THE KENYA NATIONAL EXAMINATIONS COUNCIL
Kenya Certificate of Secondary Education

231/1   –   **BIOLOGY**   –   **Paper 1**

Nov. 2018 – 2 hours

Name .... Index Number ....

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

Instructions to candidates

(a) Write your name and index number in the spaces provided above.
(b) Sign and write the date of examination in the spaces provided above.
(c) Answer **all** the questions in this question paper.
(d) All answers must be written in the spaces provided.
(e) **This paper consists of 9 printed pages.**
(f) **Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.**
(g) **Candidates should answer the questions in English.**

For Examiner's Use Only

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

17	18	19	20	21	22	23	24	25	26	27	Grand Total

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Turn over

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

1. (a) Name the cell organelle found in abundance in the white blood cells. (1 mark)

    ....

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

    ....

2. State **two** observable features that place a millipede into its Class. (2 marks)

    ....

    ....

3. Which sets of teeth would be used in chewing sugarcane for maximum extraction of sap? (2 marks)

    ....

    ....

4. A group of form two students placed a fresh leaf in warm water. They observed that air bubbles formed on the surface of the leaf.

    (a) What biological process were they investigating? (1 mark)

    ....

    (b) Name the structures from which the air bubbles were coming from. (1 mark)

    ....

    (c) Explain the distribution of the structures named in (b) above on the leaf surfaces of a land plant. (2 marks)

    ....

    ....

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5. State why it is important for plants to lose water to the atmosphere. (3 marks)

....

....

....

6. The diagram below illustrates tissue fluid and cells surrounding a capillary.
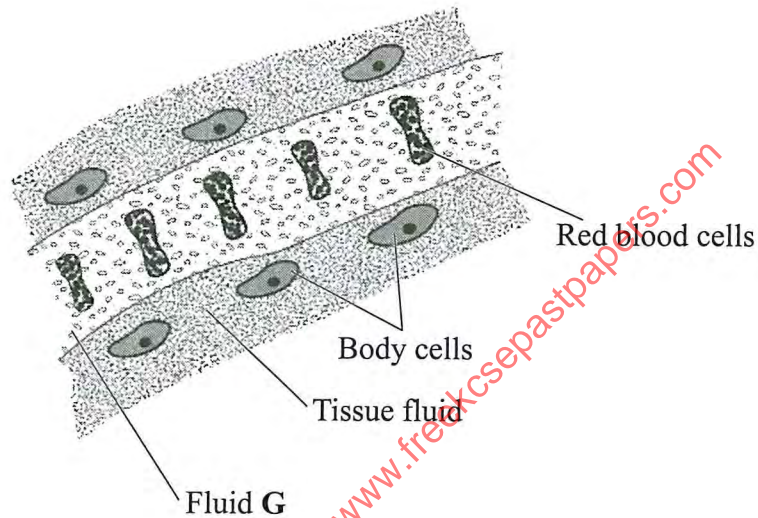
(i) Name fluid **G**. (1 mark)

....

(ii) Give **two** ways by which fluid **G** is different from tissue fluid. (2 marks)

....

....

7. (a) Define respiration.   (1 mark)

    ....

    (b) State **three** activities in the human digestive system that depend on respiration.

                                                                                     (3 marks)

    ....

    ....

    ....

8. State **three** ways in which blood capillaries are structurally adapted to their functions.

                                                                                     (3 marks)

    ....

    ....

    ....

9. The diagram below represents an organ in a bony fish.
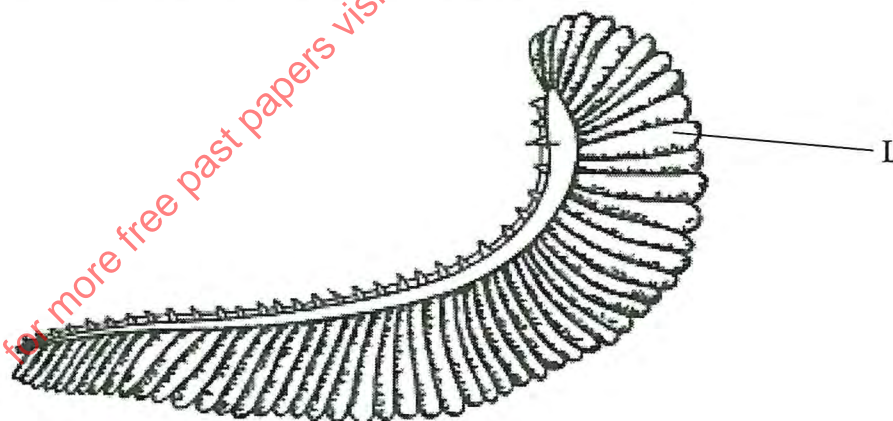
    (a) Name the organ.   (1 mark)

    ....

    (b) Describe how air in water reach the capillaries inside structure **L**.   (3 marks)

    ....

    ....

    ....

10. Name **two** products of respiration in plants. (2 marks)

....

....

11. (a) State **one** homeostatic role of the human skin. (1 mark)

....

(b) Name **three** structures of the skin essential for its homeostatic function. (3 marks)

....

....

....

12. Explain why the nephron is long and convoluted. (3 marks)

....

....

....

13. State **two** limitations of using a quadrat to estimate the population of organisms. (2 marks)

....

....

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Turn over

14. The diagram below illustrates a germinating seedling.

(a) Name the type of germination illustrated in the diagram.   (1 mark)

....

(b) Describe how the type of germination named in (a) above is brought about.   (3 marks)

....

....

15. Explain why a bony fish dies shortly after being removed from water.   (4 marks)

....

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....

16. Name the bones that articulate to form a ball and socket joint at the hip.   (2 marks)

....

....

17. Explain the role of carbonic anhydrase in red blood cells.   (3 marks)

....

....

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18. A tall, light skinned lady with pimples on her face has long hair and limps.

(a) List **two** features which the lady has that are due to inheritance. (2 marks)

....

....

(b) Explain why most recessive genes are expressed phenotypically in male offspring of humans. (3 marks)

....

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19. The diagrams below illustrate some forms of beaks in birds.
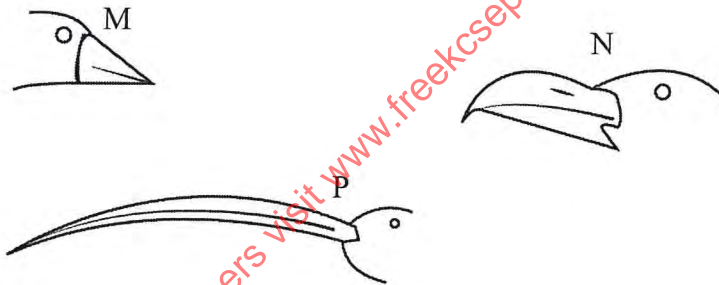
(a) Which diagram represents the beak from which the others are likely to have evolved? (1 mark)

....

(b) Explain your answer in (a) above. (3 marks)

....

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....

20. (a) Define the term analogous structures. (1 mark)

....

....

(b) Give **two** illustrations of analogous structures in mammals. (2 marks)

....

....

21. State **two** ways in which plants with weak stems obtain mechanical support. (2 marks)

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22. What does the term evolution mean? (1 mark)

....

....

23. State **two** characteristics of living things illustrated in the photograph below. (2 marks)

....

....

24. Explain why a camel has a longer nephron than a whale. (3 marks)

....

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THE KENYA NATIONAL EXAMINATIONS COUNCIL
Kenya Certificate of Secondary Education

231/2 -

BIOLOGY
(THEORY)
Nov. 2018 – 2 hours

- Paper 2

Name .... Index Number ....

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

Instructions to candidates

(a) Write your name and index number in the spaces provided above.
(b) Sign and write the date of examination in the spaces provided above.
(c) This paper consists of **two** sections; **A** and **B**.
(d) Answer **all** the questions in section **A** in the spaces provided.
(e) In section **B** answer question **6 (compulsory)** and either question **7** or **8** in the spaces provided after question **8**.
(f) **This paper consists of 12 printed pages.**
(g) Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.
(h) Candidates should answer all the questions in English.

For Examiner's Use Only

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

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Turn over

SECTION A (40 marks)

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

1. The diagram below illustrates a section of the mammalian kidney.
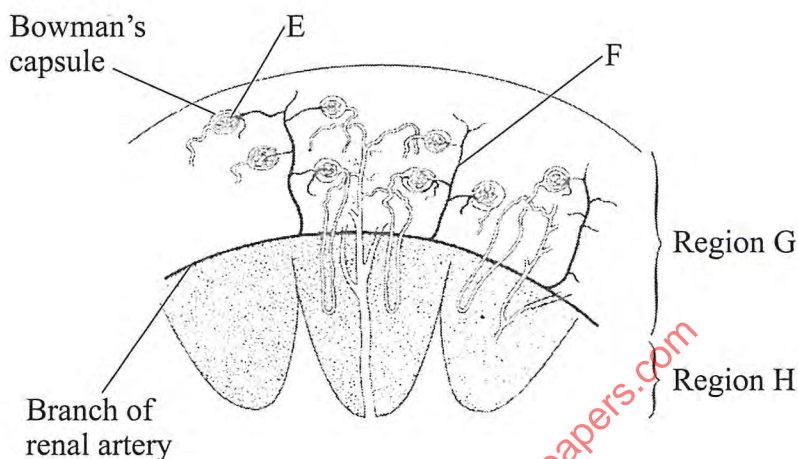
(a) Name the structures labelled E and F.

E .... (1 mark)

F .... (1 mark)

(b) Explain the processes that take place in the regions labelled G and H.

Region G (3 marks)

....

....

....

Region H (3 marks)

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2. Below is a graphical representation of students' height in a classroom.

Height (cm)
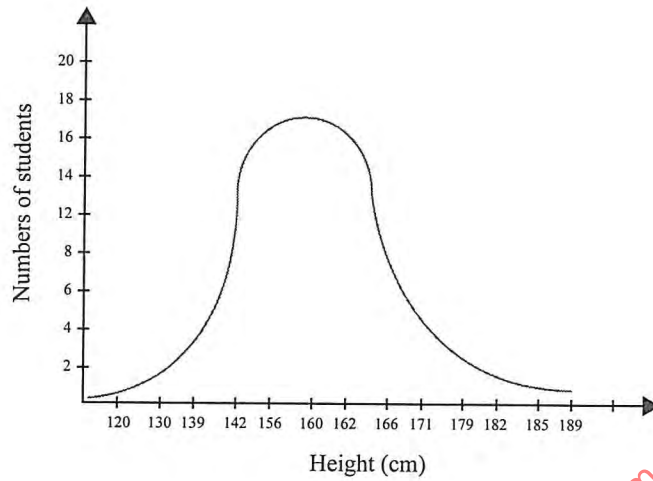
(a) Name the type of curve illustrated. (1 mark)

....

(b) (i) State the type of variation represented by the curve. (1 mark)

....

(ii) State **two** meiotic processes that lead to variation among organisms. (2 marks)

....

....

(iii) Explain the role of variation in organisms. (2 marks)

....

....

(c) Explain the need for genetic counselling in present day health facilities. (2 mark)

....

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5. The photograph below represents a plant in a certain Division.
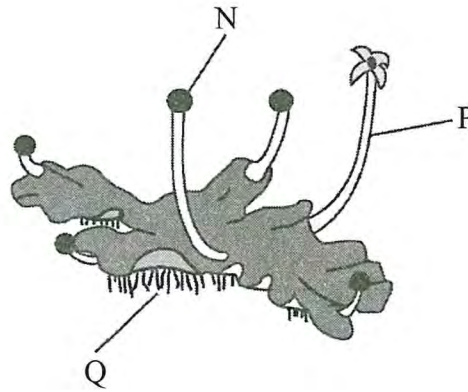
(a) (i) Name the Division to which the plant belongs. (1 mark)

....

(ii) With reference to the photograph, state **three** observable features of the Division named in a(i) above. (3 marks)

....

....

....

(b) Name the parts labelled N and P.

N .... (1 mark)

P .... (1 mark)

(c) Explain how the part labelled Q is adapted to its functions. (2 marks)

....

....

SECTION B (40 marks)

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

6.   The effect of auxin concentration on growth response of two parts of a plant, X and Y was investigated over a period of time. The results were tabulated as shown in the table below.

Concentration of Auxin (in parts per million)	10^{-6}	10^{-5}	10^{-4}	10^{-3}	10^{-2}	10^{-1}	1	10^{1}	10^{2}
Percentage inhibition /stimulation on part X	0	40	55	40	0	−45	−90	0	0
Percentage inhibition /stimulation on part Y	0	0	0	25	65	155	210	125	−25

(a)   On the same axis, draw line graphs of the effect on growth of the two parts, X and Y (percentage inhibition or stimulation) against the concentration.   (8 marks)
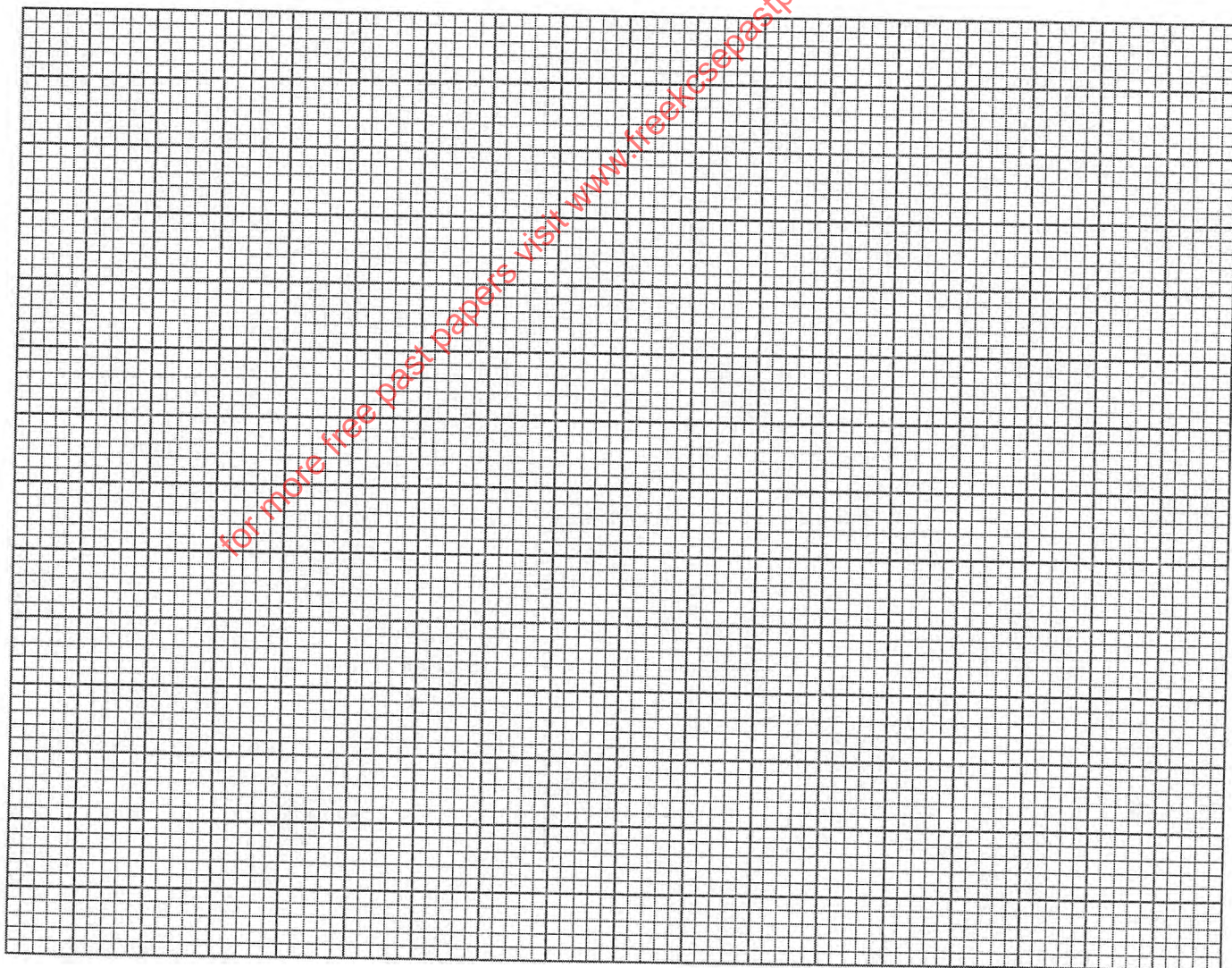
(b) With reasons, name the two parts of the plant, X and Y.

X .... (1 mark)

Reason .... (1 mark)

Y .... (1 mark)

Reason .... (1 mark)

(c) From the graph identify:

    (i)   the point at which the percentage stimulation was the same for both X and Y.

                                                                (1 mark)

            ....

    (ii)   the optimum concentration of auxins required for part Y   (1 mark)

            ....

(d) State **three** ways in which the effects of auxins on plants is applied in flower farming.

                                                                   (3 marks)

            ....

            ....

            ....

(e) Distinguish between simple and conditioned reflex action   (3 marks)

            ....

            ....

            ....

7.   (a)   Describe the mode of reproduction in a named fungus.   (5 marks)

    (b)   Describe the role of hormones in the human menstrual cycle.   (15 marks)

8. Describe what happens to a meal rich in proteins along the alimentary canal from ingestion to egestion.   (20 marks)

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565/1 – **BUSINESS STUDIES** – Paper 1

Nov. 2018 – 2 hours

Name .... Index Number ....

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

Instructions to candidates

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

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

(c) Answer **all** the questions.

(d) All answers should be written in the spaces provided in this booklet.

(e) **This paper consists of 12 printed pages.**

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

(g) **Candidates should answer the questions in English.**

For Examiner's Use Only

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

Question	14	15	16	17	18	19	20	21	22	23	24	25
Score												

TOTAL SCORE

1.   Outline **four** features of labour as a factor of production.   (4 marks)

   (a)   ....

         ....

   (b)   ....

         ....

   (c)   ....

         ....

   (d)   ....

         ....

2.   Outline **four** ways in which peace within a country may encourage entrepreneurial
      development.   (4 marks)

   (a)   ....

         ....

   (b)   ....

         ....

   (c)   ....

         ....

   (d)   ....

         ....

3.   State **four** duties of the office clerk.   (4 marks)

   (a)   ....

   (b)   ....

   (c)   ....

   (d)   ....

4.   The document shown below is used in home trade.

BABU TRADERS LTD

To: Wakesho Ltd   No. 25
      P O Box 88   Date: 25/10/16
      KISUMU

      We have credited your account as follows:

      Being correction of arithmetic   **Amount**
      error in invoice No. 015.
Sh	Ct
      Error Total Sh 50,500 | 10,000 | |
      Correct Total Sh 40,500 | | 00 |

      Signature .LBO....   **TOTAL** 10,000 | 00

(a)   Identify the document.   (1 mark)

....

(b)   Outline **three** circumstances under which the above document may be used.   (3 marks)

(i)   ....

      ....

(ii) ....

      ....

(iii) ....

      ....

5. State **four** measures that may be taken by the government to control inflation. (4 marks)

(a) ....

....

(b) ....

....

(c) ....

....

(d) ....

....

6. Outline **four** measures that may be taken by the government to curb unemployment. (4 marks)

(a) ....

....

(b) ....

....

(c) ....

....

(d) ....

....

7. Highlight **four** benefits of national income statistics to the government. (4 marks)

(a) ....

....

(b) ....

....

(c) ....

....

(d) ....

....

8. Fill in the spaces in the table below: (4 marks)

Business	Assets (Sh)	Capital (Sh)	Liabilities (Sh)
A	40,000	–	15,734
B	–	158,300	61,500
C	17,670	5,680	–
D	67,000	–	24,705

9. State **four** categories in which the various types of business partners may be classified. (4 marks)

(a) ....

....

(b) ....

....

(c) ....

....

(d) ....

....

10. Highlight **four** ways in which the government creates an enabling environment for the conduct of business in the country. (4 marks)

(a) ....

....

(b) ....

....

(c) ....

....

(d) ....

....

11. Outline **four** roles of transport in the facilitation of trade. (4 marks)

(a) ....

....

(b) ....

....

(c) ....

....

(d) ....

....

12. State **three** circumstances under which firms would form a cartel. (3 marks)

(a) ....

....

(b) ....

....

(c) ....

....

13. Outline **four** conditions under which a manufacturer would distribute his products through the wholesaler. (4 marks)

(a) ....

....

(b) ....

....

(c) ....

....

(d) ....

....

14. State **four** reasons for maintaining a cash book in a business enterprise.   (4 marks)

    (a) ....

