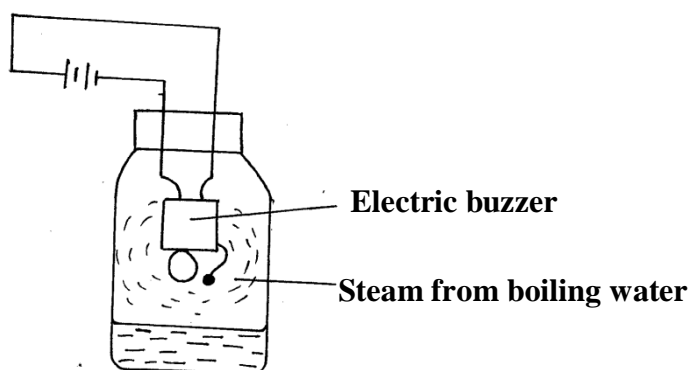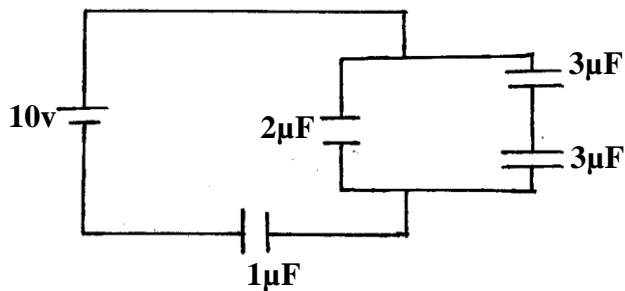
State and explain what happens to the sound from the buzzer as the bottle and its contents are cooled to 0^oC (3mks)

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(iii)   In the pipe below complete the diagram to show how air in the open pipe vibrate with a frequency of first overtone.   (1mk)

        Open pipe

5

14. (a) The figure below shows an arrangement of capacitor connected to a 10V DC supply.

Determine

(i)   The combined capacitance of the arrangement.   (3mks)
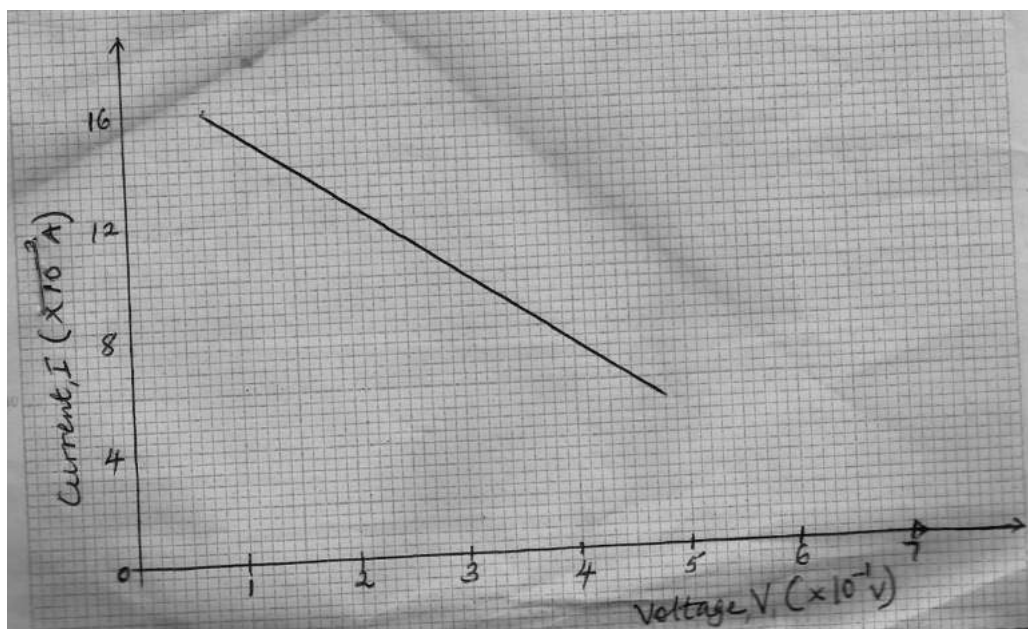
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(ii) The total energy stored.   (2mks)

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(b) The graph below shows the variation of potential difference **V** with current, **I** for a certain cell.

From the graph determine:

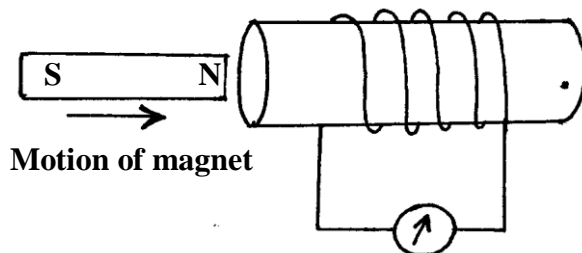(i)   Internal reaction of the cell.   (3mks)

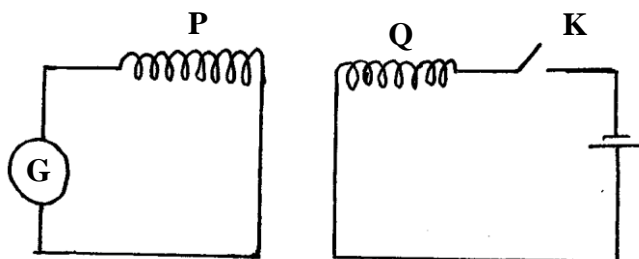(ii) The e.m.f of the cell   (2mks)

15. (a) (i) State the Lenz's law of electromagnetic induction.   (1mk)

……………………………………………………………………………………………….

………………………………………………………………………………………………….

   (ii)   Use the law to determine the direction of the induced current in the circuit below   (1mk)

Motion of magnet

   (b) Two identical coils **P** and **Q** are placed close to each other as shown.

   (i)   State the observation on the galvanometer made when the switch **K** is closed.   (1mk)

………………………………………………………………………………………………….

………………………………………………………………………………………………….

   (ii)   Explain the observation stated in (i) above   (2mks)

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(c) A student designed a transformer to provide power to an electric bell marked 24W, 6V from a 240V
   mains. He wound 50 turns and **N** turns on an iron ring. When he a connected the coil of 50 turns to
   the bell and the **N** turns coil to an a.c, he found that the transformer was only 60% efficient. Find:
   (i)   The value of **N**   (2mks)

   (ii)   The power in the coil with N turns   (2mks)

16. (a) (i) With the aid of a diagram differentiate between forward biased and reverse biased diode. (2mks)

(ii) Sketch a graph to show how a current through a forward biased **p-n** function varies with potential difference across it. (2mks)

(b) The figure below shows an incomplete circuit for full wave rectification

out put to CRO
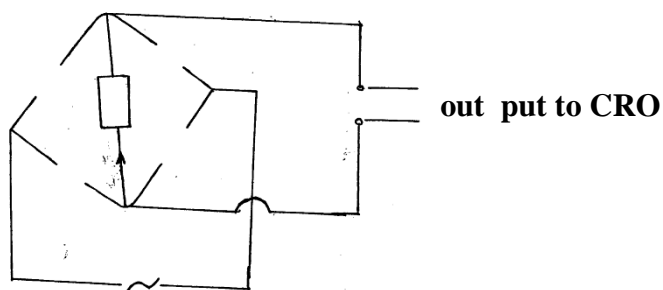
(i) Complete the diagram to show how the diodes should be arranges for the current to flow through **R** in the direction shown with an arrow. (2mks)

(ii) Sketch the output voltage as observed in the CRO (1mk)

17. (a) Complete the diagram below indicating the rays that will lead to the formation of the image **I** shown below and locate the object position (2mks)

F

I

8
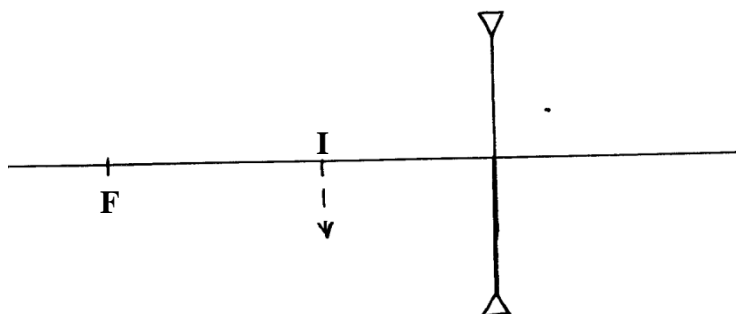
(b) An object is placed 12cm from a convex lens and it forms a virtual image 36cm from the lens calculate the focal length of the lens. (3mks)

(c) The graph below shows variation of $\frac{I}{u}$ (cm^{-1}) with $\frac{I}{v}$ (cm^{-1}) for an object placed infront of a concave mirror
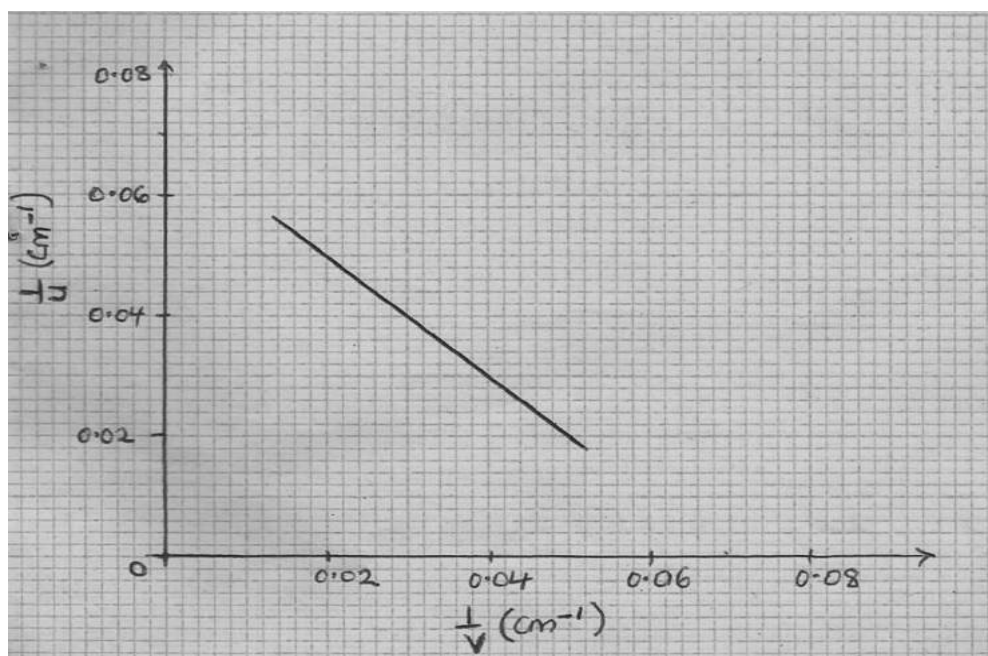
From the graph,
(i) Determine the focal of the mirror. (2mks)

(ii) Determine the image distance when the object is 20cm from the mirror. (2mks)

9

18. (a) The graph below shows stopping potential V against frequency for a photocell.

Frequency f (x10^{14}Hz)
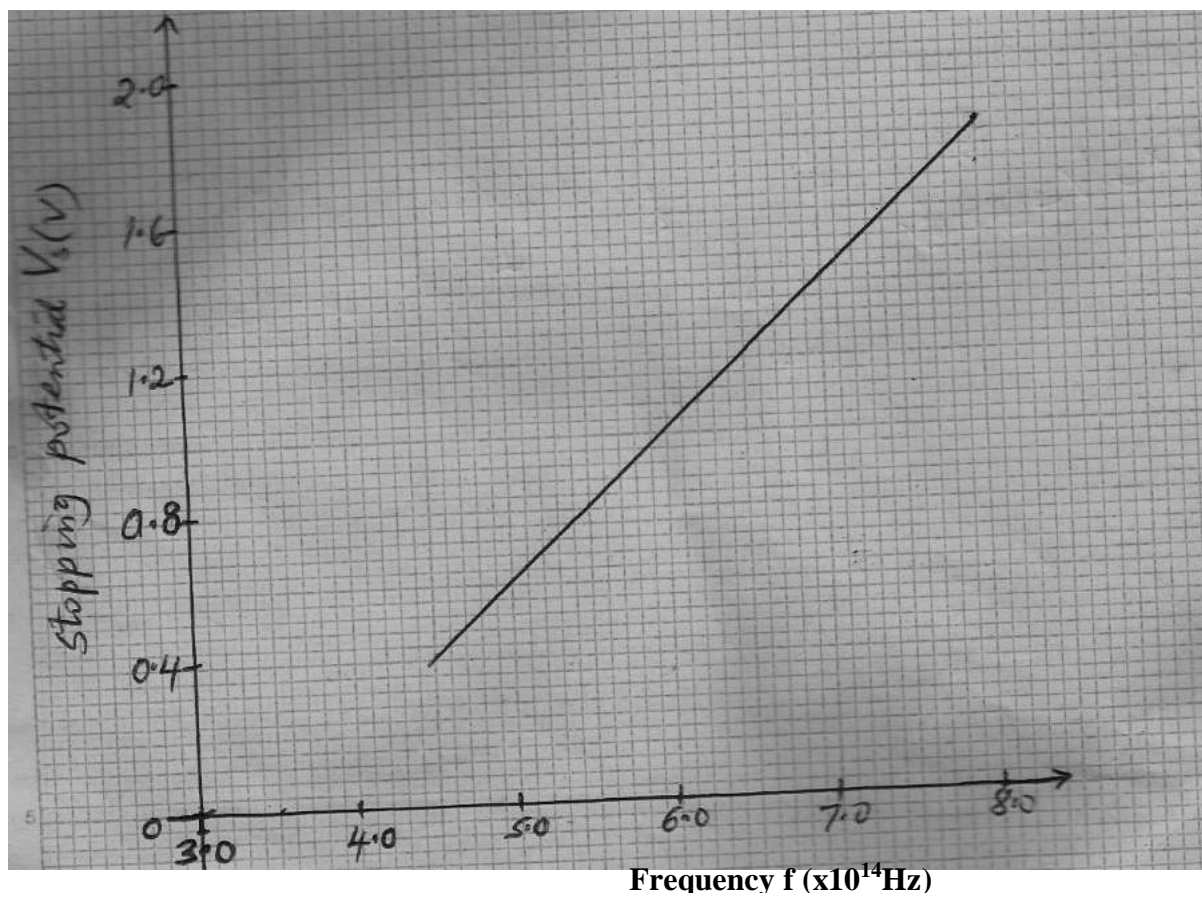
From the graph determine:

(i)   Threshohd frequency   (1mk)

(ii)   Planck's constant   (2mks)

(iii)   Work function of the metal   (2mks)
        (take **e** = 1.6 x 10-19c)

10

(b) The figure below shows an x-ray tube.
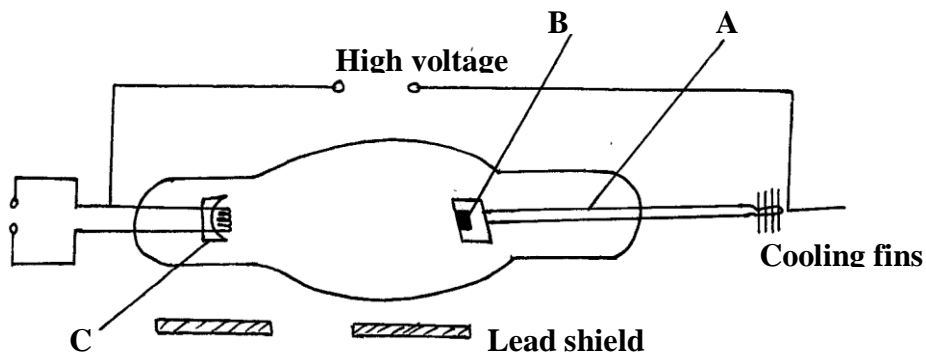
(i) Indicate on the diagram the path of the x-ray beam supplied by the tube.   (1mk)

(ii) Why is **B** set at an angle of 45º relative to the electron beam.   (1mk)

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…………………………………………………………………………………………………….

(iii) Why are cooling pins necessary   (1mk)

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(iv) Why is the tube evacuated.   (1mk)

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…………………………………………………………………………………………………….

(v) State the function of the part labeled **C**   (1mk)

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…………………………………………………………………………………………………….

11

232/3
PHYSICS
PRACTICAL
PAPER 3
TIME: 2½ HOURS

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

232/3
Physics
Paper 3
2 ½ hours

INSTRUCTIONS TO CANDIDATES:

1. Write your **name** and **index number** in the spaces provided above.
2. Sign and write the **date** of the examination in the spaces provided above.
3. You are supposed to spend the first 15 minutes of the 2 ½ hours allowed for this paper reading the whole paper carefully before commencing your work.
4. Marks are given for a clear record of the observation actually made, their suitability, accuracy and the use made of them.

FOR EXAMINERS' USE ONLY

Question 1		
Question 2		
Total		

This paper consists of 8 printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.

1

Part A

1. **Question 1**

You are provided with the following apparatus

- One resistor labeled **R**
- A wire labeled **W** mounted on millimeter scale
- A wire lebelled **S** mounted on a millimeter scale
- One dry cell and a cell holder
- One jockey
- One centre zero galvanometer
- Eight connecting wires, four with crocodile clips at both ends
- A micrometer screw gauge
- A switch

Proceed as follows

(a) Determine the average diameter D, of the wire labeled W, using the micrometer screw gauge provided.

D_1=_____mm, (½ mk)
 D_2=_____mm (½ mk)

$D = \dfrac{D_1 + D_2}{2}$

=_____m (½ mk)

(b) Set up the apparatus as shown in the circuit diagram in figure 1, below.
Use the crocodile clips to fix length **L**, of wire labeled S at 50 cm from the end connected to the galvanometer **G**.
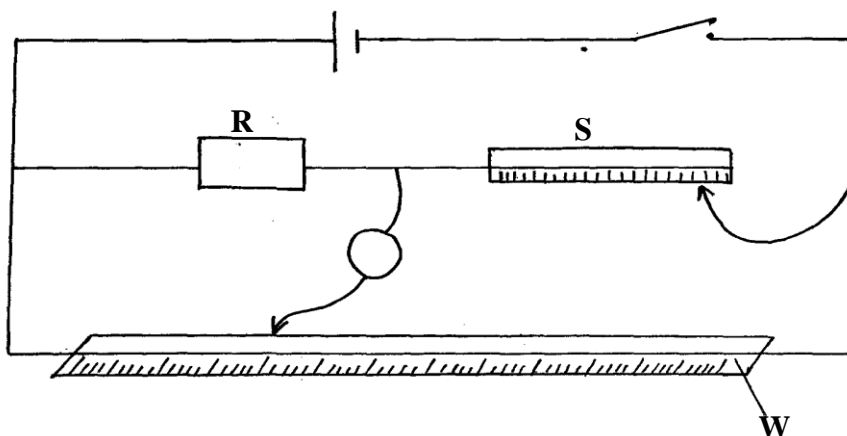
(c) Close the switch, and use the jockey to touch one end of the wire **W**, and then the other end. The deflections on the galvanometer should be in opposite directions, if not check the circuit. Adjust the positions of the jockey along the wire **W** until there is no deflection in the galvanometer. Record the value of **x** and **y**.