    (b) ....

    (c) ....

    (d) ....

15. Apart from the forces of demand and supply, list **four** other ways in which the price of a product may be set.   (4 marks)

    (a) ....

    (b) ....

    (c) ....

    (d) ....

16. Outline **four** factors that would make two people taking the same type of life assurance policy with the same insurer to pay different amounts of premium.   (4 marks)

    (a) ....

        ....

    (b) ....

        ....

    (c) ....

        ....

    (d) ....

        ....

17. State the line of communication involved in each of the following: (4 marks)

   (a) The Manager of ABC Company Ltd talking to the Manager of XYZ Company Ltd.

   ....

   (b) A secretary asking for time off from her boss.

   ....

   (c) The Production Manager giving instructions to the Secretary of the Sales Manager.

   ....

   (d) The Store Keeper giving explanations to the Chief Accountant.

   ....

18. List **four** books of original entry that may be used to record transactions affecting stock. (4 marks)

   (a) ....

   (b) ....

   (c) ....

   (d) ....

19. Highlight **four** external economies of scale that a firm may get when operating on a large scale. (4 marks)

   (a) ....

   ....

   (b) ....

   ....

   (c) ....

   ....

   (d) ....

   ....

20. The following information was extracted from the books of Leila Traders on 31st July 2016:

Details	Sh
Capital	90,000
Fixed Assets	80,000
Cash in hand	20,000
Current liabilities	20,000
Stock	20,000
Net profit	15,000
Drawings	5,000

Calculate:

(a) Capital owned (2 marks)

....

....

....

....

(b) Acid test ratio (2 marks)

....

....

....

....

Turn over

21. Watamu Enterprises had the following assets and liabilities on 1st May 2014:

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

The following transactions took place on 2nd May 2014:

(i)   Bought goods for re-sale Sh 150,000 on credit
(ii)   A debtor paid Sh 100,000 by cheque
(iii) Sold the equipment for Sh 900,000 cash

Required: Prepare Watamu Enterprises balance sheet after the above transactions.   (5 marks)

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22. Outline **four** merits of indirect taxes. (4 marks)

(a) ....

....

(b) ....

....

(c) ....

....

(d) ....

....

23. Highlight **four** ways in which the technological environment may improve business performance. (4 marks)

(a) ....

....

(b) ....

....

(c) ....

....

(d) ....

....

24. Identify the types of ledger in which each of the following accounts would be found: (4 marks)

	Account	Type of ledger
a	Otieno (buyer)	
b	Carriage outwards	
c	Mueni (supplier)	
d	Cash at bank	

25. Highlight **four** ways in which the introduction of money helped eliminate problems faced in barter trade. (4 marks)

(a) ....

....

(b) ....

....

(c) ....

....

(d) ....

....

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443/1 –   # AGRICULTURE   **– Paper 1**

Nov. 2018 – 2 hours

Name ....   Index Number ....

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

055

A190

Instructions to candidates

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

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

(c)   This paper consists of **three** sections; **A**, **B** and **C**.

(d)   Answer **all** the questions in section **A** and **B**.

(e)   Answer any **two** questions in section **C**.

(f)   All answers should be written in the spaces provided.

(g)   **This paper consists of 16 printed pages.**

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

(i)   **Candidates should answer all the questions in English.**

For Examiner's Use Only

Section	Question	Maximum Score	Candidate's Score
A	1–14	30	
B	15–18	20	
C		20	
		20	
Total Score		**90**	

443/1

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Turn over

SECTION A (30 marks)

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

1. Name **four** categories of livestock farming.   (2 marks)

    ....

    ....

    ....

    ....

2. State **four** farming practices that ensure minimum tillage.   (2 marks)

    ....

    ....

    ....

    ....

3. State **four** factors that determine the choice of water pipes used on the farm. (2 marks)

    ....

    ....

    ....

    ....

4. Name **two** sources of underground water.   (1 mark)

    ....

    ....

5. Give **four** reasons why green manure is **not** commonly used in farming. (2 marks)

....

....

....

....

6. (a) Name **two** types of inventory records kept on the farm. (1 mark)

....

....

(b) State **two** uses of inventory records on a farm. (1 mark)

....

....

7. (a) Name **three** vegetative planting materials used for propagating pineapples. (1½ marks)

....

....

....

(b) State **three** qualities of certified seeds. (1½ marks)

....

....

....

8. State **four** advantages of using polythene sleeves to propagate stem cuttings.   (2 marks)

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....

9. State **four** disadvantages of concession land tenure system.   (2 marks)

....

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....

10. Name **four** insect pests of beans in the field.   (2 marks)

....

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....

11. (a) Name **three** legume pastures grown in high altitude areas.   (1½ marks)

....

....

....

(b) State **four** management practices undertaken to improve natural pastures.   (2 marks)

....

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....

12. (a) Name **two** subsidiary books of the journal. (1 mark)

....

....

(b) State **four** item details contained in a sales receipt. (2 marks)

....

....

....

....

13. State **four** roles of Young Farmers Clubs in Kenya. (2 marks)

....

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....

14. (a) What is meant by the term agroforestry? (½ mark)

....

....

....

(b) Name **two** agroforestry practices. (1 mark)

....

....

SECTION B (20 marks)

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

15. The diagram below shows a section of a plant from which the planting material illustrated was obtained.
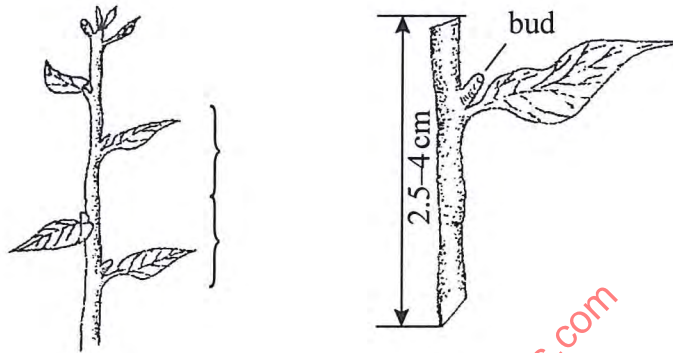
(a) Identify the planting material illustrated.   (1 mark)

....

(b) Give **two** reasons why only the middle part of the plant was used to prepare the planting material.   (2 marks)

....

....

(c) Apart from using the middle part of the plant, explain **two** precautions that should be observed when preparing the illustrated planting material.   (2 marks)

....

....

....

16. An experiment was carried out to investigate soil constituents as described below:

Step I – An empty evaporating dish was weighed and its mass was 10 gms.

Step II – Fresh garden soil was put on the evaporating dish and weighed. The mass was 40 gms.

Step III – The evaporating dish containing fresh soil was put in an oven and heated at a temperature of 105 °C for 30 minutes, cooled and then weighed. The mass was 35 gms.

Step IV – The dish containing soil was then strongly heated on a Bunsen burner for two hours while stirring. It was then cooled and weighed. The new mass was 32 gms.

(a) Give a reason why the soil was heated

(i) at 105 °C (1 mark)

....

(ii) strongly for two hours (1 mark)

....

(b) Calculate the percentage content of the soil constituents investigated in the experiment.
(3 marks)

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17. The diagram below illustrates a nursery practice.
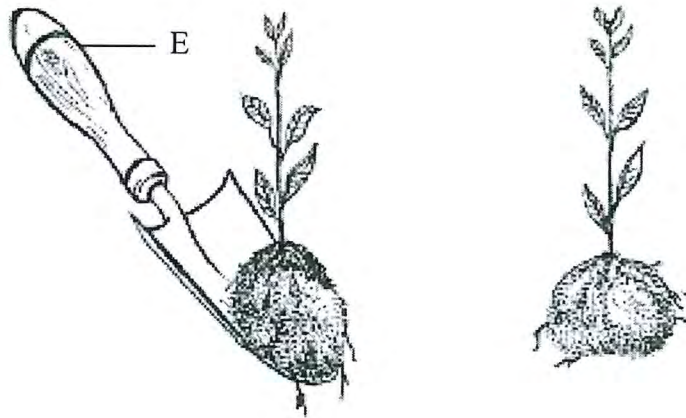
(a) Name the practice (1 mark)

....

(b) Give a reason why the tool labelled **E** is important in the practice illustrated. (1 mark)

....

....

(c) What is the appropriate stage of growth for carrying out the illustrated practice in agroforestry? (1 mark)

....

....

(d) Explain **two** activities that ensure that the illustrated practice is carried out successfully. (2 marks)

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18. In a maize production enterprise carried out over a period of eight years, a farmer used one hectare of land each time and applied different quantities of DAP fertiliser. DAP fertiliser costs KSh 2 500 per 50 kg bag and the harvested maize is sold at KSh 3 000 per 90 kg bag. The quantities of DAP fertiliser applied and maize harvested are as shown in this table below.

DAP fertiliser input in 50 kg bags	Maize yield in 90 kg bags	Total revenue KSh	Total cost KSh	Marginal revenue KSh	Marginal cost KSh
0	15.0	45 000	0	0	0
1	35.6				
2	52.0				
3	68.5				
4	71.0				
5	71.5				
6	71.5				
7	68.5				

(a) Complete the table by determining the values of total revenue, total cost, marginal revenue and marginal cost. (2 marks)

(b) From the information in your table, how can the farmer determine the level of production at which profit is maximum? (1 mark)

....

....

(c) At the production level that yielded maximum profit, what was the value of each of the following?

(i) DAP fertiliser input (1 mark)

....

(ii) Marginal revenue (1 mark)

....

....

SECTION C (40 marks)

*Answer any **two** questions from this section in the spaces provided after question **21**.*

19. (a) Explain **six** farming practices that destroy soil structure. (6 marks)

(b) (i) State **four** functions of calcium in plant growth. (4 marks)

(ii) State **four** disadvantages of using inorganic fertilisers in crop production. (4 marks)

(c) Describe **six** categories of pesticides based on mode of action. (6 marks)

20. (a) Explain **six** cultural methods of soil and water conservation. (6 marks)

(b) Explain **four** environmental factors that influence effectiveness of herbicides. (8 marks)

(c) Describe **six** post-harvest practices for dry beans. (6 marks)

21. (a) (i) Describe the harvesting and marketing of bulb onions. (6 marks)

(ii) State the precautions that should be observed when harvesting cotton. (4 marks)

(b) Explain **five** problems associated with agricultural credit. (5 marks)

(c) Explain **five** principles that govern the formation and functioning of farmer's co-operatives. (5 marks)

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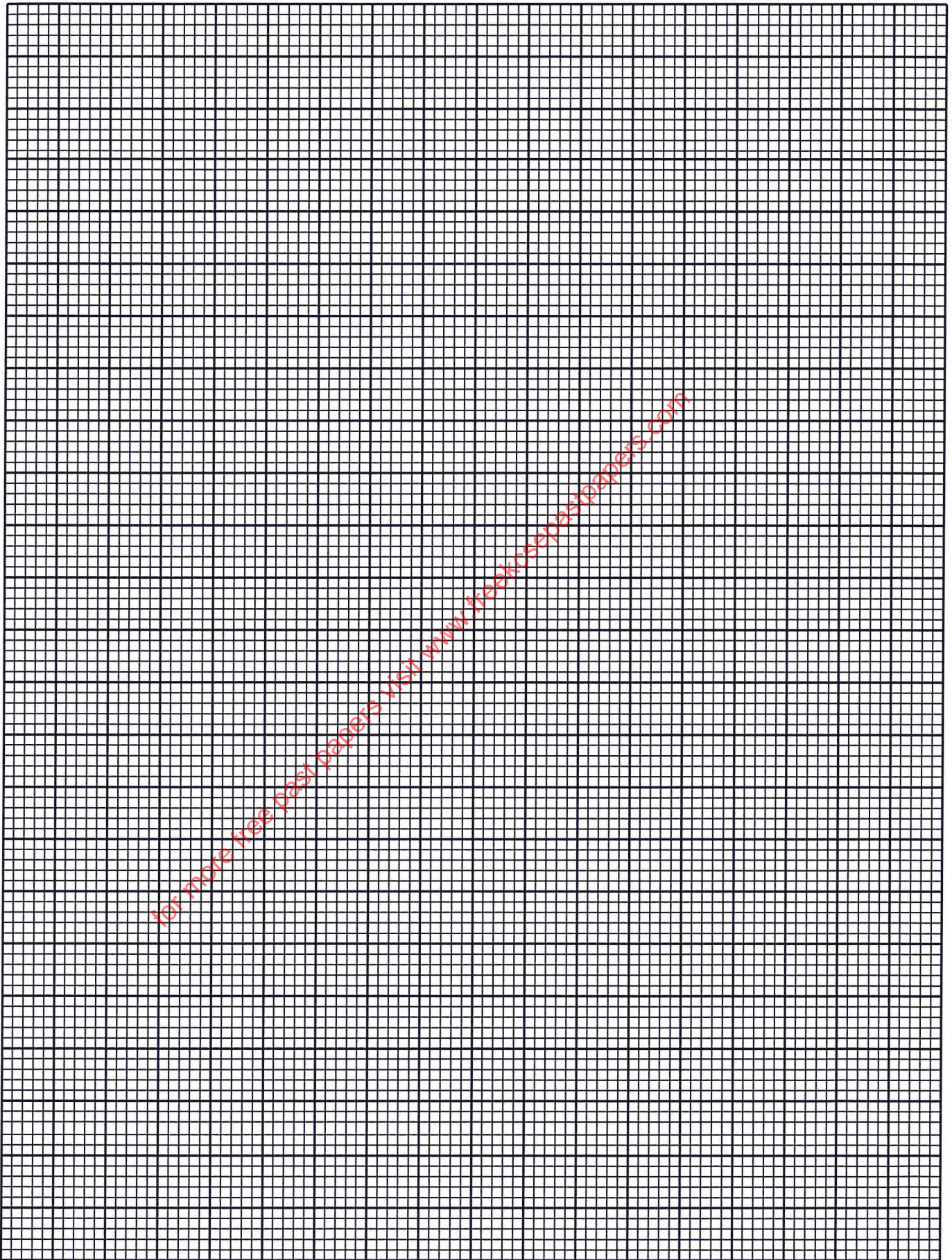
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THIS IS THE LAST PRINTED PAGE.

102/3 – KISWAHILI – Karatasi ya 3
FASIHI
Nov. 2018 – Muda: Saa 2½

Jina .... Nambari ya Mtahiniwa ....

Sahihi .... Tarehe ....

Maagizo

(a) Andika jina lako na nambari yako ya mtihani katika nafasi ulizoachiwa hapo juu.

(b) Tia sahihi yako kisha uandike tarehe ya mtihani katika nafasi ulizoachiwa hapo juu.

(c) Jibu maswali **manne** pekee.

(d) Swali la **kwanza** ni la **lazima**.

(e) Maswali hayo mengine matatu yachaguliwe kutoka sehemu nne zilizobaki; yaani: Riwaya, Tamthilia, Hadithi Fupi na Fasihi Simulizi.

(f) Usijibu maswali **mawili** kutoka **sehemu moja**.

(g) Majibu yote **lazima** yaandikwe kwa lugha ya Kiswahili.

(h) Majibu yote **sharti** yaandikwe kwenye nafasi ulizoachiwa katika kijitabu hiki cha maswali.

(i) **Karatasi hii ina kurasa 24 zilizopigwa chapa.**

(j) **Watahiniwa ni lazima wahakikishe kwamba kurasa zote za karatasi hii zimepigwa chapa sawasawa na kuwa maswali yote yamo.**

Kwa Matumizi ya Mtahini Pekee

Swali	Upeo	Alama
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	20	
	20	
Jumla		

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Geuza ukurasa

SEHEMU A : USHAIRI

1. **Lazima**

A. Mazrui: *Chembe Cha Moyo*
Soma shairi lifuatalo kisha ujibu maswali.

Nimeyaandika maneno haya
    Kwa niaba ya:
    Mamilioni wasio malazi
    wabebao vifurushi vilivyo wazi
    wazungukao barabarani bila mavazi
    ...milki yao ya maisha.
Kwa niaba ya:
Maelfu wanouawa bila haki
wiki baada ya wiki
    leo sumu au spaki
    leo kamba au bunduki
na kwa wale wanosubiri kunyongwa.

Kwa niaba ya:
Vijana walio mitaani
wale mayatima wa maskini
wazungukao mapipani
kila pembe mjini
kuokota sumu kutia tumboni
kujiua bila kujua
ili kupata kuishi.

Kwa niaba ya:
Wakongwe wasiojiweza
walao chakula kilichooza
wachukuao choo wakijipakaza
polepole wakijiangamiza
katika vyumba vyao
baridi na giza
kwa sababu hawana watazama
wala wauguza.

Kwa niaba ya:
Waishi na nyingi hofu
kwa sababu ya madawa tifutifu
yatiwayo vyakulani yakitufanya wafu
bila ya mtu kuona
    kama kwanba sote tu vipofu,

Na kwa niaba yetu sote;
    Tuliofungwa vifungoni, duniani
    Tuliosukumwa kingoni, maishani
    Tuliopokonywa maoni, machoni
    Tuliotiliwa sumu, malishoni
    Tuliodidimizwa kinyesini
        ili 'maendeleo'
        yaendelee kwenda njiani
        huku yakitema machicha ya roho zetu.

(a) "Shairi hili linakatisha tamaa." Thibitisha kauli hii kwa kutoa mifano **saba** kutoka kwenye shairi. (alama 7)

(b) Fafanua umuhimu wa aina **mbili** za urudiaji zilizotumiwa katika shairi hili. (alama 4)

(c) Bainisha vipengele vifuatavyo vya kimtindo katika shairi hili. (alama 3)

    (i) tasfida

    (ii) kinaya

    (iii) tashihisi

(d) Eleza kwa kutoa mfano, mbinu **moja** ambayo mshairi ametumia kutosheleza mahitaji ya kiarudhi katika ubeti wa **tano**. (alama 2)

(e) Andika ubeti wa **pili** kwa lugha ya nathari. (alama 2)

(f) Bainisha nafsineni katika shairi hili. (alama 2)

SEHEMU B: RIWAYA

K. Walibora: *Kidagaa Kimemwozea*

Jibu swali la 2 au la 3.

2. "Riwaya hii ya aina yake inathibitisha kwa usanii wa kupigiwa mfano jinsi ndoto ya uhuru barani Afrika imegeuka kuwa jinamizi."

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

(b) Onyesha jinsi ndoto ya uhuru barani Afrika imegeuka kuwa jinamizi kwa kuwarejelea wahusika wafuatao:

    (i) Majisifu (alama 8)

    (ii) Fao (alama 4)

    (iii) Wahudumu katika zahanati ya Nasaba Bora (alama 4)

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3.   (a)   "Leo usukani uko mikononi mwetu wenyewe. Mbeberu amekwisha ng'olewa pamoja na mizizi yake."

           Onyesha kinaya katika kauli hii kwa kutoa mifano **kumi** kutoka *Kidagaa Kimemwozea*.
                                                            (alama 10)

     (b)   Tathmini mchango wa wanyonge katika kuzoroteka kwa hali ya maisha yao.   (alama 10)

SEHEMU C: TAMTHILIA

P. Kea: *Kigogo*

Jibu swali la 4 au la 5.

4.   Tusiwaruhusu watu wachache waliojazwa kasumba za kikoloni kuturejesha kwenye utumwa. Hatuwezi kukubali kutawaliwa kidhalimu tena!"

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

     (b)   Fafanua kinyume kinachojitokeza katika kauli iliyopigiwa mstari kwa kurejelea hoja **kumi na sita** kutoka kwenye tamthilia hii.   (alama 16)

5.   "Si haki! Unayazika matumaini yetu. Unaifukia kesho yetu."

     (a)   Fafanua umuhimu wa mzungumzaji wa maneno haya katika kuijenga tamthilia ya *Kigogo*.   (alama 6)

     (b)   Kwa kurejelea hoja **kumi na nne** kutoka kwenye tamthilia, jadili namna uongozi wa Sagamoyo unavyoyazika matumaini ya raia.   (alama 14)

SEHEMU D: HADITHI FUPI

A. Chokocho na D. Kayanda: *Tumbo Lisiloshiba na Hadhithi Nyingine*

Jibu swali la 6 au la 7.

Said A. Mohamed: "*Tumbo Lisiloshiba*"

6.   "…lakini hakuiruhusu sahau iketi na kutawala kichwani mwake…hapoi…Angepoaje na ule moto unaomlipukia kila mtu pale mtaani, umeacha mpaka sasa kovu bichi moyoni mwa kila mtu…?"