X = _____cm (½ mk)

Y=_____ cm (½ mk)

2

(d) Repeat for other values of **L** in the table

L (cm)	45	40	35	30	25	20
X (cm)						
Y (cm						
$\frac{y}{x}(adp)$						

(3mks)

(e)(i) Plot a graph of $^1/x$ (y- axis) against, **L** (4mks)
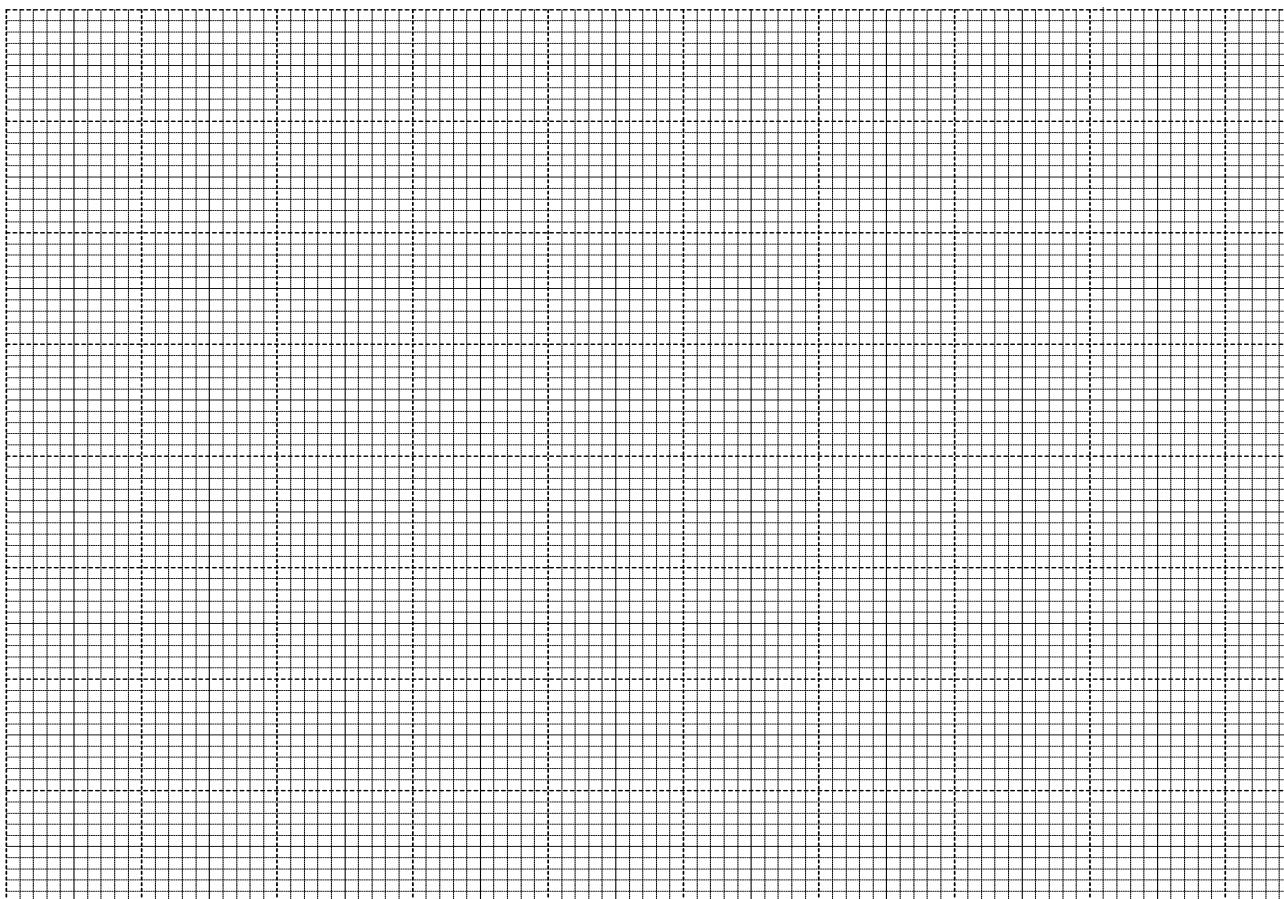
(ii) Determine the slope , **m** of the graph. (2mks)

(iii) Given that K = $\frac{100D}{m}$, determine the value of **K** (2mks)

3

PART B
You are provided with the following apparatus

- A rectangular glass block
- Four optical pins
- A piece of soft board
- A plain sheet of paper
- 4 thumb tacks

Proceed as follows

Place the plain sheet of paper on the soft board and fix it using the thumb tacks provided. Place the glass block at the centre of the sheet, draw its outline. Remove the glass block.
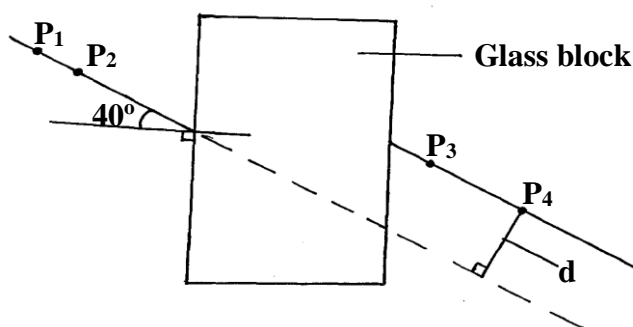
(ii)   Draw normal at point 2cm from the end of one of the longer side of the block outline.

Draw a line at an angle of $\theta = 40^o$ from the normal. Stick two pins p_1 and p_2 vertically on this line. 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 the perpendicular distance d_1, between the extended line and the line p_3p_4.

$d_1 =$ _____ cm   (1mk)

Repeat the procedure in above $\theta = 60^o$

Hence find $d = \dfrac{d_1 + d_2}{2}$

$=$ _____cm   (1mk)

NB: the sheet of paper with the drawing **MUST** be handed in together with the question paper.

4

Question 2 A

You are provided with the following apparatus

- Two metre rule (not half metre rules)
- Two stands and two clamps
- Two bosses
- Three pieces of threads
- One optical pin
- A piece of cellotape (and or plasticine)
- A spring
- One mass of 200g
- A stop watch.