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

     (b)   Bainisha tamathali **tatu** za usemi ambazo zimetumiwa katika kauli hii.   (alama 3)

     (c)   Fafanua sifa **tano** za mhusika anayerejelewa na kauli hii.   (alama 5)

     (d)   Huku ukijadili hoja **nane**, onyesha jinsi wakazi wa Madongoporomoka walivyolipukiwa na moto.   (alama 8)

7. Onyesha jinsi maudhui ya utabaka yalivyoshughulikiwa katika *Tumbo Lisiloshiba na Hadithi Nyingine* kwa kurejelea hadithi zifuatazo:

    (a)   Mkubwa   (alama 12)

    (b)   Kidege   (alama 8)

SEHEMU E: FASIHI SIMULIZI

8.   (a)   *Soma utungo ufuatao kisha ujibu maswali.*

Nalilitizama jua la kinjano
Likijikokota kwa jitimai kutua
Mbele ya nguu
ya mlima uso kikomo
likipisha machweo
yenye giza la kaniki
Likishindilia uzito wa nanga
kwenye moyo tepetevu
uloonja shubiri ya kwondokewa.

Twalitazamana na hiyo shamsi
ikipotelea kwenye upeo wa macho
huku nyuma ikinambia
"yamekwisha.".
Naliona kope zake zikimezwa na kiza
Nikaliona jua likitoweka pamwe nawe
Jagina wa maisha yangu.
Nikaliona likikokota aushiyo
likabwakura rohoyo
kutoka kwenye vyangu vitanga.

Kumbukizi zilikuleta
kwenye jukwaa la akili yangu
pazia likafunguka
likayaleta mawio
ya siku ya kuamkia kuuka kwako.
Nalikuona kwenye ruya ukitazamana ana kwa ana
na hasidi alokakawana
kutuhasiri mi nawe
Nalikiona kipaji chako
kikitwaa wasiwasi
ukawa ni kama wanywea
kwa wake mtazamo.

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                                                                          Geuza ukurasa

Hata uliponishika
mkono kunambia
tukimbile tujiponye
nalikuwa nimechelewa
ulikuwa keshanipa kisogo, huku
nyuma waniita,
"Mwanangu, njoo tujisalimishe
Mwanangu njoo, nguvu zimenisha."
Kumbe hiyo ilikuwa tahadhari
kwamba Iziraili yu karibu
moyowe kuchukua?
Kumbe wali ukisema, 'Buriani mwanangu?"

Siku ya faradhi ilifika, mkono kulazimika kukupungia
Naliutazama mwilio mtukufu
Nalilitazama tambolo liloumbuka
wali umedhibitiwa shujaa wangu
ndani ya chumba chenye kuta
na paa la mbao.
Hata tulipokukaribisha,
kwa lako kaburi
Nilijipa kujiambia, "Hajenda popote
mtima bado wapiga."
Nalingoja unisalimu
Nalingojea tabasamu lako lenye haya
Ela hayo hayakutimila
Walikuwa kesha kwenda
Kuwa milki, ya ardhi isoshiba.

Hata waliponena, "Udongo kwa udongo,"
Nilikusikia ewe yeli uso kifani
ukighani ubeti wa wimbo
wako pendwa mawazoni mwangu,
"Kifo ni hasidi,
Ikiwa mimi Gunge
Roho yangu nitamkabidhi Iziraili
Mimi niliyekaidi bunduki ya Mzungu
Katika kitali cha miaka minne
Kwetu kukarudi fahari na jina.
Mimi niliyeshindana na ndui na tetekuwanga, iliyowapukutisha
wana wote wa Ngome
Nikabaki mimi, jogoo wa kijiji.

"Kifo ni shujaa,
Ikiwa mimi Gunge mwili wangu huu mtukufu
kwa tambo na nemsi
nitaukubalia
kuwa lengo la dua za kuonewa imani
kuwa karamu ya macho ya mahasimu
kuvikwa suti na mwosha
kufunikwa kwa udongo uliolaaniwa
Mimi Gunge,
Niliruhusu jabali kubwa
Likibinye changu kichwa
Likidhibiti changu kidari
Linizibe zangu pumzi
Gunge niache kutawala."

(i)   Huu ni wimbo wa aina gani?   (alama 1)

(ii)   Andika sababu **mbili** kuthibitisha jibu lako la a(i).   (alama 1)

(iii)   Ni nani anayeimbiwa na nafsineni?   (alama 1)

(iv)   Bainisha matatizo **mawili** yanayoikumba jamii inayosawiriwa na utungo huu.   (alama 2)

(v)   Bainisha mbinu zifuatazo katika wimbo huu.   (alama 3)

    I.   ritifaa

    II.   mbinu rejeshi

    III.   taashira

(vi)   Unanuia kutumia mbinu ya kutazama na kushiriki kufanya utafiti kuhusu nyimbo za aina hii. Eleza sababu **sita** za kuchagua mbinu hii.   (alama 6)

(b)   Fafanua mikakati **sita** ambayo jamii inaweza kutumia ili kuudumisha utanzu wa semi.   (alama 6)

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HUU NDIO UKURASA WA MWISHO ULIOPIGWA CHAPA.

232/1 –   **PHYSICS**   – **Paper 1**
(THEORY)
Nov. 2018 – 2 hours

Name .... Index Number ....

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

Instructions to candidates

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

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

(c)   This paper consists of **two** sections **A** and **B**.

(d)   Answer **all** the questions in sections **A** and **B** in the spaces provided.

(e)   **All** working **must** be clearly shown.

(f)   Silent non-programmable electronic calculators may be used.

(g)   **This paper consists of 15 printed pages.**

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

(i)   **Candidates should answer the questions in English.**

For Examiner's Use Only

Section	Questions	Maximum Score	Candidate's Score
A	1–13	25	
B	14	12	
	15	11	
	16	9	
	17	11	
	18	12	
Total Score		80	

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Turn over

SECTION A: (25 marks)

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

1. State the reason why an object on earth has a higher weight than on the moon.   (1 mark)

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2. **Figure 1** shows the position of a students eye while measuring the length of a wooden block using a metre rule.
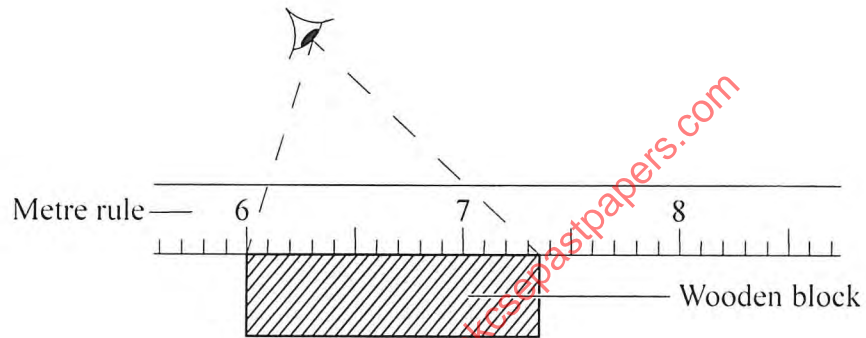
    Figure 1

    Determine the length of the block as viewed by the student.   (1 mark)

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3. Describe how the knowledge of the oil drop experiment may be used to estimate the area of oil spillage from a ship in the sea assuming the surface water is not disturbed.   (3 marks)

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4.   **Figure 2** shows an instrument used to measure atmospheric pressure.
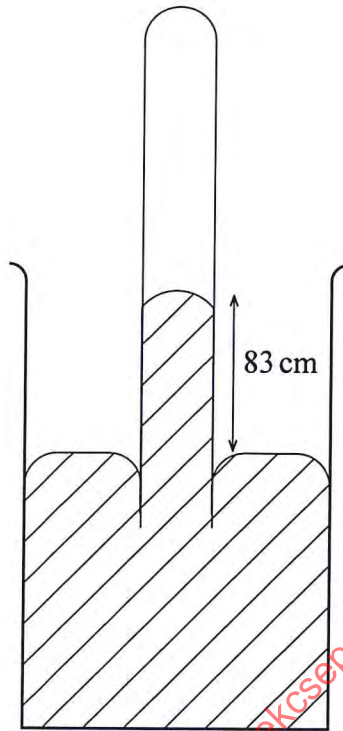
Figure 2

State with a reason the modification that would be required in a similar set up if mercury were to be replaced with water.   (2 marks)

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5.   It is observed that a drop of milk carefully put into a cup of water turns the water white after some time. State the reason for this observation.   (1 mark)

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6.   **Figure 3** shows the shape of a bimetallic strip after it was cooled below room temperature.

Invar

Brass
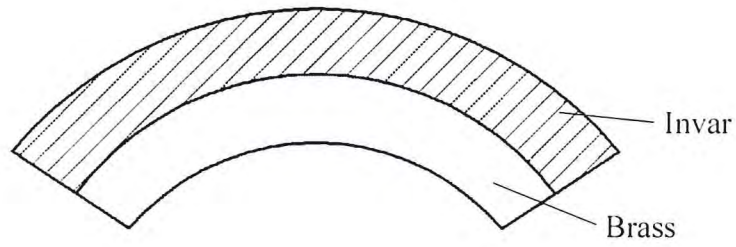
Figure 3

Explain why the strip curved as shown.   (2 marks)

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7.   A wooden cube of side 0.5 m floats in water fully submerged. Determine the weight of the cube. (*density of water = 1 gcm⁻³*).   (2 marks)

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8.   **Figure 4** shows a stone whirled in a vertical circle.
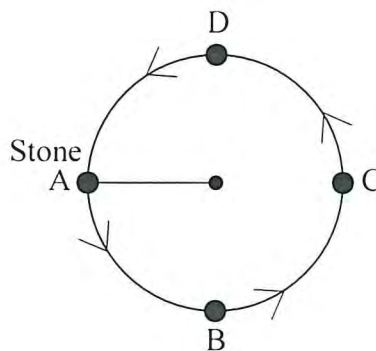
Figure 4

On the axes provided, sketch a graph of tension against time as the stone moves through point A, B, C and D. (3 marks)

Tension (N)

Time (s)
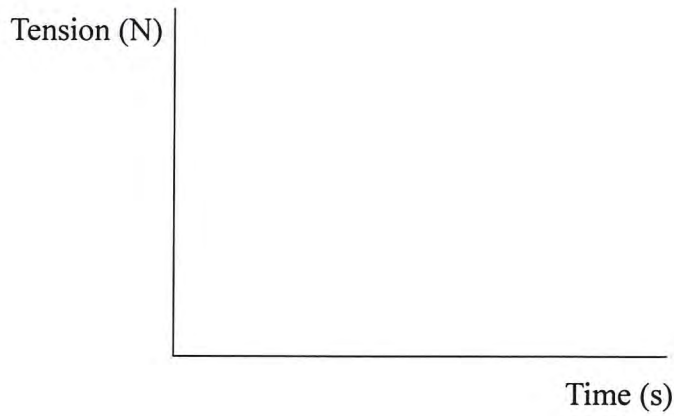
9. **Figure 5** shows a ball spinning as it moves.

Initial path
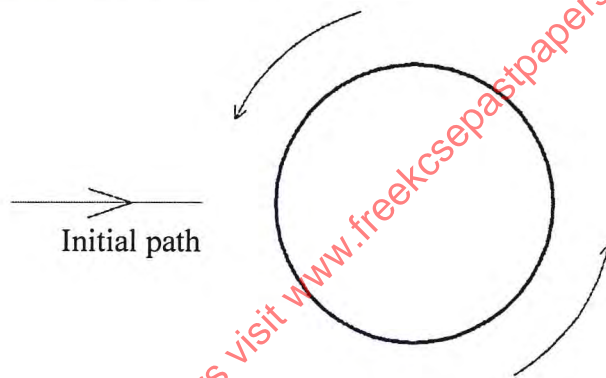
Figure 5

(a) On the diagram, sketch the path followed by the ball as it moves. (1 mark)

(b) Explain why the ball takes that path. (3 marks)

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10. **Figure 6** shows the relationship between volume and pressure for a certain gas.
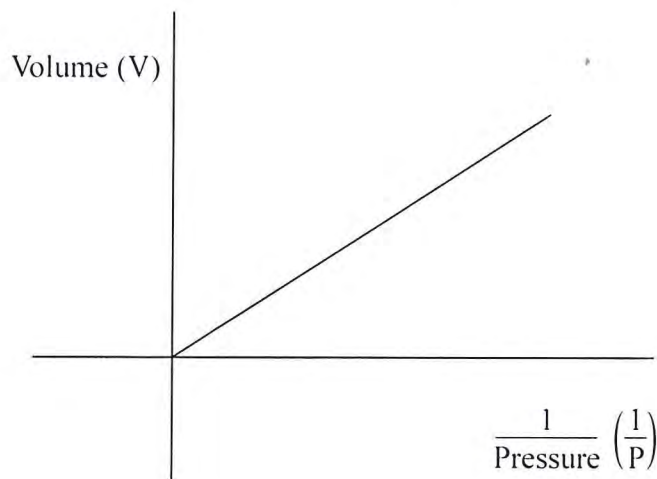
Figure 6

Name the law that the gas obeys. (1 mark)

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11. **Figure 7** shows an L-shaped wooden structure.
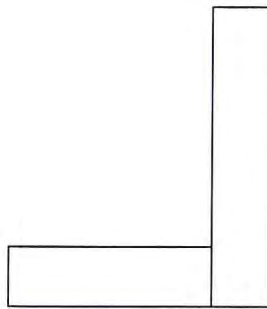
Figure 7

On the diagram, construct appropriate lines to show the position of the centre of gravity for the structure. (2 marks)

12. **Figure 8** shows the graph of extension against force for a certain helical spring.
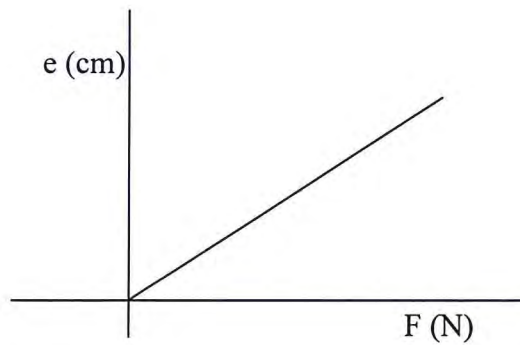
Figure 8

On the same diagram sketch the graph of extension against force for a spring with a lower value of spring constant. (1 mark)

13. State **two** ways in which a mercury based thermometer can be modified to read very small temperature changes. (2 marks)

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SECTION B (55 marks)

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

14. (a) State **two** differences between boiling and evaporation. (2 marks)

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(b) State **three** ways in which loss of heat by conduction is minimised in a vacuum flask. (3 marks)

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(c) In a certain experiment, 50 g of dry steam at 100 °C was directed into some crushed ice at 0 °C. (*Latent heat of vaporisation of water is* 2.26×10^6 *Jkg^{-1}, latent heat of fusion for ice is* 3.34×10^5 *Jkg^{-1} and specific heat capacity of water is* 4.2×10^3 *Jkg^{-1}*)

Determine the:

(i) quantity of heat lost by steam to change to water at 100 °C. (2 marks)

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(ii) quantity of heat lost by water to cool to 0 °C. (2 marks)

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(iii) mass of ice melted at 0 °C. (3 marks)

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15. (a) State Newton's first law of motion. (1 mark)

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(b) A wooden block resting on a horizontal bench is given an initial velocity u so that it slides on the bench for a distance x before it stops. Various values of x are measured for different values of the initial velocity. **Figure 9** shows a graph of u^2 against x.
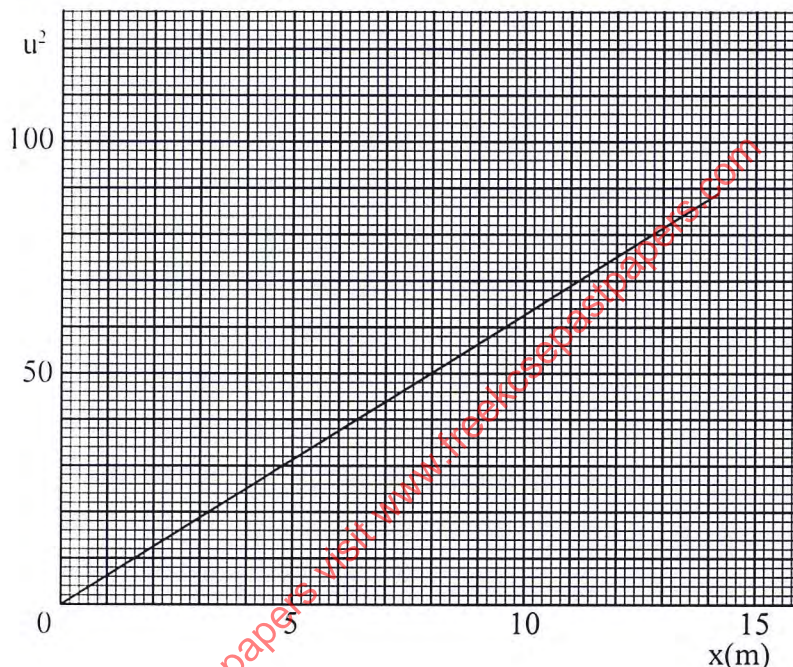
Figure 9

(i) Determine the slope S of the graph. (3 marks)

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(ii) Determine the value of **k** given that $u^2 = 20kd$ where **k** is a frictional constant for the surface. (2 marks)

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(iii) State with a reason what happens to the value of **k** when the roughness of the bench surface is reduced. (2 marks)

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(c) An object is thrown vertically upwards with an initial velocity of $30\,ms^{-1}$. Determine its maximum height (*acceleration due to gravity g is 10 ms⁻²*). (3 marks)

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16. (a) An electric crane uses 8.0×10^4 N of energy to lift a load of 2.0×10^4 N in 4 s.

    (i) Determine the;

        I   power developed by the crane, (2 marks)

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        II   height to which the load is lifted, (2 marks)

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        III   efficiency of the crane whose motor is rated 2.5×10^4 W. (2 marks)

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    (ii) State **two** forms of energy transformation that lead to the crane's inefficiency. (2 marks)

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(b) A stone is dropped from the top of a building to the ground. On the axes provided, sketch a graph of potential energy against time for the stone. (1 mark)

Potential
Energy
(N)

Time (s)
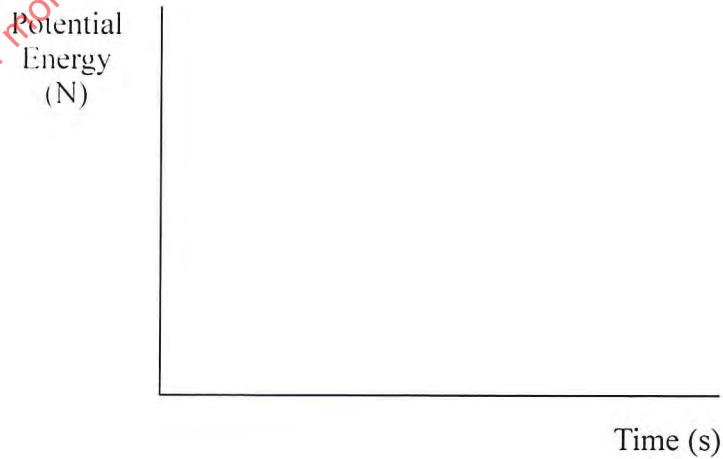
17. (a) State Pascal's principle of transmission of pressure in liquids. (1 mark)

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(b) **Figure 10** shows heights of two immiscible liquids X and Y in a U-tube (drawn to scale).
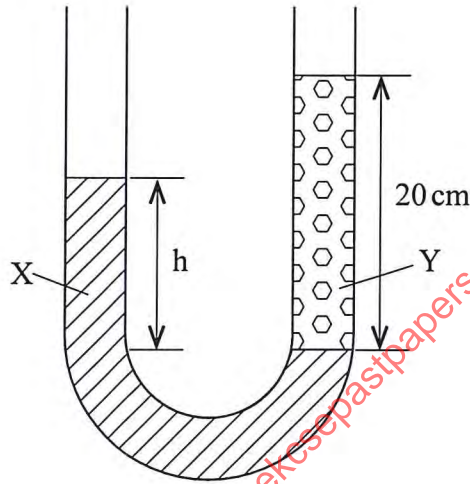
Figure 10

(i) State with a reason which of the two liquids X and Y has a higher density. (2 marks)

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(ii) Determine the value of **h**. (2 marks)

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(iii)   Given that the density of liquid Y is ρ, write down an expression for the density **d** of liquid X in terms of ρ. (2 marks)

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(c)   (i)   With the aid of a diagram, describe how a liquid may be siphoned from one container to another using a flexible tube. (3 marks)

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(ii)   State **one** application of the siphon. (1 mark)

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18. (a) State **two** quantities that must be kept constant in order to verify Boyle's law. (2 marks)

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(b) An air bubble at the bottom of a beaker full of water becomes larger as it rises to the surface. State the reason why;

(i) the bubble rises to the surface, (1 mark)

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(ii) it becomes larger as it rises. (1 mark)

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(c) State **two** assumptions made in explaining the gas laws using the kinetic theory of gases. (2 marks)

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(d)   **Figure 11** shows an incomplete experimental set up that was prepared by a student to verify one of the gas laws.
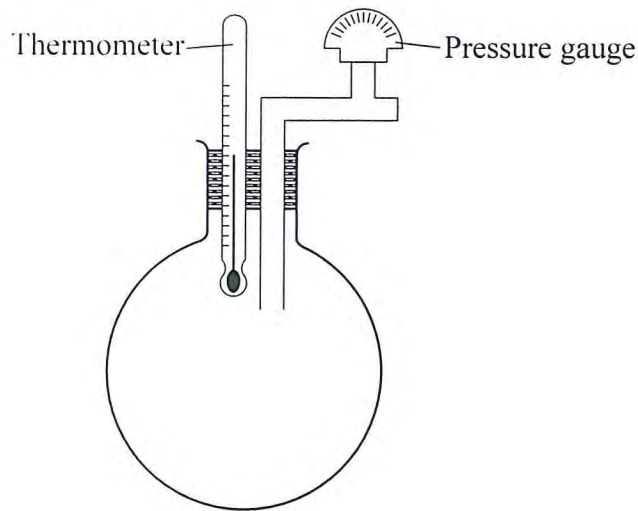
Figure 11

(i)   State with a reason which one of the laws may be verified using the set up.