Proceed as follows

(i)   Set up apparatus as shown in the figure 1 below. Attach the pin (to act as the pointer) at one end of the metre rule using a cellotape.
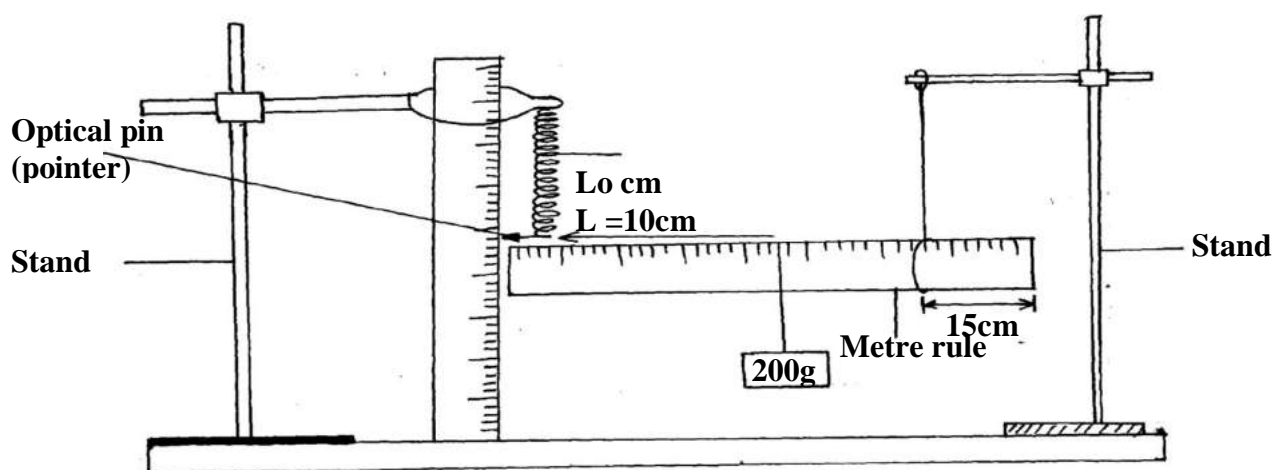
(ii)   Suspend one end of the metre rule with a thread at 5 cm mark from the end
(iii)   Suspend the other end with spring also 5cm from the end so that metere rule is horizontal.
(iv)   Hold the other rule vertically on the bench so that it is near the end with apointer as shown in the diagram above.
(v)   Read the pointer position, Lo_____cm   (1mk)

   (a) Hang on the horizontal metre rule the 200g mass at a length **l** = 10cm from the spring record the extension, **e**, of the spring in the table below.

   (b) Displace the mass slightly downward and release it to oscillate vertically. Take time for 20 oscillation and record in he table below.

   (c) Repeat for other position of **L**, of the mass.

   NB: before taking the reading, ensure the oscillation is steady.

5

Length L (cm)	10	20	30	40	50
Extension M (cm)					
Time for 20 oscillation (sec)					
Periodic time T (sec)					
T² (sec)²					

(5mks)

(vi) Plot a graph of extension, e (m) (y – axis) against T^2 (s)^2 (5mks)
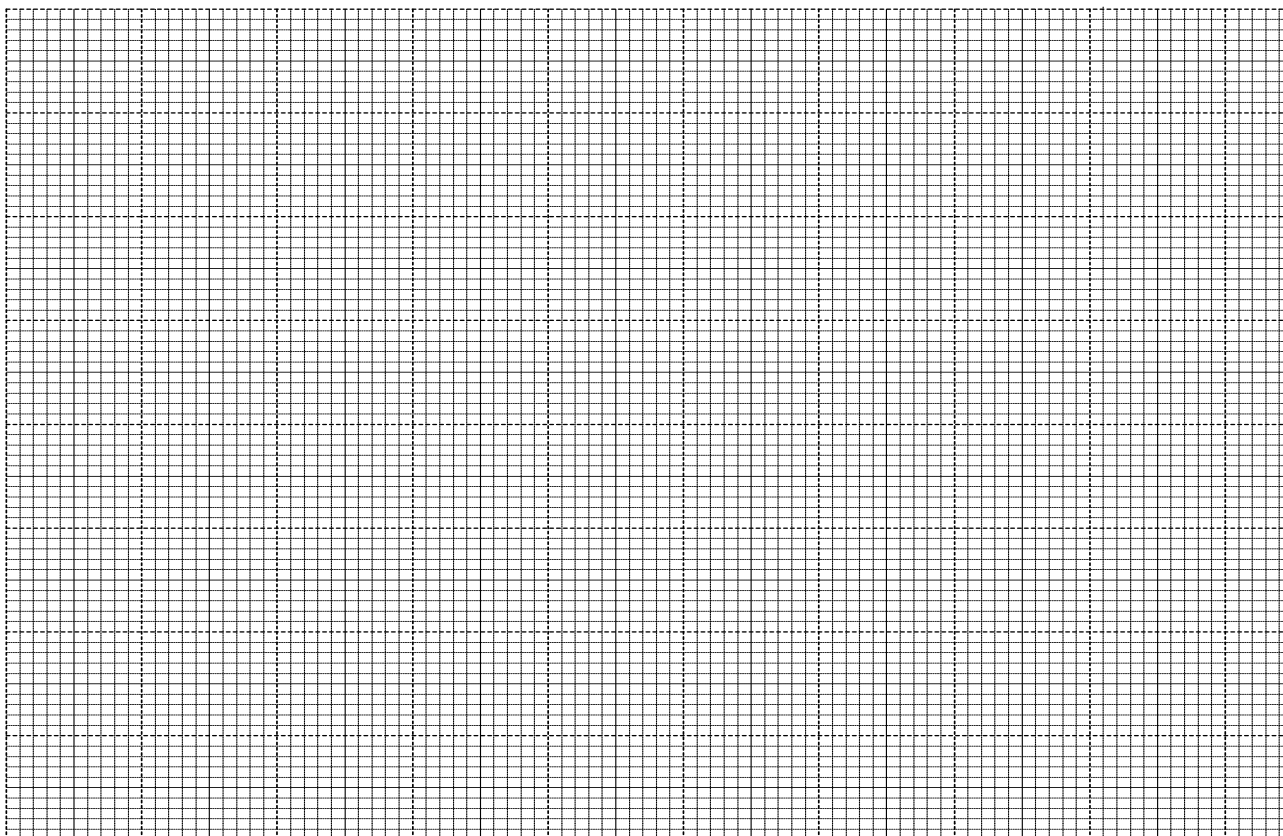
(vii) Calculate the gradient of the graph (2mks)

(viii) Given that $e = \dfrac{RT^2}{4\pi^2} + \mathbf{C}$, determine the value of **R** (3mks)