(2 marks)

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(ii)   State what the student left out in the diagram of the set up.   (1 mark)

....

(e)   The volume of a fixed mass of a gas reduced from 500 cm³ to 300 cm³ at constant pressure. The initial temperature was 90 K. Determine the final temperature.   (3 marks)

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311/1 –   # HISTORY AND GOVERNMENT   – **Paper 1**

Nov. 2018 – 2½ hours

Name ....   Index Number ....

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

Instructions to candidates

(a) Write your name and index number in the spaces provided above.
(b) Sign and write the date of examination in the spaces provided above.
(c) This paper consists of three sections: **A**, **B** and **C**.
(d) Answer **all** the questions in section **A**, **three** questions from section **B** and **two** questions from section **C**.
(e) Answers to **all** the questions **must** be written in the space provided at the end of question 24.
(f) **This paper consists of 20 printed pages.**
(g) Do not remove any pages from this booklet.
(h) **Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.**
(i) **Candidates should answer the questions in English.**

For Examiner's Use Only

Section	Question	Maximum Score	Candidate's Score
A	1 – 17	25	
B		15	
		15	
		15	
C		15	
		15	
	Total Score		

918345

Turn over

SECTION A (25 marks)

*Answer **all** the questions in this section in the space provided at the end of question 24.*

1. Name the last stage in the evolution of man. (1 mark

2. Which is the largest linguistic group in Kenya? (1 mark

3. Give **two** sub-groups of the Mjikenda. (2 marks

4. Highlight **one** way of becoming a citizen in Kenya. (1 marks

5. Identify **two** activities that promote national unity in Kenya. (2 marks

6. State **two** natural factors that were responsible for the rise of Nairobi as an urban centre.
    (2 marks)

7. Give **two** types of constitutions. (2 marks)

8. State **two** types of democracy. (2 marks)

9. Name the leader of the Wanga who collaborated with the British. (1 mark)

10. Name **two** methods which were used by the British to establish their rule in Kenya. (2 marks)

11. Name **two** groups which were involved in the provision of education services in Kenya during the colonial period. (2 marks)

12. State the importance of Eliud Mathu in the history of Kenya. (1 mark)

13. Give **two** national philosophies in Kenya. (2 marks)

14. Who is the administrative head of the Parliamentary Service Commission? (1 mark)

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15. Which constitutional amendment reintroduced multiparty democracy in Kenya? (1 mark)

16. Identify the political party formed in 1960 to champion the interests of the minority groups in Kenya. (1 mark)

17. Name **one** category of elected members of the National Assembly in Kenya. (1 mark)

SECTION B (45 marks)

*Answer any **three** questions from this section in the space provided at the end of question 24.*

18. (a) State **five** reasons that led to the migration of the Luo from their original homeland to the present day Kenya. (5 marks)

    (b) Describe **five** aspects of the social organisation of the Agikuyu in the 19th century. (10 marks)

19. (a) Give **five** reasons that led to the coming of the Arabs to the Kenyan Coast. (5 marks)

    (b) Explain **five** effects of Christian missionary activities in Kenya. (10 marks)

20. (a) Identify **five** roles of chiefs during the colonial period in Kenya. (5 marks)

    (b) Explain **five** factors responsible for the Agiryama resistance to the British rule in Kenya. (10 marks)

21. (a) Give **five** political contributions by Ronald Ngala. (5 marks)

    (b) Discuss **five** reasons that led to the emergence of independent churches and schools in Kenya during the colonial period. (10 marks)

SECTION C (30 marks)

*Answer any **two** questions from this section in the space provided at the end of question 24.*

22. (a) Name **three** categories of members who make up a County Assembly in Kenya.
(3 marks)

(b) Explain **six** functions of returning officers in a general election in Kenya. (12 marks)

23. (a) State **three** reasons why the independence of the Judiciary is important in Kenya.
(3 marks)

(b) Explain **six** factors that can interfere with free and fair elections in Kenya. (12 marks)

24. (a) State **three** roles of the Commission on Revenue Allocation (C.R.A). (3 marks)

(b) Discuss **six** features of the Constitution of Kenya (2010). (12 marks)

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233/3 – **CHEMISTRY** – **Paper 3**
(PRACTICAL)
Nov. 2018 – 2¼ hours

Name .... Index Number ....

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

Instructions to candidates

(a) Write your name and index number in the spaces provided above.
(b) Sign and write the date of examination in the spaces provided above.
(c) Answer **ALL** the questions in the spaces provided in the question paper.
(d) You are **NOT** allowed to start working with the apparatus for the first 15 minutes of the 2¼ hours allowed for this paper. This time is to enable you to read the question paper and make sure you have all the chemicals and apparatus that you may need.
(e) All working **MUST** be clearly shown where necessary.
(f) KNEC mathematical tables and silent electronic calculators may be used.
(g) *This paper consists of 8 printed pages.*
(h) **Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.**
(i) **Candidates should answer the questions in English.**

For Examiner's Use Only

Question	Maximum Score	Candidate's Score
1	20	
2	11	
3	09	
Total Score	40	

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Turn over

1. You are provided with:

   - 0.30 g **solid A**, magnesium metal
   - Hydrochloric acid, **solution B**
   - 0.15 sodium carbonate, **solution C**
   - Methyl orange indicator

You are required to determine the:

   - Enthalpy change, ΔH per mole, of the reaction between magnesium metal and excess hydrocholoric acid.
   - Concentration in moles per litre of hydrochloric acid, **solution B.**

PROCEDURE I

(i) Using a burette, measure 50.0 cm³ of **solution B** and place it in a 100 ml plastic beaker.
(ii) Measure the temperature of **solution B** in the beaker after every 30 seconds and record it in **Table 1**.
(iii) At the 90th second, add **all** of the **solid A** provided into the beaker, stir with the thermometer and continue measuring and recording the temperature after every 30 seconds. Complete **Table 1**. **Retain the mixture in the beaker for use in procedure II.**

Table 1

Time (seconds)	0	30	60	90	120	150	180	210	240	270
Temperature (°C)				X						

(3 marks)

(a) Plot a graph of temperature (vertical axis) against time on the grid provided.

(3 marks)
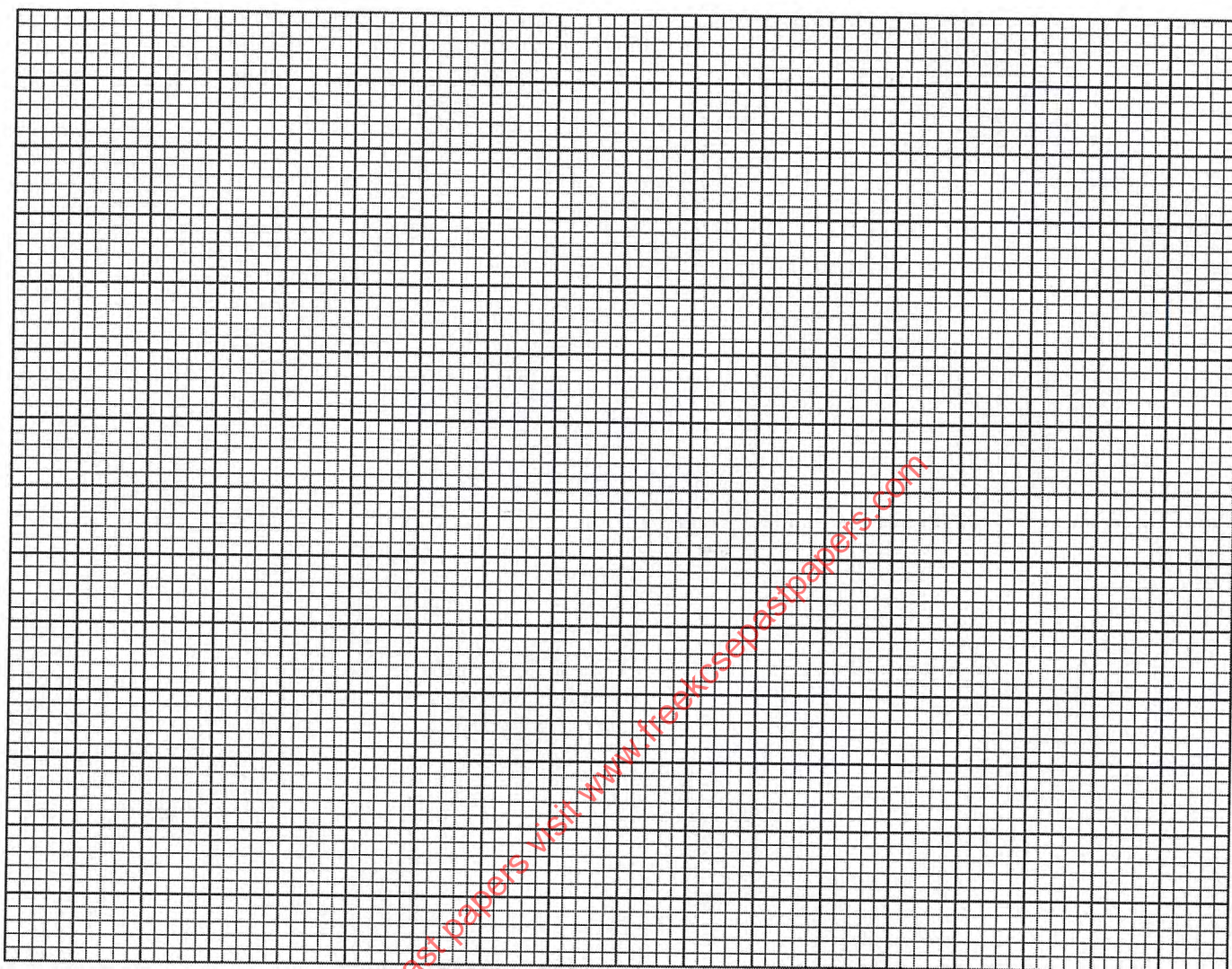
(b)   Determine the change in temperature, ΔT, for the reaction. Show the working on the
       graph.

       $\Delta T = $ .... (1 mark)

(c)   Calculate the heat change, in joules, for the reaction. Assume that for the solution,
       specific heat capacity is $4.2\,J\,g^{-1}K^{-1}$ and density is $1.0\,g\,cm^{-3}$.   (2 marks)

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(d)   The relative atomic mass of magnesium is 24.0. Calculate the enthalpy change, ΔH, of the reaction per mole of magnesium. Indicate the sign of ΔH.   (1 mark)

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PROCEDURE II

(i)   Fill a **clean** burette with the 0.15M sodium carbonate, **solution C**.
(ii)   Place **all** of the mixture in the beaker from **procedure I** into a 250 ml volumetric flask. Add distilled water to the mark and shake thoroughly. Label the mixture as **solution D**.
(iii) Using a pipette filler, pipette 25.0 cm³ of **solution D** into a 250 ml conical flask and add 2 drops of methyl orange indicator.
(iv)   Titrate **solution D** in the conical flask with the sodium carbonate, **solution C** and record the readings in **Table 2**.
(v)   Repeat steps **(iii)** and **(iv)** and complete **Table 2**.

Table 2

	I	II	III
Final burette reading			
Initial burette reading			
Volume of **solution D** used (cm³)			

(3 marks)

(a)   Determine the average volume of the 0.15M sodium carbonate, **solution C**, used.
                                                                                                       (1 mark)

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(b)   Calculate the number of moles of:

    (i)   sodium carbonate used.   (1 mark)

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    (ii)   hydrochloric acid in the 25.0 cm³ of **solution D**.   (1 mark)

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    (iii)   hydrochloric acid in the 250 cm³ of **solution D**.   (1 mark)

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    (iv)   hydrochloric acid that reacted with magnesium metal.   (1 mark)

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    (v)   total number of moles of hydrochloric acid in the 50.0 cm³, **solution B**.   (1 mark)

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(c) Determine the concentration of hydrochloric acid in moles per litre, in **solution B**.

(1 mark)

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2. You are provided with **solid E**. Carry out the following tests and record the observations and inferences in the spaces provided.

(a) Place about one-third of **solid E** in a **dry** test-tube. Heat the solid strongly and test any gas with both blue and red litmus papers.

Observations	Inferences
(2 marks)	(1 mark)

(b) Place the remaining amount of **solid E** in a boiling tube. Add about $15 \, cm^3$ of distilled water and shake. Divide the mixture into **four** test tubes each containing about $2 \, cm^3$.

(i) To the first portion, add three or four drops of dilute hydrochloric acid.

Observations	Inferences
(1 mark)	(2 marks)

(ii)   To the second portion, add two or three drops of aqueous barium nitrate.

Observations	Inferences

(½ mark)   (½ mark)

(iii)   To the third portion, add aqueous sodium hydroxide dropwise until in excess.

Observations	Inferences

(1 mark)   (1 mark)

(iv)   To the fourth portion, add aqueous ammonia dropwise until in excess.

Observations	Inferences

(1 mark)   (1 mark)

3.   You are provided with **solid F**. Carry out the following tests and record the observations and inferences in the spaces provided.

(a)   Place about one-third of **solid F** on a **clean** metallic spatula and burn it in a Bunsen burner flame.

Observations	Inferences

(1 mark)   (1 mark)

(b)   Place the remaining amount of **solid F** in a boiling tube. Add about $10\,cm^3$ of distilled water and shake. Use the mixture for tests **(i)** to **(iii)** below.

Observations	Inferences

    (½ mark)   (½ mark)

(i)   Using about $2\,cm^3$ of the mixture in a test-tube, determine the pH using universal indicator paper and chart.

pH	Inferences

    (1 mark)   (1 mark)

(ii)   To about $2\,cm^3$ of the mixture in a test tube, add two or three drops of acidified potassium manganate(VII).

Observations	Inferences

    (1 mark)   (1 mark)

(iii)   To about $2\,cm^3$ of the mixture in a test-tube add two or three drops of bromine water.

Observations	Inferences

    (1 mark)   (1 mark)

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Kenya Certificate of Secondary Education, 2018

THE KENYA NATIONAL EXAMINATIONS COUNCIL
Kenya Certificate of Secondary Education

121/2 – MATHEMATICS ALT A – Paper 2

Nov. 2018 – 2½ hours

Name .... Index Number ....

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

Instructions to candidates

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

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

(c) This paper consists of **TWO** sections: **Section I** and **Section II**.

(d) Answer **ALL** the questions in **Section I** and only **five** questions from **Section II**.

(e) **Show all the steps in your calculations, giving your answers at each stage in the spaces provided below each question.**

(f) Marks may be given for correct working even if the answer is wrong.

(g) **Non-programmable** silent electronic calculators **and** KNEC Mathematical tables may be used, except where stated otherwise.

(h) **This paper consists of 20 printed pages.**

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

(j) **Candidates should answer the questions in English.**

For Examiner's Use Only
Section I

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

Section II

17	18	19	20	21	22	23	24	Total

Grand Total

SECTION I (50 marks)

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

1.   Given that $2 \log x^2 + \log \sqrt{x} = k \log x$, find the value of k.   (2 marks)

2.   A variable P varies directly as t^3 and inversely as the square root of s. When $t = 2$ and $s = 9$, P = 16. Determine the equation connecting P, t and s, hence find P when s = 36 and $t = 3$.
                                                                                          (4 marks)

3.   Asia invested some money in a financial institution. The financial institution offered 6% per annum compound interest in the first year and 7% per annum in the second year. At the end of the second year, Asia had Ksh 170 130 in the financial institution. Determine the amount of money Asia invested.   (3 marks)

4. The figure below represents a wedge ABCDEF. EF = 10 cm, angle FBE = 45° and the angle between the planes ABFE and ABCD is 20°.

Calculate length BC, correct to 1 decimal place. (3 marks)

5. Simplify $\dfrac{\sqrt{54} + 3\sqrt{3}}{\sqrt{3}}$. (2 marks)

6. In the figure below, AB is a tangent to the circle, centre O and radius 6 cm. The arc AC subtends an angle of 60° at the centre of the circle.

Calculate the area of the shaded region, correct to 1 decimal place. (4 marks)

7. Use completing the square method to solve $3x^2 + 8x - 6 = 0$, correct to 3 significant figures. (3 marks)

8. Three workers, working 8 hours per day can complete a task in 5 days. Each worker is paid Ksh 40 per hour. Calculate the cost of hiring 5 workers if they work for 6 hours per day to complete the same task.   (3 marks)

9. The table below represents a relationship between two variables x and y.

x	1	2	3	4	5	6
y	3.5	4.5	8.0	8.5	11	13

    (a) On the grid provided draw the line of best fit.   (3 marks)

    (b) Use the graph to find the value of y when $x = 0$.   (1 mark)

10. State the amplitude and the phase angle of the curve $y = 2\sin\left(\dfrac{3}{2}x - 30°\right)$. (2 marks)

11. The mass, in kilograms, of 9 sheep in a pen were:
13, 8, 16, 17, 19, 20, 15, 14 and 11.
Determine the quartile deviation of the data. (3 marks)

12. The position of two points C and D on the earth's surface are (θ°N, 10°E) and (θ°N, 30°E) respectively. The distance between the two points is 600 nm. Determine the latitude on which C and D lie. (3 marks)

13. In the figure below **OP** = **p**, **OR** = **r**, **PQ**:**QR** = 1:2 and **PS** = 3**PR**.
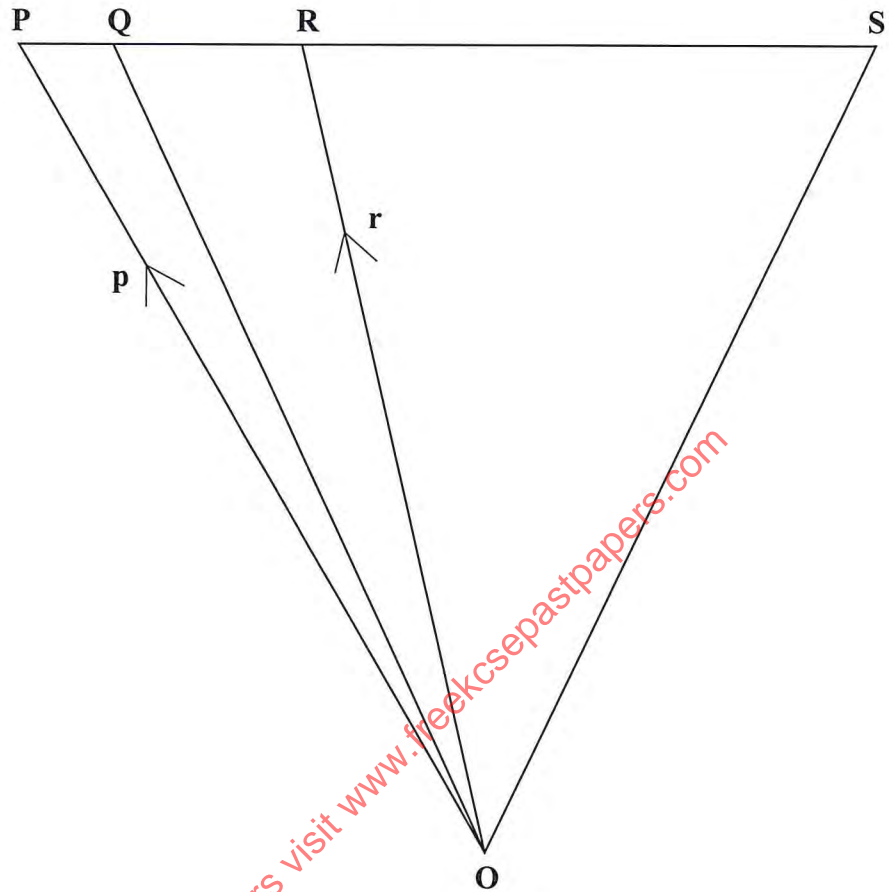
Express **QS** in terms of **p** and **r**. (4 marks)

14. In a certain firm there are 6 men and 4 women employees. Two employees are chosen at random to attend a seminar. Determine the probability that a man and a woman are chosen.   (3 marks)

15. Under a transformation $\mathbf{T} = \begin{pmatrix} 4 & -3 \\ 2 & 3 \end{pmatrix}$, triangle OAB is mapped onto triangle OA′B′ with vertices O(0,0), A′(18,0) and B′(18, 6). Find the area of triangle OAB.   (3 marks)

16. Find the value of k if $\int_0^2 (kx^3 - 3x^2)\,dx = 16$.   (4 marks)

SECTION II (50 marks)

*Answer any **five** questions from this section in the spaces provided.*

17.   The 5th and 10th terms of an arithmetic progression are 18 and -2 respectively.

(a)   Find the common difference and the first term.   (4 marks)

(b)   Determine the least number of terms which must be added together so that the sum of the progression is negative. Hence find the sum.   (6 marks)

18. (a) Complete the table below for the equation $y = x^2 - 4x + 2$. (2 marks)

x	0	1	2	3	4	5
y						

(b) On the grid provided draw the graph $y = x^2 - 4x + 2$ for $0 \leqslant x \leqslant 5$. Use 2 cm to represent 1 unit on the x-axis and 1 cm to represent 1 unit on the y-axis. (3 marks)

(c) Use the graph to solve the equation,
$x^2 - 4x + 2 = 0$ (2 marks)

(d)   By drawing a suitable line, use the graph in (b) to solve the equation
        $x^2 - 5x + 3 = 0$.   (3 marks)

19. (a) The table below shows the frequency distribution of heights of 40 plants in a tree nursery.

Heights of plants (cm)	0–10	10–20	20–30	30–40	40–50	50–60
Frequency	4	8	10	12	4	2

(a) State the modal class. (1 mark)

(b) Calculate:

    (i) the mean height of the plants; (3 marks)

    (ii) the standard deviation of the distribution. (4 marks)

(c) Determine the probability that a plant taken at random has a height greater than 40 cm. (2 marks)

20. (a) Using a ruler and a pair of compasses only, construct:

(i) a parallelogram ABCD, with line AB below as part of it, such that AD = 7 cm and angle BAD = 60°; (3 marks)

A ——————————————————— B

(ii) the locus of points equidistant from AB and AD; (1 mark)

(iii) the perpendicular bisector of BC. (1 mark)

(b) (i) Mark the point P that lies on DC and is equidistant from AB and AD. (1 mark)

(ii) Measure BP. (1 mark)

(c) Describe the locus that the perpendicular bisector of BC represents. (1 mark)

(d) Calculate the area of trapezium ABCP. (2 marks)

21. The table below shows some values of the curves $y = 2 \cos x$ and $y = 3 \sin x$.

(a) Complete the table for values of $y = 2 \cos x$ and $y = 3 \sin x$, correct to 1 decimal place.

(2 marks)

$x°$	0°	30°	60°	90°	120°	150°	180°	210°	240°	270°	300°	330°	360°
$y = 2 \cos x$	2		1	0		−1.7		−1.7	−1		1	1.7	2
$y = 3 \sin x$	0	1.5		3	2.6		0		−2.6			−1.5	0

(b) On the grid provided, draw the graphs of $y = 2 \cos x$ and $y = 3 \sin x$ for $0° \leqslant x \leqslant 360°$, on the same axes.

(5 marks)

(c)   Use the graph to find the values of x when $2 \cos x - 3 \sin x = 0$ (2 marks)

(d)   Use the graph to find the values of y when $2 \cos x = 3 \sin x$.   (1 marks)

121/2

Turn over

22. The figure below is a model of a watch tower with a square base of side 10 cm. Height PU is 15 cm and slanting edges UV = TV = SV = RV = 13 cm.
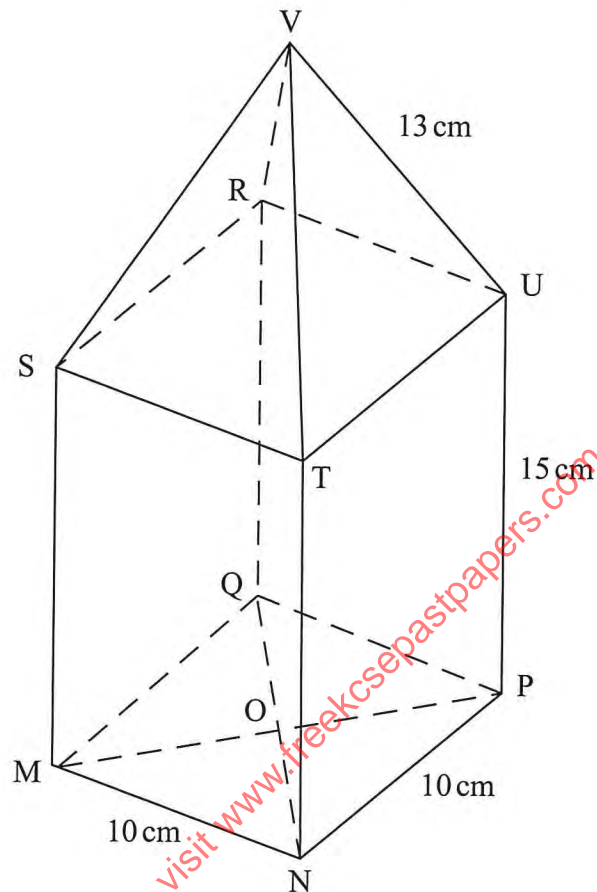
Giving the answer correct to two decimal places, calculate:

(a)   length MP;   (2 marks)

(b)   the angle between MU and plane MNPQ;   (2 marks)

(c)   Length VO;   (3 marks)

(d)   the angle between planes VST and RSTU.   (3 marks)

23. The table below shows monthly income tax rates for a certain year.

Monthly income (in Ksh)	Tax rate in each shilling
0 – 11 180	10%
11 181 – 21 714	15%
21 715 – 32 248	20%
32 249 – 42 782	25%
Above 42 782	30%

In that year a monthly personal tax relief of Ksh 1 280 was allowed. In a certain month of that year, Sila earned a monthly basic salary of Ksh 52 000, a house allowance of Ksh 7 800 and a commuter allowance of Ksh 5 000.

(a) Calculate:

    (i) Sila's taxable income;   (2 marks)

    (ii) the net tax payable by Sila in that month;   (5 marks)

(b) In July that year, Sila's basic salary was raised by 4%. Determine Sila's net salary in July.
    (3 marks)

24   A hotel buys beef and mutton daily. The amount of beef bought must be at least 30 kg and that of mutton at least 20 kg. The total mass of beef and mutton bought should not exceed 100 kg. The beef is bought at Ksh 360 per kg and the mutton at Ksh 480 per kg. The amount of money spent on both beef and mutton should not exceed Ksh 43 200 per day. Let x represent the number of kilograms of beef and y the number of kilograms of mutton.

(a)   Write the inequalities that represent the above information.   (3 marks)

(b)   On the grid provided, draw the inequalities in (a) above.   (4 marks)
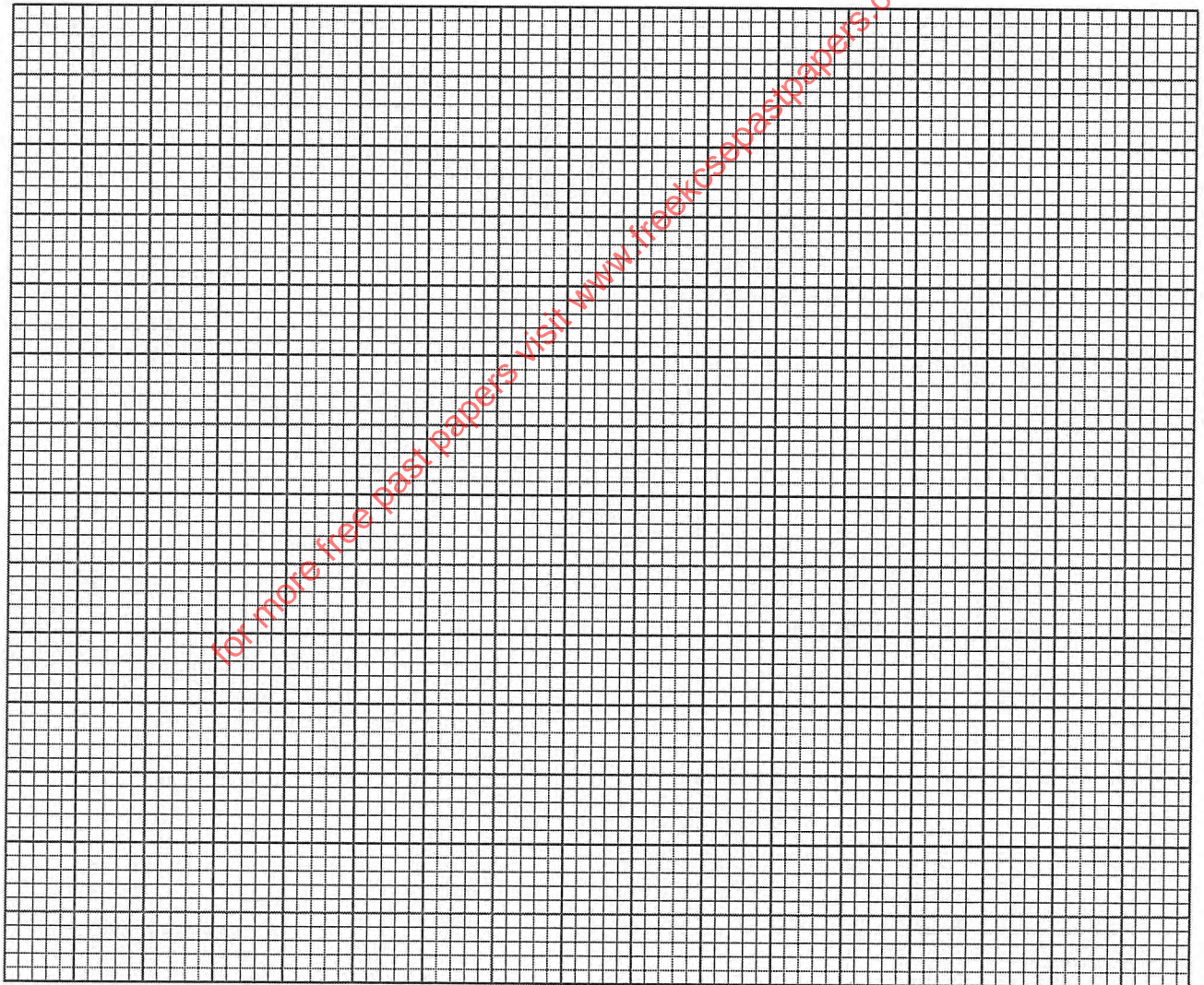
(c)   The hotel makes a profit of Ksh 50 on each kg of beef and Ksh 60 on each kg of mutton. Determine the maximum profit the hotel can make.   (3 marks)

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25.   Desert kangaroo rats spend most of their time in underground burrows.

(a)   Name this type of behavioural activity   (1 mark)

....

(b)   Explain the significance of this behaviour to the organism.   (3 marks)

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26.   State **two** advantages terrestrial animals have in excreting urea as their main nitrogenous waste product.   (2 marks)

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27.   Below is a graphical representation of how basal metabolic rates compare in various animals.
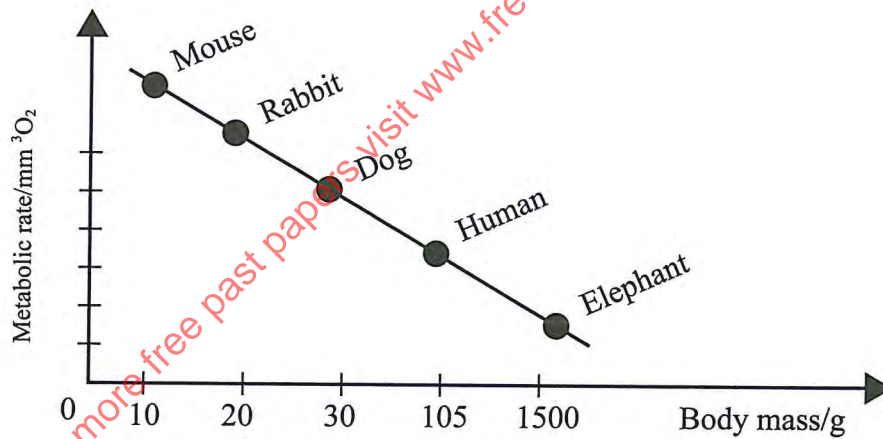
From the graph, explain why the mouse has a higher breathing rate than the elephant.

(3 marks)

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121/2 – MATHEMATICS ALT A – Paper 2

Nov. 2018 – 2½ hours

Name .... Index Number ....

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

Instructions to candidates

(a) Write your name and index number in the spaces provided above.
(b) Sign and write the date of examination in the spaces provided above.
(c) This paper consists of **TWO** sections: **Section I** and **Section II**.
(d) Answer **ALL** the questions in **Section I** and only **five** questions from **Section II**.
(e) **Show all the steps in your calculations, giving your answers at each stage in the spaces provided below each question.**
(f) Marks may be given for correct working even if the answer is wrong.
(g) **Non-programmable** silent electronic calculators **and** KNEC Mathematical tables may be used, except where stated otherwise.
(h) **This paper consists of 20 printed pages.**
(i) **Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.**
(j) **Candidates should answer the questions in English.**

For Examiner's Use Only
Section I

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

Section II

17	18	19	20	21	22	23	24	Total

Grand Total

918285

Turn over

SECTION I (50 marks)

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

1. Given that $2 \log x^2 + \log \sqrt{x} = k \log x$, find the value of k.

(2 marks)

2. A variable P varies directly as t^3 and inversely as the square root of s. When $t = 2$ and $s = 9$, $P = 16$. Determine the equation connecting P, t and s, hence find P when $s = 36$ and $t = 3$.

(4 marks)

3. Asia invested some money in a financial institution. The financial institution offered 6% per annum compound interest in the first year and 7% per annum in the second year. At the end of the second year, Asia had Ksh 170 130 in the financial institution. Determine the amount of money Asia invested.

(3 marks)

4.   The figure below represents a wedge ABCDEF. EF = 10 cm, angle FBE = 45° and the angle between the planes ABFE and ABCD is 20°.

Calculate length BC, correct to 1 decimal place.   (3 marks)

5.   Simplify $\dfrac{\sqrt{54} + 3\sqrt{3}}{\sqrt{3}}$.   (2 marks)

6. In the figure below, AB is a tangent to the circle, centre O and radius 6 cm. The arc AC subtends an angle of 60° at the centre of the circle.

Calculate the area of the shaded region, correct to 1 decimal place. (4 marks)

7. Use completing the square method to solve $3x^2 + 8x - 6 = 0$, correct to 3 significant figures. (3 marks)
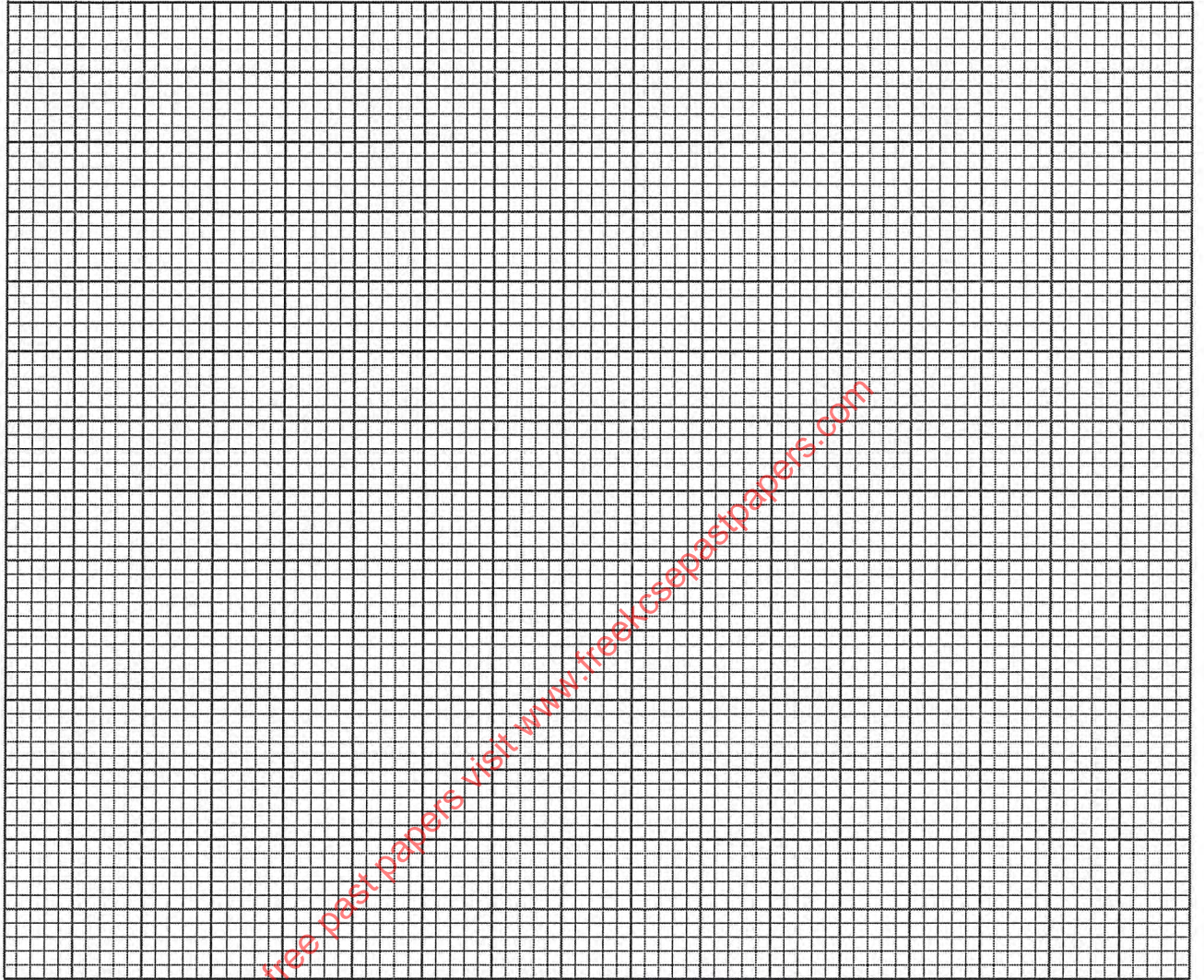
19

24. A hotel buys beef and mutton daily. The amount of beef bought must be at least 30 kg and that of mutton at least 20 kg. The total mass of beef and mutton bought should not exceed 100 kg. The beef is bought at Ksh 360 per kg and the mutton at Ksh 480 per kg. The amount of money spent on both beef and mutton should not exceed Ksh 43 200 per day. Let x represent the number of kilograms of beef and y the number of kilograms of mutton.

(a)   Write the inequalities that represent the above information.   (3 marks)

(b)   On the grid provided, draw the inequalities in (a) above.   (4 marks)

23. The table below shows monthly income tax rates for a certain year.

Monthly income (in Ksh)	Tax rate in each shilling
0 – 11 180	10%
11 181 – 21 714	15%
21 715 – 32 248	20%
32 249 – 42 782	25%
Above 42 782	30%

In that year a monthly personal tax relief of Ksh 1 280 was allowed. In a certain month of that year, Sila earned a monthly basic salary of Ksh 52 000, a house allowance of Ksh 7 800 and a commuter allowance of Ksh 5 000.