6

Part B

(b) You are provided with a lens **P** a lens holder a white screen and a 30cm rule

Procedure:

(i)   Set the apparatus as shown in figure 4 below. Focus a sharp image of a distant object on the screen. The object should be at least 10cm away.
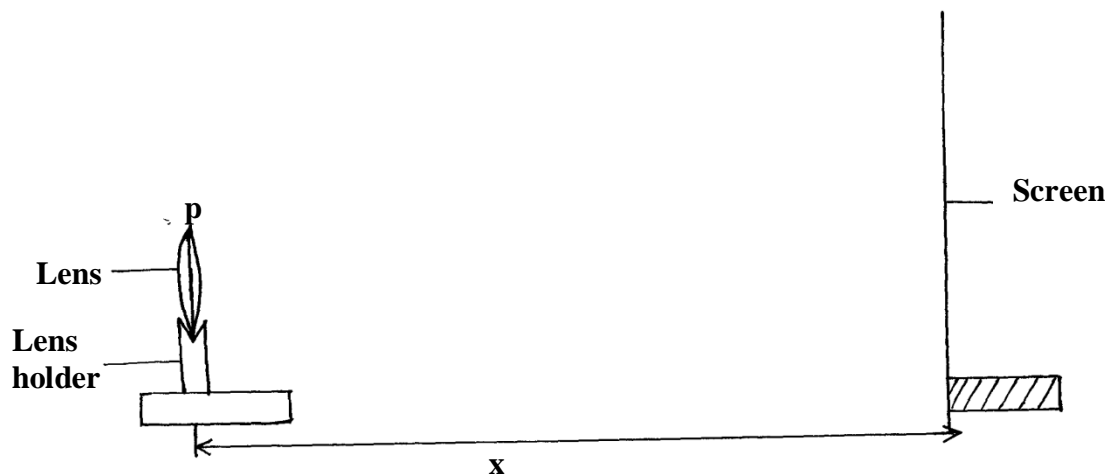
(a) Measure he distance **x** in cm between the lens and the screen at which a sharp image is obtained repeat this two times, using different objects and record your readings in table 3 below.

Table 3

Object	Distance X, (cm)
1	
2	

(2mks)

(ii)   Calculate the average value of **x**   (2mks)

(iii)   What is the physical significance of the result obtained in (iii) above ?   (1mk)

7

443/1
AGRICULTURE
PAPER 1
TIME: 2 HOURS

Kenya Certificate of Secondary Education

443/1
Agriculture
Paper 1
2 hours

INSTRUCTIONS TO CANDIDATES:

- *This paper contains **three** sections A, B and C*
- *Answer **ALL** the questions in section A and B*
- *Answer any **Two** questions from section C*
- *All answers should be written in the spaces provided.*

FOR EXAMINERS USE ONLY

SECTION	QUESTIONS	MAX SCORE	CANDIDATES SCORE
A	1-19	30	
B	20-23	20	
C	24-26	20	
		20	
TOTAL		90	

This paper consists of 8 printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.

1

SECTION A (30 MARKS)

Answer all questions from this section in the spaces provided.

1. Name **three** physical agents of weathering   (1 ½ mks)
    …………………………………………………………………………….…………………………
    ……
    …………………………………………………………………………….…………………………

2. Outline **three** methods of breaking seed dormancy   (1 ½ mks)
    …………………………………………………………………………….…………………………
    …………………………………………………………………………………………….……………
    …………………………………………………………………………………….……………………

3. List **three** signs shown by crops when they are attacked by nematodes   (1 ½ mks)
    …………………………………………………………………………….…………………………
    …………………………………………………………………………….…………………………
    …………………………………………………………………………….……………………………

4. Differentiate between Net Revenue and Marginal Revenue as used in production economics (1mk)
    …………………………………………………………………………….……………………………
    …………………………………………………………………………….……………………………

5. Give **one** use of each of the following materials in the preparation of compost manure   (1 ½ mks)
    (a) Top soil
    …………………………………………………………………………………………….……………
    (b) Wood ash
    …………………………………………………………………………….……………………………
    (c) Organic manure
    …………………………………………………………………………….……………………………

6. List **three** advantages of using polythene sleeves in raising seedlings   (1 ½ mks)
    …………………………………………………………………………….……………………………
    …………………………………………………………………………….……………………………
    …………………………………………………………………………….……………………………
    …………………………………………………………………………….……………………………
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    …………………………………………………………………………….……………………………

7. State **three** disadvantages of commercial land tenure system   (1 ½ mks)
    …………………………………………………………………………….……………………………
    …………………………………………………………………………….……………………………
    …………………………………………………………………………….……………………………

2

8. Outline **four** methods used to improve efficiency and productivity of farm labour (2mks)

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9. State **four** factors that determine the choice of an irrigation system to use in a farm. (2mks)

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10. Mention **four** characteristics of shifting cultivation as a method of farming (2mks)

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11. Differentiate between thinning and pricking out as used in crop management (1mk)

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12. List **three** books of account used in the farm (1 ½ mks)

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13. State **three** cultural measures taken by farmers to control weeds in the field (1 ½ mks)

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14. State **three** precautions taken when harvesting pyrethrum (1 ½ mks)

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15. Mention **four** advantages of minimum tillage (2mks)

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16. Name **three** crop diseases caused by viruses (1 ½ mks)

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3

17. Outline **three** examples of joint products in crop production   (1 ½ mks)

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18. State **three** advantages of land fragmentation   (1 ½ mks)

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19. Give **four** advantages of using zero grazing system of grazing   (2mks)

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SECTION B (20 MARKS)

Answer ALL questions in this section in the spaces provided

20. The following are diagrams illustrating a soil profile labeled **A** and **two** types of soil structure labeled **B** and **C**. Use them to answer the questions that follow.