(a)   Calculate:

(i)   Sila's taxable income;   (2 marks)

(ii)   the net tax payable by Sila in that month;   (5 marks)

(b)   In July that year, Sila's basic salary was raised by 4%. Determine Sila's net salary in July.   (3 marks)

17

(c)   Length VO;   (3 marks)

(d)   the angle between planes VST and RSTU.   (3 marks)

16

22. The figure below is a model of a watch tower with a square base of side 10 cm. Height PU is 15 cm and slanting edges UV = TV = SV = RV = 13 cm.

Giving the answer correct to two decimal places, calculate:

(a) length MP; (2 marks)

(b) the angle between MU and plane MNPQ; (2 marks)

(d)   Use the graph to find the values of y when $2 \cos x = 3 \sin x$.   (1 marks)

(c)   Use the graph to find the values of x when $2 \cos x - 3 \sin x = 0$ (2 marks)

21. The table below shows some values of the curves $y = 2 \cos x$ and $y = 3 \sin x$.

(a) Complete the table for values of $y = 2 \cos x$ and $y = 3 \sin x$, correct to 1 decimal place.

(2 marks)

$x°$	$0°$	$30°$	$60°$	$90°$	$120°$	$150°$	$180°$	$210°$	$240°$	$270°$	$300°$	$330°$	$360°$
$y = 2 \cos x$	2		1	0		-1.7		-1.7	-1		1	1.7	2
$y = 3 \sin x$	0	1.5		3	2.6		0		-2.6			-1.5	0

(b) On the grid provided, draw the graphs of $y = 2 \cos x$ and $y = 3 \sin x$ for $0° \leq x \leq 360°$, on the same axes.

(5 marks)

20. (a) Using a ruler and a pair of compasses only, construct:

(i) a parallelogram ABCD, with line AB below as part of it, such that AD = 7 cm and angle BAD = 60°; (3 marks)

A _____ B

(ii) the locus of points equidistant from AB and AD; (1 mark)

(iii) the perpendicular bisector of BC. (1 mark)

(b) (i) Mark the point P that lies on DC and is equidistant from AB and AD. (1 mark)

(ii) Measure BP. (1 mark)

(c) Describe the locus that the perpendicular bisector of BC represents. (1 mark)

(d) Calculate the area of trapezium ABCP. (2 marks)

19. (a) The table below shows the frequency distribution of heights of 40 plants in a tree nursery.

Heights of plants (cm)	0–10	10–20	20–30	30–40	40–50	50–60
Frequency	4	8	10	12	4	2

(a) State the modal class. (1 mark)

(b) Calculate:

(i) the mean height of the plants; (3 marks)

(ii) the standard deviation of the distribution. (4 marks)

(c) Determine the probability that a plant taken at random has a height greater than 40 cm. (2 marks)

11

(d) By drawing a suitable line, use the graph in (b) to solve the equation

$$x^2 - 5x + 3 = 0.$$

(3 marks)

18. (a) Complete the table below for the equation $y = x^2 - 4x + 2$.   (2 marks)

x	0	1	2	3	4	5
y						

(b) On the grid provided draw the graph $y = x^2 - 4x + 2$ for $0 \leqslant x \leqslant 5$. Use 2 cm to represent 1 unit on the x-axis and 1 cm to represent 1 unit on the y-axis.   (3 marks)

(c) Use the graph to solve the equation,

$$x^2 - 4x + 2 = 0$$ (2 marks)

SECTION II (50 marks)

*Answer any **five** questions from this section in the spaces provided.*

17.   The 5th and 10th terms of an arithmetic progression are 18 and −2 respectively.

(a)   Find the common difference and the first term.   (4 marks)

(b)   Determine the least number of terms which must be added together so that the sum of the progression is negative. Hence find the sum.   (6 marks)

14. In a certain firm there are 6 men and 4 women employees. Two employees are chosen at random to attend a seminar. Determine the probability that a man and a woman are chosen. (3 marks)

15. Under a transformation $\mathbf{T} = \begin{pmatrix} 4 & -3 \\ 2 & 3 \end{pmatrix}$, triangle OAB is mapped onto triangle OA′B′ with vertices O(0,0), A′(18,0) and B′(18, 6). Find the area of triangle OAB. (3 marks)

16. Find the value of k if $\int_0^2 (kx^3 - 3x^2)\,dx = 16$. (4 marks)

13. In the figure below **OP** = **p**, **OR** = **r**, **PQ:QR** = 1:2 and **PS** = 3**PR**.
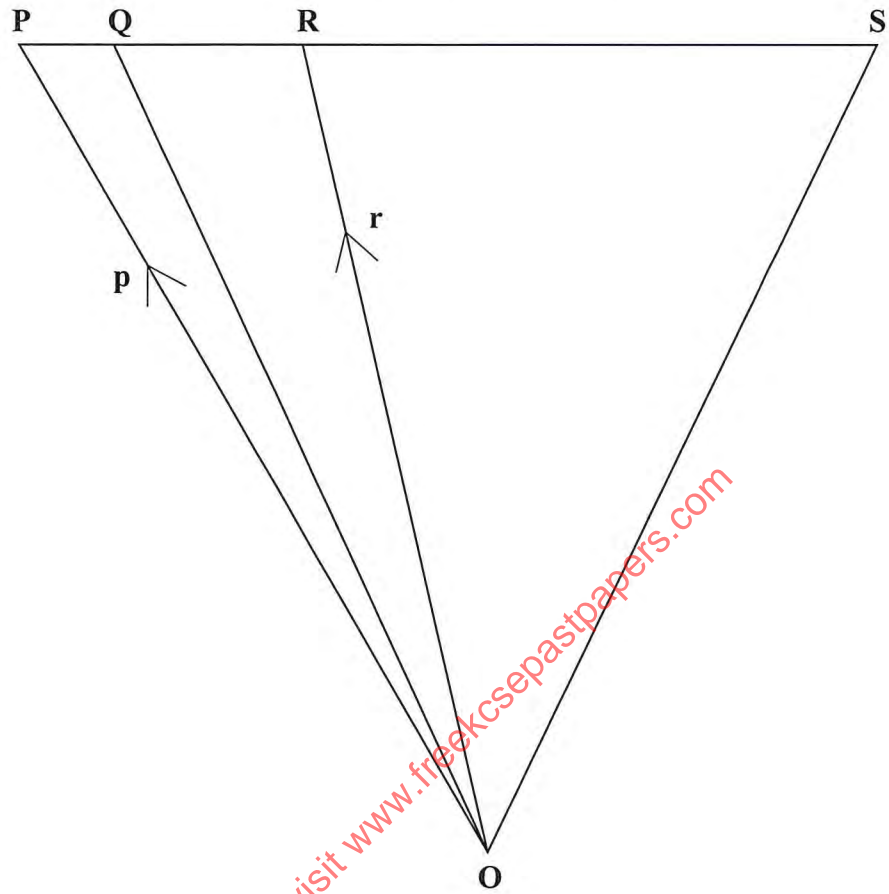
Express **QS** in terms of **p** and **r**. (4 marks)

10. State the amplitude and the phase angle of the curve $y = 2\sin\left(\dfrac{3}{2}x - 30°\right)$. (2 marks)

11. The mass, in kilograms, of 9 sheep in a pen were:
    13, 8, 16, 17, 19, 20, 15, 14 and 11.
    Determine the quartile deviation of the data. (3 marks)

12. The position of two points C and D on the earth's surface are (θ°N, 10°E) and (θ°N, 30°E) respectively. The distance between the two points is 600 nm. Determine the latitude on which C and D lie. (3 marks)

8. Three workers, working 8 hours per day can complete a task in 5 days. Each worker is paid Ksh 40 per hour. Calculate the cost of hiring 5 workers if they work for 6 hours per day to complete the same task. (3 marks)

9. The table below represents a relationship between two variables x and y.

x	1	2	3	4	5	6
y	3.5	4.5	8.0	8.5	11	13

(a) On the grid provided draw the line of best fit. (3 marks)

(b) Use the graph to find the value of y when $x = 0$. (1 mark)

Kenya Certificate of Secondary Education, 2018
121/2
Turn over

312/2 – **GEOGRAPHY** – **Paper 2**
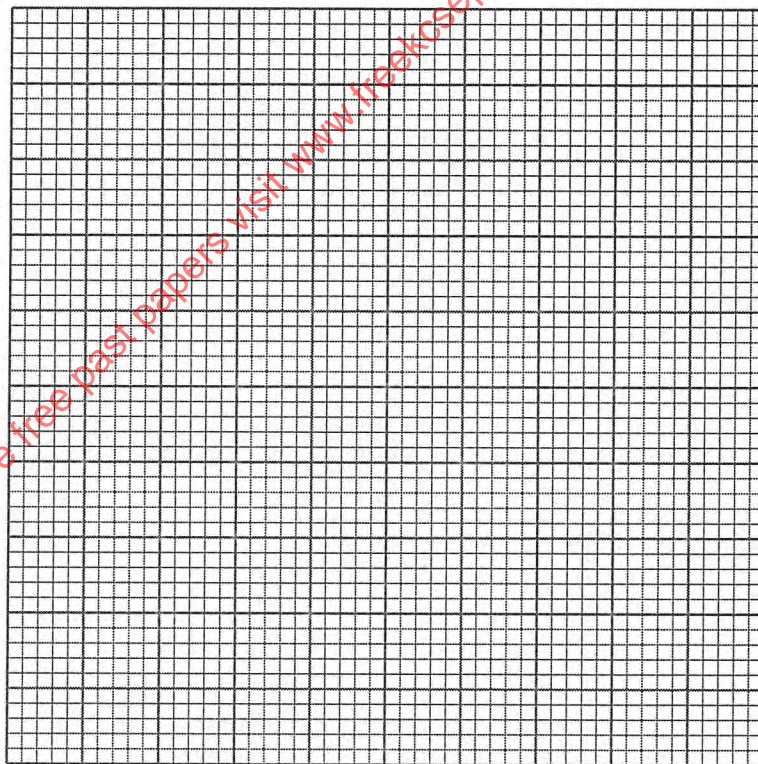
Nov. 2018 – 2¾ hours

Name .... Index Number ....

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

Instructions to candidates

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

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

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

(d) Answer **all** the questions in section **A** in the space provided at the end of question 10.

(e) Answer question **6** and any other **two** questions from section **B** in the space provided at the end of question 10.

(f) **This paper consists of 20 printed pages.**

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

(h) **Candidates should answer the questions in English.**

For Examiner's Use Only

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

918357

Turn over

SECTION A

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

1. (a) Name **two** categories of fish. (2 marks)

    (b) Identify **three** methods of fishing that are used for deep sea fishing. (3 marks)

2. (a) Give **three** tourist attractions found in the lake region of Kenya. (3 marks)

    (b) State **three** reasons why domestic tourism is encouraged in Kenya. (3 marks)

3. (a) Name **three** places in Kenya where geothermal energy has potential of being harnessed. (3 marks)

    (b) State **three** physical factors that have favoured high Hydro-Electric Power production in Uganda. (3 marks)

4. (a) Give **two** trading blocs in Africa. (2 marks)

    (b) Identify **three** political problems facing regional trading blocs in Africa. (3 marks)

5. List **three** environmental hazards that are caused by human activities. (3 marks)

SECTION B

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

6. Study the data provided below and answer the questions that follow.

Value of export earnings of selected crops from Kenya (Ksh millions)

Crop	2012	2013	2014
Tea	101441	104648	93996
Coffee	22271	16328	19913
Sisal	1184	1020	1325
Total	**124896**	**121996**	**115234**

(a) (i) Using a scale of 1 cm to 50,000 million, draw proportional circles to represent the total export earnings between 2012 and 2014. Use the diameter method. (10 marks)

(ii) Calculate the percentage decline in export value between 2012 and 2013. (2 marks)

(b) (i) What conclusion on value of exports can you make from the proportional circles? (3 marks)

(ii) State **four** disadvantages of using proportional circles to represent the export values. (4 marks)

(c) Explain how international trade in Kenya can be improved. (6 marks)

7. (a) (i) Define the term mining. (2 marks)

(ii) State **four** factors that influence the occurrence of minerals. (4 marks)

(b) Describe the open cast method of mining. (5 marks)

(c) The map below shows location of minerals in East Africa. Use it to answer question (c) (i).
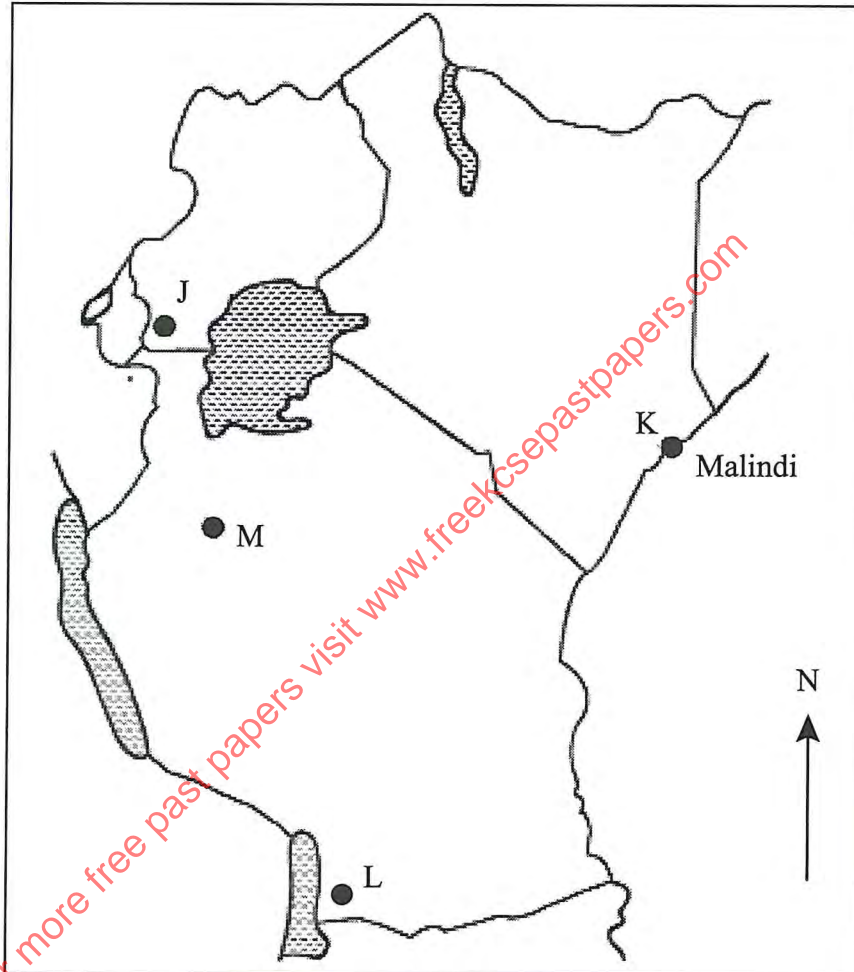
(i) Name the minerals found in areas marked J, K, L and M (4 marks)

(ii) Describe the processing of Trona in lake Magadi. (4 marks)

(d) Explain **three** ways in which mining promotes industrialisation in Kenya. (6 marks)

8. (a) (i) What is forestry? (2 marks)

    (ii) Apart from tropical hardwood forests, name **two** other types of natural forest. (2 marks)

    (iii) State the problems experienced in exploitation of tropical hardwood forests. (5 marks)

    (b) List the characteristics of planted forests in Kenya. (5 marks)

    (c) Explain **three** factors that favour forestry in Canada. (6 marks)

    (d) Give **five** measures that the government has taken to conserve and manage forests in Kenya. (5 marks)

9. (a) Explain each of the following methods of land rehabilitation:

    (i) Mulching (4 marks)

    (ii) Bunds and gabions (6 marks)

    (b) Give **three** ways in which the government is trying to rehabilitate overgrazed lands in Kenya. (3 marks)

    (c) (i) Name **four** types of irrigation practised in Kenya. (4 marks)

    (ii) Explain **two** conditions that favour irrigation farming in Kenya. (4 marks)

    (d) Give the characteristics of land reclamation in Kenya. (4 marks)

10. The pyramids below represent the population structure of Kenya and Sweden in the year 2009.

Use them to answer question (a).

POPULATION PYRAMIDS 2009
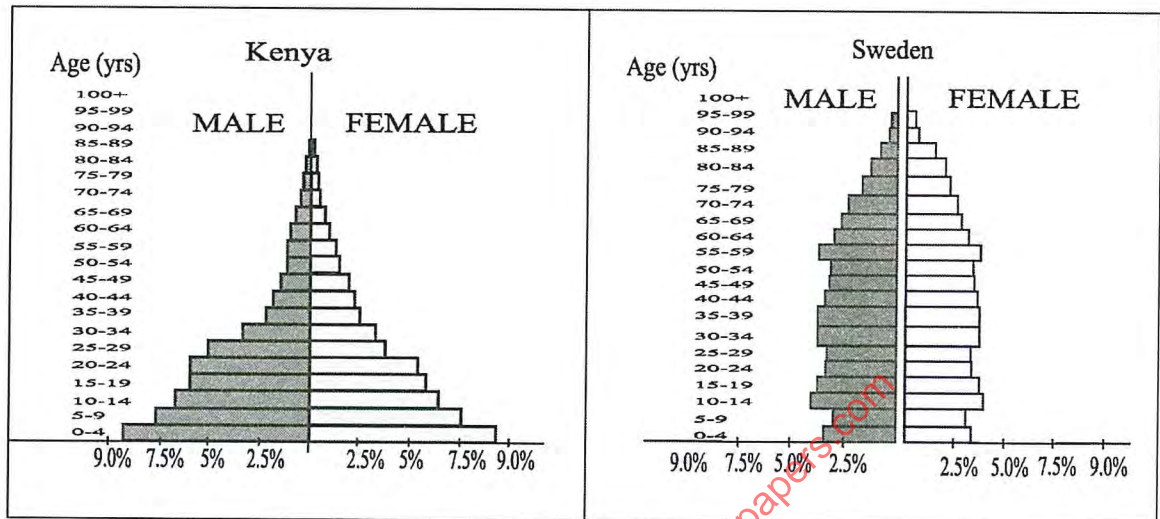
(a) Describe the characteristics of population of the two countries as represented by the pyramids. (6 marks)

(b) (i) What is fertility rate? (2 marks)

(ii) Explain **three** factors that have contributed to the reduction in fertility rate in Kenya. (6 marks)

(c) State **three** problems caused by slow population growth rate in developed countries. (3 marks)

(d) Explain **four** causes of rural-rural migration in Kenya. (8 marks)

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443/2 – **AGRICULTURE** – **Paper 2**
(THEORY)
Nov. 2018 – 2 hours

Name .... Index Number ....

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

Instructions to candidates

(a) Write your name and index number in the spaces provided above.
(b) Sign and write the date of examination in the spaces provided above.
(c) This paper consists of **three** sections; **A**, **B** and **C**.
(d) Answer **all** the questions in sections **A** and **B**.
(e) Answer any **two** questions in section **C**.
(f) **All** answers should be written in the spaces provided in the question paper.
(g) **This paper consists of 16 printed pages.**
(h) **Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.**
(i) **Candidates should answer all the questions in English.**

For Examiner's Use Only

Section	Question	Maximum Score	Candidate's Score
A	1–16	30	
B	17–20	20	
C		20	
		20	
Total Score		**90**	

918348

Turn over

SECTION A (30 marks)

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

1. State **six** characteristics of a good breeding stock. (3 marks)

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2. State **four** reasons for maintaining farm tools and equipment. (2 marks)

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3. State **four** reasons why a calf should be fed on colostrum. (2 marks)

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4. Give **two** reasons for growing grass around a fish pond. (1 mark)

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5. Name **four** systems of poultry rearing. (2 marks)

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6. State **three** advantages of contemporary comparison method of selecting breeding stock.

(1½ marks)

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7. Give the meaning of the following terms as used in livestock breeding:

(a) close breeding (½ mark)

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(b) line breeding (½ mark)

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(c) out crossing (½ mark)

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(d) cross breeding (½ mark)

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8. State **four** livestock rearing practices undertaken in a crush to control parasites and diseases.
(2 marks)

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9. Name the dairy cattle breed that

(a) produces the highest milk yield in kilograms (½ mark)

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(b) is fawn/brown coloured with white colour on the face, legs below knees and hocks, tail switch and flanks (½ mark)

....

(c) is most suitable for marginal areas with poor pastures. (½ mark)

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10. Distinguish between each of the following breeding practices:

(a) crutching and ringing (1 mark)

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(b) tupping and serving (1 mark)

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11. What is a predisposing factor of a disease? (1 mark)

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12. State **four** candling qualities of good eggs for incubation. (2 marks)

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13. Apart from the roof, name **four** other parts of a building that can be constructed using wood.
(2 marks)

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14. State **four** symptoms of internal parasite infestation in livestock. (2 marks)

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15. State the functional difference between the following:

(a) cross-cut saw and rip saw (1 mark)

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(b) wood chisel and cold chisel (1 mark)

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

(a) predisposing factor   (1 mark)

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(b) incubation period   (1 mark)

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SECTION B (20 marks)

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

17. The diagram below shows a livestock parasite.
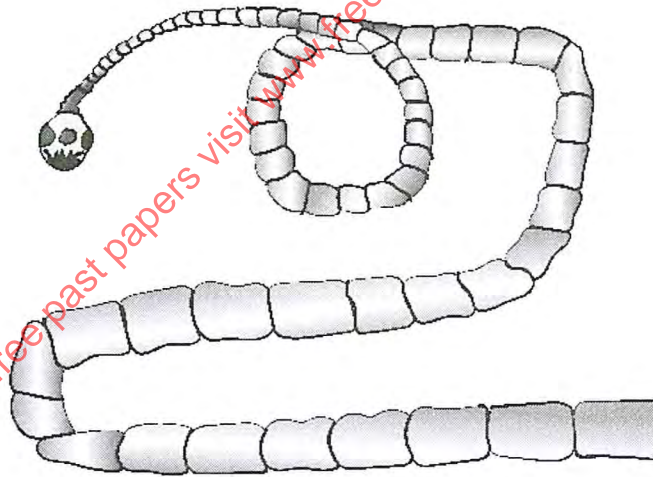
(a) Identify the parasite.   (1 mark)

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(b) Explain how the parasite is passed from

(i) livestock to human beings   (1 mark)

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(ii)   human beings to livestock   (1 mark)

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(c)   Explain **two** control measures for the parasite in a zero grazing unit.   (2 marks)

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18.   The diagram below illustrates a tractor drawn implement.
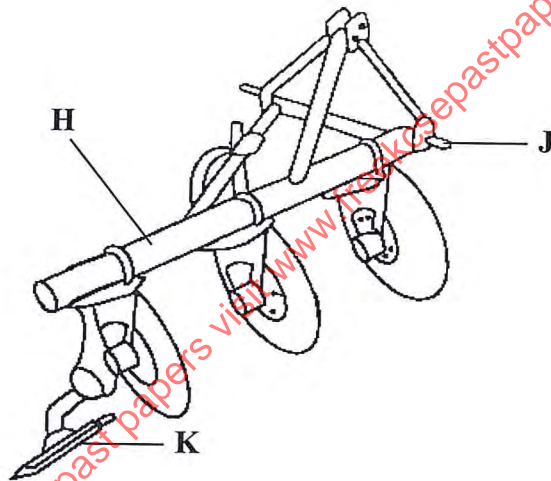
(a)   Identify the implement   (1 mark)

....

(b)   Name the part labelled

H .... (1 mark)

J .... (1 mark)

(c)   State **one** function of the part labelled **K**   (1 mark)

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(d)   Explain why the implement is suitable for ploughing areas with hidden stones.   (1 mark)

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19.   A farmer is required to prepare 200 kg of dairy meal containing 18% digestible crude protein (DCP). Using the Pearson's Square Method, calculate the quantity of sunflower seed cake (34% DCP) and maize germ (7% DCP) the farmer requires for the dairy meal.   (5 marks)

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20.   The diagram below represents a practice of identifying livestock on a farm.
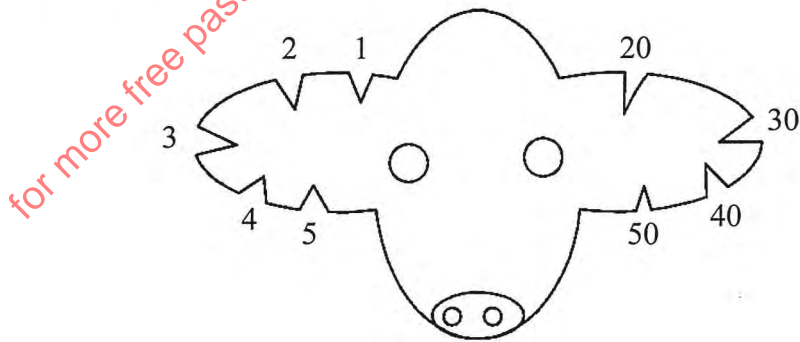
(a)   Identify the practice   (1 mark)

....

(b)   Determine the number that identifies the animal represented by the illustration   (1 mark)

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(c)   Draw a diagram of the animal identified by the number 148 on the farm.   (1 mark)

(d)   Give **two** reasons why this method of identification is discouraged in livestock rearing.
                                                                                            (2 marks)

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SECTION C (40 marks)

*Answer any **two** questions from this section in the spaces provided* after ***question 23.***

21. (a) Describe how natural incubation is set up and managed. (8 marks)

    (b) Describe the management of growers in poultry rearing. (5 marks)

    (c) Describe **seven** possible sources of power on a farm. (7 marks)

22. (a) Describe pneumonia disease under the following sub-headings:

    (i) causal organism (1 mark)

    (ii) animals affected (2 marks)

    (iii) predisposing factors (2 marks)

    (iv) symptoms (5 marks)

    (v) control measures. (3 marks)

    (b) Explain **seven** housing requirements for a calf. (7 marks)

23. (a) State **five** signs of heat in cattle. (5 marks)

    (b) State **five** advantages a spray race has over a plunge dip. (5 marks)

    (c) Give **five** reasons for maintaining livestock healthy. (5 marks)

    (d) Explain **five** factors that determine the amount of food eaten by a livestock animal. (5 marks)

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Kenya Certificate of Secondary Education, 2018
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Kenya Certificate of Secondary Education, 2018
443/2

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101/1 – **ENGLISH**
(Functional Skills) – **Paper 1**
Nov. 2018 – 2 hours
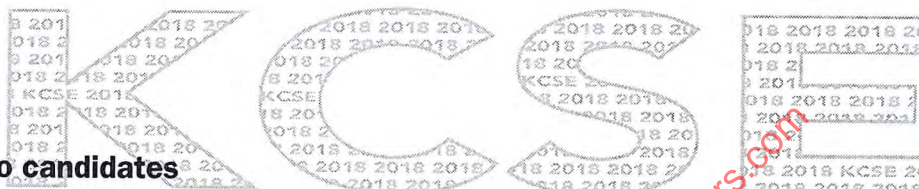
Name .... Index Number ....

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

Instructions to candidates

(a) Write your name and index number in the spaces provided above.
(b) Sign and write the date of examination in the spaces provided above.
(c) Answer **all** the questions in this paper.
(d) All your answers must be written in the spaces provided in the question paper.
(e) **This paper consists of 8 printed pages.**
(f) **Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.**
(g) **Candidates must answer the questions in English.**

For Examiner's Use Only

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

918237

Turn over

1. A travelling theatre group is staging a performance of one of the literature set books in the local sub-county hall. Members of the drama club, the form three students and the form four students would want to watch the performance. As the secretary of the drama club, write a letter to the principal asking for formal permission. In your letter, give details about who will attend, the date and time of the performance and the cost. You should also explain why the performance is important. (20 marks)

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

(10 marks)

Are leaders born or are they created out of circumstances and experience? The debate (a)............................. this topic has gone on as long as the chicken-and-egg (b)............................. There are strong points for (c)............................. side. For our purposes, we will say that the answer is a little bit of (d)............................. Some individuals such as royalty are born and bred to (e)............................. on leadership roles in later life. Other people develop into leaders over a sustained (f)............................. of time. This is the type of leader (g)............................. should all strive to become. All too (h)............................. people find themselves in awe of great leader, wondering, "where do beings like these come from?" What these same individuals fail to realize is that (i)............................. personality and luck can (j)............................. to a leader's success, those things are not the essence of what makes an exceptional leader.

(Adapted from: *Everything Leadership Book* by Bob Adams)

3. (a) *Read the Poem below, and then answer the questions that follow.*

A POISON TREE
I was angry with my friend;
I told my wrath, my wrath did end.
I was angry with my foe:
I told it not, my wrath did grow.

And I watered it in fears,
Night and morning with tears;
And I sunned it with smiles,
And with soft deceitful wiles.

And it grew both day and night.
Till it bore an apple bright.
And my foe beheld it shine,
And he knew that it was mine.

And into my garden stole,
when the night had veiled the pole;
in the morning glad I see;
My foe outstretched beneath the tree.

By William Blake

(i)   Identify and explain any **two** features that would make this poem easy to recite.

(4 marks)

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(ii)   Describe the rhyme scheme of this poem.   (3 marks)

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(iii) In an oral performance of this poem, how would you say the last line?   (2 marks)

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(b)   Paying attention to the vowel sound in each of the following words, pick the odd one out.

(6 marks)

(i)   scene, ship, these, bean, be

(ii)   one, sun, put, ton, but

(iii) hard, hurt, firm, earn, fur

(iv)   rode, coat, port, sew, know

(v)   sit, nine, fight, eye, hide

(vi)   soup, food, sue, root, good

Kenya Certificate of Secondary Education, 2018

(c)   For each one of the words below, provide another word which is pronounced in the same way but spelt differently. (5 marks)

mite ....

rest ....

waist ....

stare ....

rain ....

(d)   Read the dialogue below then answer the questions that follow.

Ms. Simiyu:	Good morning Kantai, why are you waiting outside?
Kantai:	Good morning Madam. I was waiting to speak to you.
Ms. Simiyu:	What is the problem this time? Are the boys in your class fighting again?
Kantai:	There is no problem, Madam. My class sent me to ask you to allow them to attend the entertainment session tomorrow.
Ms. Simiyu:	You already know the answer to this, Kantai. Your class had their turn last weekend.
Kantai:	It is true Madam, we had our turn last weekend. But Madam, the video showing this weekend is based on one of our literature set texts. Here is the notice Madam.
Ms. Simiyu:	Let me see it.
Kantai:	Here, Madam. Also Madam, we have come up with questions which we will answer and discuss in groups after watching the video.
Ms. Simiyu:	Where are the questions?
Kantai:	Here they are Madam.

(i)   What marks politeness in this negotiation? (2 marks)

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(ii)   What in this negotiation shows that Kantai had prepared his case well? (2 marks)

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(iii) What in Ms. Simiyu's behaviour encourages Kantai to continue with the negotiation? (2 marks)

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(iv) Provide **two** appropriate turns to complete the negotiation; one from Ms. Simiyu and one from Kantai. (4 marks)

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101/2 – **ENGLISH** – **Paper 2**
(Comprehension, Literary Appreciation and Grammar)
Nov. 2018 – 2½ hours

Name .... Index Number ....

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

031

Instructions to candidates

(a) Write your name and index number in the spaces provided above.
(b) Sign and write the date of examination in the spaces provided above.
(c) Answer **all** the questions in this question paper.
(d) All your answers must be written in the spaces provided in this question paper.
(e) **This paper consists of 11 printed pages.**
(f) **Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.**
(g) **Candidates must answer the questions in English.**

034

For Examiner's Use Only

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

918240

Turn over

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

In life, we meet and learn from three different kinds of disciplines. The first and probably the most important is that which we might call the Discipline of Nature or of Reality. This type of discipline requires that when people choose to do the wrong things, they will get the wrong results. If, for instance, a musician hits the wrong key, he or she hears the wrong note. If the nail is not squarely hit on the head, it bends and it therefore has to be pulled out.

People meet the Discipline of Nature every time they try to do something. This is why it is so important in school to give students more chances to do things, instead of just reading or listening to someone talk. This discipline is a good teacher. The learner never has to wait long for the answer, it usually comes quickly, often instantly. The answer is often clear, and it points towards the needed correction. This way, the learner does not only see that what was done is wrong, but also why, and what they need to do instead. Finally, and most importantly, the giver of the answer, call her 'Nature' is impersonal, impartial and indifferent. She does not give opinions or make judgement. With Nature, one always gets an opportunity to start afresh, this time with the intention of doing things right.

The next type of discipline is the Discipline of Culture. Man is a social and cultural animal. Everyone, thus, senses around them this discipline, this network of agreements, customs, habits and rules binding the society together. People always seek to understand the society and be part of it. They watch very carefully what other people around them are doing and wish to do the same. These unwritten rules regarding how to act in specific situations are called social norms. Social norms help delineate what is acceptable behaviour. For example, it is not acceptable to be loud and **boisterous** in a place of worship.

The third discipline is the one most people refer to when they speak of discipline – the Discipline of Superior Force. It is the discipline of "You do what I tell you or I'll make you wish you had." There is bound to be some of this in a person's life. Living as we do surrounded by things that can hurt us and our friends, we cannot avoid the Discipline of Superior Force. For example, no one can let a child find out from experience the danger of playing with fire. So along with other **precautions**, the child is told not to play with fire or they will be punished.

There are situations where all the three disciplines overlap. We often hear people say that students will never do anything unless they are compelled to. But in their private lives, or in co-curricular activities in school, they often **submit** themselves, willingly and wholeheartedly to very intense disciplines simply because they want to learn to do a given thing well. So, discipline, does not only stem from authority figures such as parents and teachers but it also comes from a person's willingness to do right.

Adapted from Connelly Mark's *The Brief Sundance Reader:* Thomson Heinle, 2003

(a)   What are we told about the Discipline of Nature in the first paragraph?   (2 marks)

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(b)   Identify and explain the use of personification in paragraph two.   (2 marks)

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(c)   Why do you think the Discipline of Nature is said to be a good teacher?   (4 marks)

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(d)   "You do what I tell you or I'll make you wish you had." What does this statement imply?   (2 marks)

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(e)   "So, discipline does not only stem from authority figures such as parents and teachers but it also comes from a person's willingness to do right".
(Rewrite beginning: Not only...)   (1 mark)

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(f) In about 60 words, summarise what we are told about the Discipline of Culture.

(6 marks)

Rough copy

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Fair copy

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(g)   Explain the meaning of the following words as used in the passage.   (3 marks)

(i)   Boisterous ....

(ii)   Precautions ....

(iii)   Submit ....

2.   Margaret Ogola, *The River and the Source*

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

"Now Nyabera, I don't believe a daughter of mine could sound so foolish. Of course they are human, that is why they are called white people, not white animals. And trust is something to give to people who have earned it and therefore you have to give them a chance to do so. I would not trust your uncle Otieno although he is as black as the bottom of the pot I boil maize and beans in. Finally, you'd better know that I aim to get some help from them against Otieno. The future of your nephew Owuor is in their hands so start praying."

"Oh, mother! Please don't go! What if something happened to you? I am afraid, mother, I am so afraid! And how can you leave Owuor alone considering the kind of irresponsible mother he has? Oh, mother, I feel like this family is cursed. What if something happened to him, to you? Nyabera waited, her tears running in full force. Akoko stood up to her full height which barely reached her daughter's shoulders. Her eyes were blazing fit to send sparks to set the thatched roof ablaze.

"Nyabera, you are not the woman I brought you up to be. I know you have suffered, but suffering is the lot of many. To suffer is not a curse unless you have earned it and I have never done anything to earn a curse. Both the evil and the good suffer. How you come through suffering is what will make or break you. Please think, my daughter. At least you can have children and you have a good husband. One day *Were* will give you a child that lives; I am sure of it after what you have just told me. But to have a child is one thing, to bring it up to be a human fit to live with others is something else altogether – and the way you are going I doubt if you will be fit to be a mother when the baby comes. You may be just like Alando your sister-in-law. You have known me all your life. How could you ever imagine that I could leave my grandson at the Mercy of your uncle? I've taken him to Yimbo to live in the house of Oloo, my brother. Are you happy now?"

"Oh mother! Why didn't you bring him here to stay with me? Don't you trust me?" "Of course I trust you. I thought of bringing him here, but I decided it was too near the nest of vipers who now occupy the stool of Maroko, the first chief. Please can you show me a place to rest? I will be staying with you for a few days before I leave for Kisumu. That way no one will know or suspect my motives." Nyabera conducted her mother to her mother-in-law's house as *Chik* did not allow her to spend the night in a married daughter's house.

Kenya Certificate of Secondary Education, 2018
101/2

Turn over

The next few days passed pleasantly enough, with mother and daughter chatting for hours about their lives, their people, their past, their future, their hopes and all manner of things. On the fifth day she embarked on a journey which would bring her and her scant offspring to a new era: for the great river starts its journey as a little stream which at first meanders around without any apparent direction, sometimes disappearing underground altogether, but always there, always moving towards the sea.

(a) Briefly describe what happens before the events in this excerpt. (2 marks)

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(b) From the excerpt, what do we learn about Akoko's character? (6 marks)

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(c) Who are being referred to as a 'nest of vipers' and why? (3 marks)

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(d) What main theme emerges from this excerpt? Illustrate your answer. (3 marks)

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(e) What is the tone of the excerpt? Explain your answer. (3 marks)

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(f) With reference to the novel, briefly explain the symbolism in the last paragraph of the excerpt. (4 marks)

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(g) How was Akoko's case handled by the white man? (4 marks)

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101/2

Turn over

3.   *Read the following poem and then answer the questions that follow.*

The Man He Killed

"Had he and I but met,
By some old ancient inn,
We should have sat us down to wet
Right many a nipperkin!

But ranged as infantry,
And staring face to face,
I shot at him as he at me,
And killed him in his place.

I shot him dead because –
Because he was my foe,
Just so, my foe of course he was;
That's clear enough; although.

He thought he'd 'list, perhaps
off-hand like – just like I –
Was out of work – had sold his traps –
No other reason why.

Yes; quaint and curious war is!
You shoot a fellow down
You'd treat if met where any bar is,
or help to half-a-crown."

Thomas Hardy (1840–1923)

(a)   Briefly explain what the poem is about.   (3 marks)

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(b)　Identify and explain any two stylistic devices used in this poem.　　　　(6 marks)

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(c)　What do we learn about the persona from this poem?　　　　(4 marks)

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(d)　Describe the tone of this poem.　　　　(3 marks)

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(e)　What is the message of this poem?　　　　(3 marks)

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(f)　Explain the meaning of the word 'quaint' as used in the poem.　　　　(1 mark)

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4. (a) *Rewrite the following sentences according to the instructions given after each. Do not change the meaning.* (5 marks)

(i) They will look after Bakari.
(*Begin*: Bakari...)

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(ii) The textbooks said the teacher are not adequate. (*Punctuate correctly*)

....

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(iii) I know that one of your books has been published.
(*Begin*: I know that a...)

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(iv) I will help him only if he asks me to.
(*Rewrite using the word* "unless")

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(v) All of us want to pass our exams.
(*Begin*: None.........)

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(b) *Fill in each blank space with the correct alternative from the given choices.* (3 marks)

(i) The bank, in conjunction with the clubs, ... sponsored the event. (has, have)

(ii) Neither Karimi nor her friend .... there. (was, were)

(iii) Kawira is one of those people who............................. always in a hurry. (are, is)

(c)   *Fill in each blank space in the following sentences with a correct preposition.*

(3 marks)

(i)   We know how proficient Jane is .... her work.

(ii)   Many people are not accustomed .... such treatment.

(iii) The accident victim writhed .... pain as we rushed him to hospital.

(d)   *Explain the meaning of the underlined expression in each of the sentences below.*

(2 marks)

(i)   Nyabera really is <u>a top notch administrator.</u>

....

....

(ii)   He has <u>a heart of gold</u>.

....

....

(e)   *Complete the following sentences using an appropriate expression from those given in brackets.*   (2 marks)

(i)   At my sister's graduation party, there were (a great deal of, plenty of) people.

....

(ii)   You only require (a little, little) salt in your diet.

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THE KENYA NATIONAL EXAMINATIONS COUNCIL

Kenya Certificate of Secondary Education

565/2 – **BUSINESS STUDIES** – Paper 2

Nov. 2018 – 2½ hours

Name .... Index Number ....

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

Instructions to candidates

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

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

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

(d) Answer any **five** questions.

(e) Write your answers in the spaces provided after question **six**.

(f) All questions carry equal marks.