    A   **B**   **C**
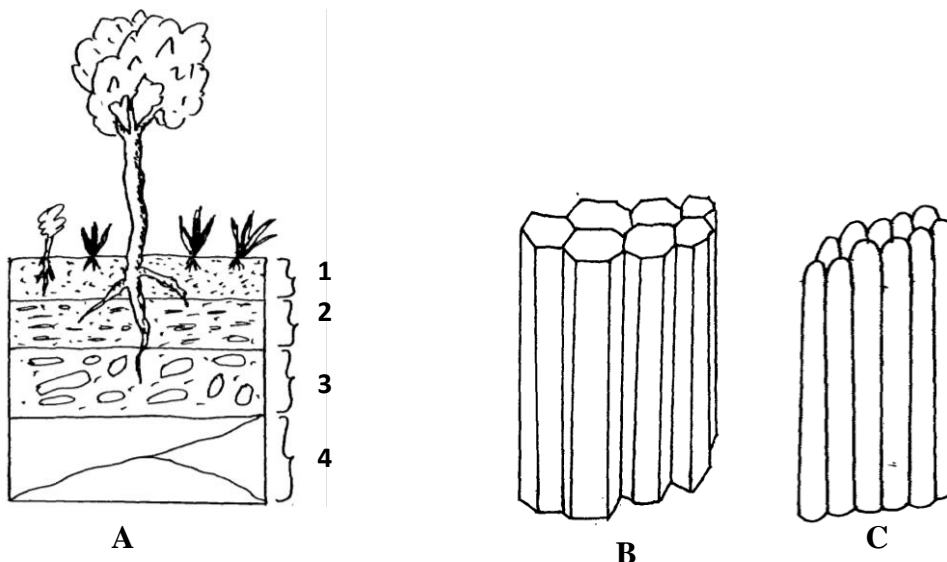
    (a) Identify the strata of the soil profile labeled **1, 3** and **4**   (1 ½ mks)

        1…………………………………………………

        3…………………………………………………

        4…………………………………………………

    (b) Identify the types of soil structure labeled **B** and **C**   (1mk)

        B…………………………………………………

        C…………………………………………………

    (c) Name a natural process that may change soil structure **B** into structure **C**   (½ mk)

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(d) State **two** limitations of the hard layer of soil that develops in layer 2 (1mk)

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(e) List **two** farming practices that may destroy structure B (1mk)

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21. The following are illustrations of methods of vegetative crop propagation labeled D and E. use them to answer the questions that follow
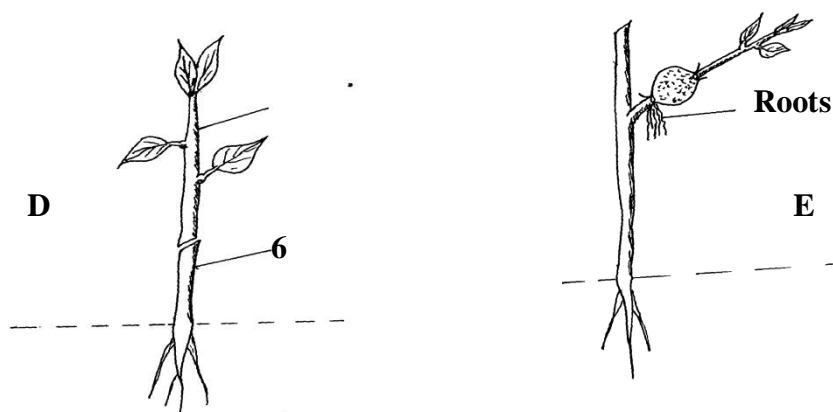
(a) Identify methods of crop propagation labeled **D** and **E** (1mk)

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(b) Identify parts of **D** labeled **5** and **6** above (1mk)

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(c) When does method E become necessary in crop production (1mk)

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(d) Outline **four** characteristics you would desire part 6 to have (2mks)

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22. The following diagram is of a method of draining waterlogged land for crop production. Study it carefully and answer the questions that follow.

5

Crop

Furrow
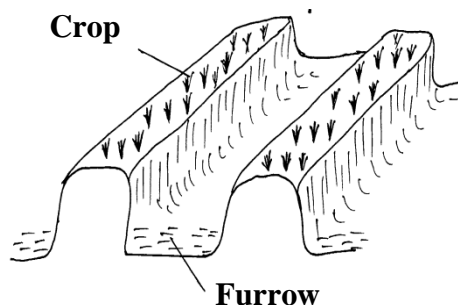
(a) Identify the methods of drainage illustrated above (1mk)

…………………………………………………………………………….……………………
………………………………………………………………………………….…………………

(b) Apart from the above method of drainage, name **two** other methods of draining farm/land (2mks)

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………………………………………………………………………………….…………………

(c) Give **two** reasons for draining farm/land (2mks)

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………………………………………………………………………………….…………………

23. A farmer was adviced to top-dress his maize crop with C.A.N at the rate of 200 kg/ha. CAN contains 20% Nitrogen.
    (a) Calculate the amount of Nitrogen applied per hectare (show your working) (3mks)

    (b) Name **two** methods the farmer may have used to top-dress the maize crop (2mks)

SECTION C (40 MARKS)
Answer any two questions from this section in the spaces provided after the question.

24. (a) Outline problems facing agriculture in Kenya (10mks)
    (b) Explain the importance of the following soil constituents
        (i)   Soil air (3mks)
        (ii) Mineral matter (2mks)
    (c) State the uses of water in the farm (5mks)

25. (a) Explain how **five** factors lead to loss of soil fertility (10mks)

6

(b) Explain how **five** factors affect efficiency and effectiveness of herbicides   (10mks)

26. (a) Outline the roles played by co-operative societies in Kenya   (10mks)
    (b) Explain how farmers adjust to risk and uncertainties in farming   (10mks)

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(b) Explain how **five** factors affect efficiency and effectiveness of herbicides…………………
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7

443/2
AGRICULTURE
PAPER 2
TIME: 2 HOURS

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

443/2
Agriculture
Paper 2
2 hours

INSTRUCTIONS TO CANDIDATES:

- *Write your **name** and **index number** in the spaces provided.*
- ***Sign** and **write the date** of examination in the spaces provided*
- *This paper consists of **three** section **A,B** and **C***
- *Answer all questions in section **A** and **B***
- *Answer any **two** questions in section **C***
- *All the questions should answered in the spaces provided*

FOR EXAMINERS USE ONLY

SECTION	QUESTIONS	MAX SCORE	CANDIDATES SCORE
A	1-17	30	
B	18-21	20	
C	22-24	20	
		20	
TOTAL		90	

This paper consists of 8 printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.

SECTION A (30 MARKS)

Answer all questions from this section in the spaces provided.

1. Mention **two** examples of meat goats in Kenya (1mk)

    ……………………………………………..…………………………………………………
    …………………………………………………….…………………………………………………

2. Give the functions of the following parts in the male reproductive system of a goat
    (i)   Testes (1mk)

    ……………………………………………………….…………………………………………………

    (ii)   Urethra (1mk)
    ……………………………………………………….…………………………………………………

3. State **three** factors that affect digestibility of a feed in dairy animals (1 ½ mks)

    …………………………………………………….…………………………………………………
    …………………………………………………….…………………………………………………
    …………………………………………………….…………………………………………………

4. State **three** factors to consider when selecting eggs for sale (1 ½ mks)

    …………………………………………………..…………………………………………………
    …………………………………………………..…………………………………………………
    …………………………………………………..…………………………………………………

5. Give **two** uses of a gear box in a tractor (2mks)

    …………………………………………………..…………………………………………………
    …………………………………………………..…………………………………………………

6. Differentiate between outcrossing and cross breeding as used in livestock production (2mks)

    …………………………………………………..…………………………………………………
    …………………………………………………..…………………………………………………
    …………………………………………………..…………………………………………………

7. State **three** reasons for weighing livestock at weaning stage (1 ½ mks)

    …………………………………………………..…………………………………………………
    …………………………………………………..…………………………………………………
    …………………………………………………..…………………………………………………

8. State **four** functions of vitamins (2mks)

    …………………………………………………..…………………………………………………
    …………………………………………………..…………………………………………………
    …………………………………………………..…………………………………………………
    …………………………………………………..…………………………………………………

2

9. State **two** advantages of using wood as a construction material (2mks)

………………………………………………………………………………………………………

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10. Mention **four** safety precautionary measures when using electric power in the farm (2mks)

………………………………………………………………………………………………………

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11. Name **two** tractor drawn implements that are attached to the draw bar (1mk)

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………………………………………………………………………………………………………

12. Give **two** uses of footbath in a plunge dip (2mks)

………………………………………………..……………………………………………………

………………………………………………………………………………………………………

13. State **two** possible channels through which Kenya farmers can market their livestock (2mks)

………………………………………………..……………………………………………………

………………………………………………………………………………………………………

14. State **two** disadvantages of using hurricane lamps and lanterns as providers of heat in a brooder

(2mks)

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………………………………………………………………………………………………………

15. Give **four** ways of stimulating milk let down in a dairy cow (2mks)

………………………………………………..……………………………………………………

………………………………………………………………………………………………………

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16. State **two** functions of addictives in silage making (2mks)

………………………………………………..……………………………………………………

………………………………………………………………………………………………………

17. State the uses of the following tools and equipments (1 ½ mks)
   (i)   Chipping harmer
   ………………………………………………..……………………………………………………

   (ii)   Tinsnip
   ………………………………………………..……………………………………………………

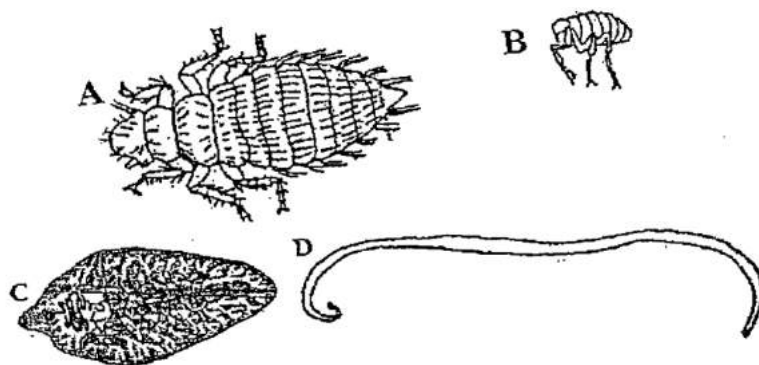   (iii)   Router
   ………………………………………………..……………………………………………………

SECTION B (20 MARKS)

Answer all the questions in this section in the spaces provided

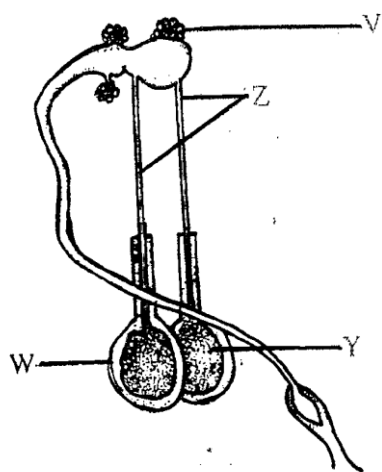**18. (a)** Identify each of the parasites of livestock shown below,   **(2mks)**

   (b) What is the difference between parasites **A** and **B** and parasites **C** and **D**?   **(lmk)**

   A…………………………………………..
   B…………………………………………..
   C…………………………………………..
   D…………………………………………..

   (c) Suggest an effective control measure of the parasite labeled **C**   **(1 mk)**
   …………………………………………………..……………………………………………………

18. The diagram below shows the male reproductive organ in cattle. Study it and answer the questions that follow
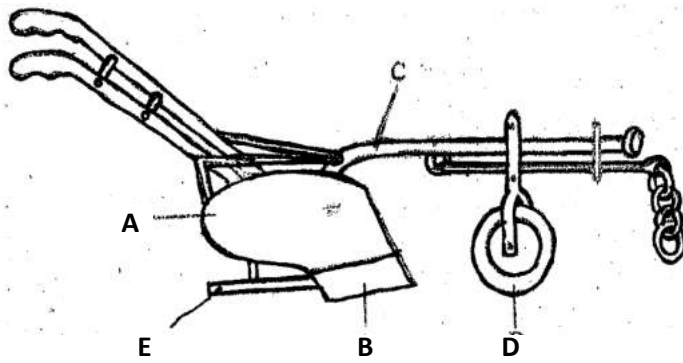

   (a) Name the parts labeled **Z** and **W**   (2mks)
   Z ………………………………………………………………………………
   W ………………………………………………………………………………

   (b) State **two** functions of the part labeled **Y**   (2mks)
   …………………………………………………..……………………………………………………
   …………………………………………………..……………………………………………………

4

19. Below is a diagram of a farm implement

(a) Identify the implement (½ mk)

……………………………………………………………………………………

(b) Label the parts marked **A,B,C,D** and **E** (2 ½ mks)

A…………………………………………………………

B…………………………………………………………

C…………………………………………………………

D…………………………………………………………

E …………………………………………………………

(c) State the functions of the parts labeled **C** and **E** (2mks)

…………………………………………………………………………………………………

…………………………………………………………………………………………………

20. A farmer wants to prepare a ration for layers containing 18% DCP using maize germ 20% DCP and wheat bran 10% DCP.

(a) Calculate using pearson's square method the amount of each feed-stuff needed in order to prepare 100kg of feed (5mks)

(b) Name **one** other method the farmer can use to compute the ratio (1mk)

…………………………………………………………………………………………………

21. The diagrams below illustrate a **four** stroke cycle engine system. Study it and answer the questions that follow