(g) **This paper consists of 16 printed pages.**

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

(i) **Candidates should answer the questions in English.**

For Examiner's Use Only

Question	Maximum Score	Candidate's Score
	20	
	20	
	20	
	20	
	20	
Total Score		

565/2

918375

Turn over

1. (a) Explain **five** circumstances that may lead to the existence of a business opportunity to be exploited by the entrepreneur. (10 marks)

   (b) Explain **five** factors that Chuma Steel Manufacturers may consider when choosing a channel for distributing their products. (10 marks)

2. (a) Explain **five** clauses that must be specified in the Memorandum of Association of a public limited company. (10 marks)

   (b) The following information was extracted from the books of Kisababu Traders on 31 December 2014:

Details	Sh
Sales	84,000
Purchases	58,800
Opening stock	15,700
Stock on 31/12/2014	13,000
Returns out	1,500
Returns in	9,000

   Required:
   i. Prepare Kisababu Traders Trading Account for the period ending 31 December 2014. (5 marks)

   ii. Work out Kisababu Traders percentage mark up. (2 marks)

   iii. Calculate Kisababu Traders Rate of Stock Turnover. (3 marks)

3. (a) Explain **five** demerits of using carts as a means of transport in towns. (10 marks)

   (b) Explain **five** types of direct taxes that the government may use to collect revenue from individuals and companies. (10 marks)

4. (a) The demand for soft drinks has been on the increase. Explain **five** factors that may have contributed to this. (10 marks)

   (b) Describe **five** forms of economic integration that countries may join to promote international trade. (10 marks)

5. (a) Explain **five** differences between an open office and an enclosed office. (10 marks)

(b) The following opening balances were extracted from the books of Mageta Traders on 1 July 2016:

Details	Sh
Furniture	56,000
Capital	80,000
Creditors	20,000
Debtors	25,000
Bank	11,000
Cash	8,000

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

- Paid a creditor Sh 4,500 in cash.
- Took Sh 3,000 from the bank for family use.
- Bought stock Sh 18,600 on credit.
- Acquired a 10 year bank loan Sh 165,000 which was credited to the business bank account.
- Purchased land worth Sh 82,000 paying by cheque.
- Converted a family table worth Sh 5,500 to business use.
- Received Sh 7,300 in cash from debtor.

Required: Prepare Mageta Traders Balance Sheet at the end of July 2016 (10 marks)

6. (a) Explain **five** problems of using national income statistics to compare the living standards of citizens of Kenya and Tanzania. (10 marks)

(b) Use the transactions given below to prepare Jawabu Traders two column cash book for the month of February 2015. (10 marks)

1st Feb.	Had Sh 12,500 cash and a bank overdraft of Sh 5,000
2nd Feb.	Used cash to pay for water bill Sh 800, electricity Sh 1,100 and wages Sh 4,700.
3rd Feb.	Received a cheque of Sh 18,900 from a debtor
5th Feb.	Sold goods worth Sh 7,150 in cash.
7th Feb.	Paid for goods bought for resale worth Sh 6,400 by cheque.
9th Feb.	Received a cheque of Sh 13,000 from the co-operative society as earnings from dividends.
10th Feb.	Withdrew Sh 2,500 from the bank for family use.
13th Feb.	Received Sh 15,900 in cash from a debtor.
15th Feb.	Deposited Sh 9,500 from the office into the business bank account.
17th Feb.	Paid a creditor by cheque Sh 4,390.
27th Feb.	Used all the money in the bank to purchase furniture leaving only a balance of Sh 2,010.

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232/3 – **PHYSICS** – **Paper 3**
(PRACTICAL)
Nov. 2018 – 2½ hours

Name .... Index Number ....

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

Instructions to candidates

(a) Write your name and index number in the spaces provided above.
(b) Sign and write the date of examination in the spaces provided above.
(c) Answer **all** the questions in the spaces provided in the question paper.
(d) You are supposed to spend the first **15 minutes** of the **2½ hours** allowed for this paper reading the whole paper carefully before commencing your work.
(e) Marks are given for a clear record of the observations actually made, their suitability, accuracy and the use made of them.
(f) Candidates are advised to record their observations as soon as they are made.
(g) **Non-programmable** silent electronic calculators may be used.
(h) **This paper consists of 9 printed pages.**
(i) **Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.**
(j) **Candidates should answer the questions in English.**

For Examiner's Use Only

Question 1	a	b	c	d	g	h	i	j
Maximum Score	1	1	1	4	4	4	3	2
Candidate's Score								

Total

Question 2	a	b	c	d	h	i
Maximum Score	1	3	6	2	6	2
Candidate's Score						

Total

Grand Total

918417

Turn over

Question 1

You are provided with the following:

- Some water in a container
- A 10 ml measuring cylinder
- A piece of a glass rod
- A 10 g mass
- 5 paper clips
- A half metre rule
- A metre rule
- Two stands, two bosses and two clamps
- Three pieces of sewing thread

Proceed as follows:

(a) Pour 6 ml of the water into the measuring cylinder. Lower the glass rod into the water and determine the volume V of the glass rod.

V = ...cm³   (1 mark)

Remove the glass rod from water.

(b) Using a stand and a piece of string, suspend the half metre rule at its centre of gravity C so that it balances horizontally with the scale facing you.

Using a second stand, clamp a metre rule vertically near one end of the half metre rule to note the height at which the half metre rule is horizontal.

Maintain this height throughout the experiment

Record the centimetre mark of the centre of gravity C.

C = ... cm   (1 mark)

(c) Using the string, suspend the 10 g mass on the half metre rule at a distance d = 2 cm from C. **The distance d = 2 cm should be maintained throughout the experiment**.

Balance the half metre rule by suspending the glass rod using a string at a distance X from C.

Record the value of X

X = ... cm   (1 mark)

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232/3

(d)   Using the results in part (a) and (c) determine the;

   (i)   mass of the glass rod,   (2 marks)

   ....

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   (ii)   density of the glass rod.   (2 marks)

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(e)   Remove the glass rod. Push the half metre rule through one paper clip and adjust the position of the clip to a point P where the half metre rule balances horizontally. See **Figure 1**.
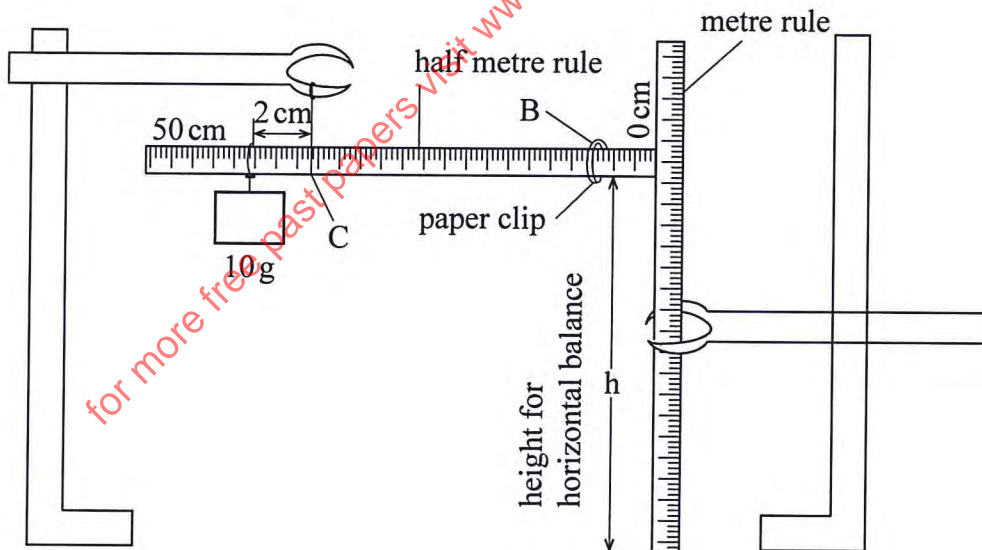
Figure 1

(f)   Record the centimetre mark for point P in **Table 1**.

(g) Repeat part (f) for the other number of clips shown in **Table 1** and complete (*the clips may be suspended by connecting them as a chain of the required number*)   (4 marks)

Table 1

Number of clips N	1	2	3	4	5	6
cm mark of P(cm)						
distance L (from c to p)						
$\frac{1}{L}$ (cm^{21})						

(h) Plot a graph of $\frac{1}{L}$ (y axis) against the number of clips N.   (4 marks)
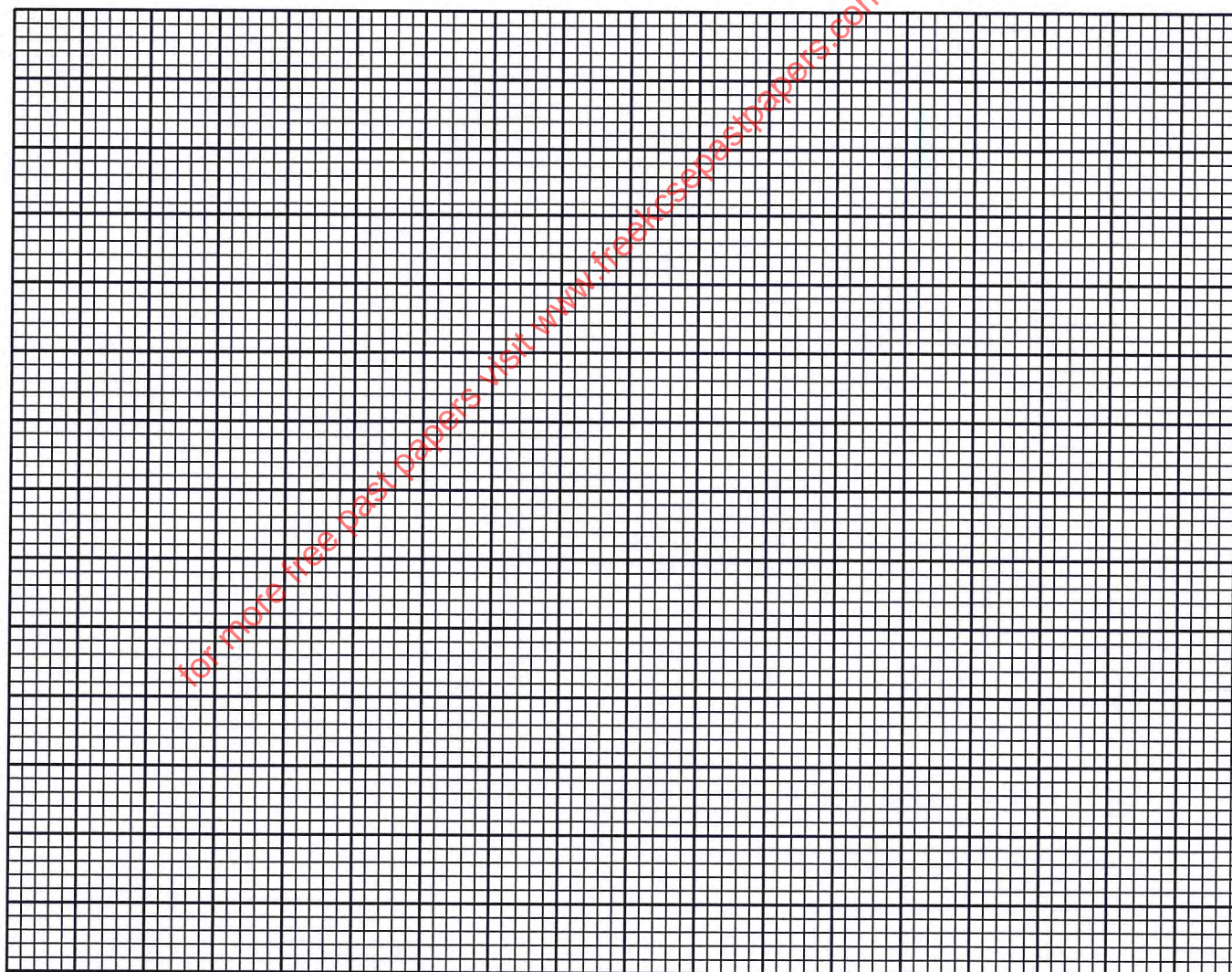
(i) Determine the slope S of the graph. (3 marks)

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(j) Determine K given that: $\dfrac{1}{L} = 0.05\,KN$ (2 marks)

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QUESTION 2

You are provided with the following:

(i)   A voltmeter
(ii)   A resistor labelled 10Ω
(iii)   A resistance wire mounted on a half metre rule labelled X
(iv)   Two cells in a cell holder
(v)   A switch
(vi)   Eight connecting wires
(vii)   A micrometer screw gauge
(viii) A resistor labelled 10KΩ
(ix)   A galvanometer
(x)   A beaker containing a liquid labelled L
(xi)   Two copper plates
(xii)   A resistance wire labelled AB and mounted on a millimetre scale
(xiii) A jockey
(xiv)   A vernier calliper

Proceed as follows:

PART A

(a)   Measure and record the diameter d of the resistance wire x   (1 mark)

d   = ...mm

    = ... m

(b)   Set up the circuit as shown in **Figure 2.**
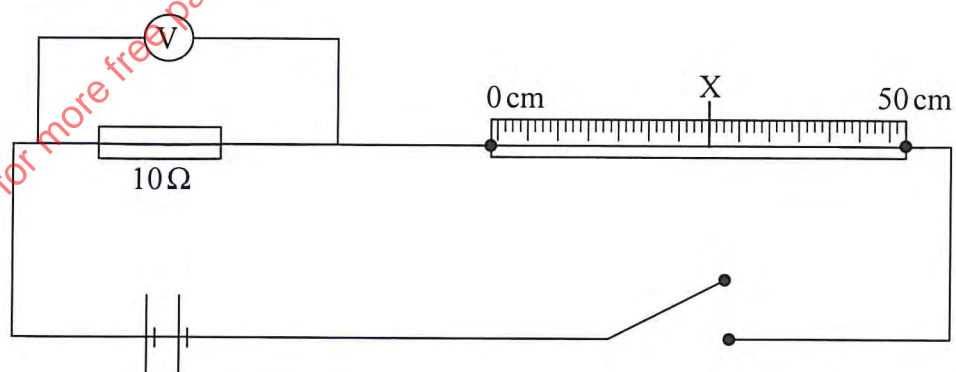
Figure 2

(i)   Close the switch and record the potential difference V_1 across the 10Ω resistor.

V_1 = ... (1 mark)

(ii) Open the switch. Determine the current **I** flowing in the circuit. (2 marks)

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(c) (i)   Now connect the voltmeter across wire X. Close the switch and record the potential difference V_2 across wire X.

V_2 = ... (1 mark)

(ii) Determine the resistance **R** of wire X. (2 marks)

....

....

....

(iii) Determine **K** the resistance per metre of wire X. (1 mark)

....

....

(iv) Determine **Q** given that $Q = \dfrac{\pi K d^2}{4}$ (*where d is in metres*). (2 marks)

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PART B

(d) (i) Using the vernier callipers measure and record the width W of one of the copper plates

W = ... cm   (1 mark)

(ii) Determine the area A of a 5 cm length of the copper plate

A = ... cm²   (1 mark)

(e) Using stands and clamps, hold the copper plates in the beaker such that both plates:

(i) reach the bottom of the beaker;
(ii) are parallel, vertical and facing each other;
(iii) are separated from each other by a distance S.

(f) Connect the copper plates to the circuit as shown in **Figure 3.**
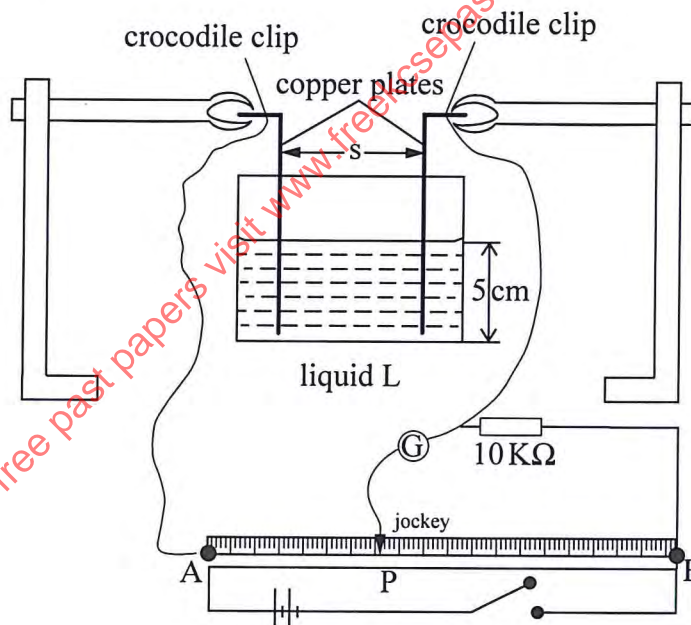
Figure 3

(g) Set the separation distance between the copper plates **S** to 3 cm. Using the jockey tap wire AB at various points to obtain a point **P** at which the galvanometer does not show any deflection. Record the balance length L (from **A** to **P**) in **Table 2**.

(h)   Repeat part (g) for other values of **S** shown in **Table 2** and complete the table.   (6 marks)

Table 2

Plate separation distance **S** (cm)	3	4	5
Balance length L (cm)			
Resistance R $= \dfrac{(10\times10^3)L}{(100-L)}$			
Resistance per unit length $K = \dfrac{R}{S}$			
constant Z = A.K.			

(i)   Determine the average value of Z.   (2 marks)

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231/3 – **BIOLOGY** – **Paper 3**
(PRACTICAL)
Nov. 2018 – 1¾ hours

Name .... Index Number ....

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

Instructions to candidates

(a) Write your name and index number in the spaces provided above.
(b) Sign and write the date of examination in the spaces provided above.
(c) Answer **all** the questions in the spaces provided.
(d) You are required to spend the first 15 minutes of the 1¾ hours allowed for this paper reading the whole paper carefully before commencing your work.
(e) Additional pages must **not** be inserted.
(f) **This paper consists of 7 printed pages.**
(g) **Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.**
(h) **Candidates should answer all the questions in English.**

For Examiner's Use Only

Question	Maximum Score	Candidate's Score
1	14	
2	12	
3	14	
Total Score	**40**	

918381

Turn over

1. The photographs below represent three mammalian bones, labelled **E**, **F** and **G**.

E   F   G

(a) With reasons, identify the bones.

Bone	Identity	Reason(s)
E	....	....
	....	....
	....	.... (3 marks)
F	....	....
	....	....
		.... (2 marks)
G	....	....
	....	....
	....	.... (2 marks)

(b) Name the joints formed at the anterior and posterior ends of **F**.

Anterior end .... (1 mark)

Posterior end .... (1 mark)

(c)   State the types of movement facilitated by the joint at the anterior end of specimen
        labelled **F**.   (1 mark)

        ....

        ....

(d) (i) Name the substance found inside the living tissue of the specimen represented in
          photograph **F**.   (1 mark)

          ....

          ....

     (ii) State the function of the substance named in (d) (i) above.   (1 mark)

          ....

          ....

(e) (i) Name the muscle bundle usually attached onto the front of the specimen
          represented in photograph **F**.   (1 mark)

          ....

     (ii) State the function of the muscle bundle named in (e) (i) above.   (1 mark)

          ....

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A105

918381

2. Below is a photograph of a blood smear from a normal individual. The arrangement is arbitrary and the number of blood elements is greater than what would normally occur in an actual microscopic field.
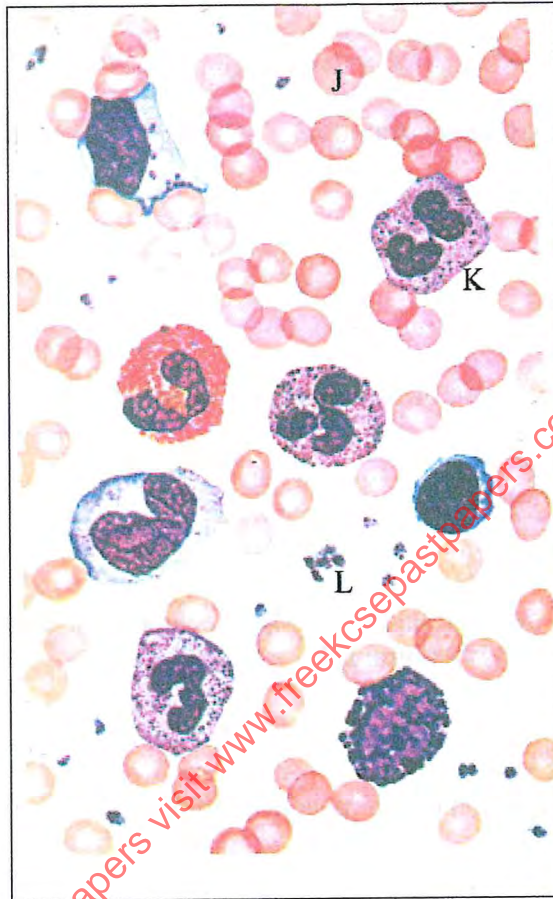
(a) (i) Name the blood elements labelled **J**, **K** and **L**. (3 marks)

J ....

K ....

L ....

(ii) State **one** function of each of the elements named in (a) (i) above. (3 marks)

J ....

K ....

L ....

149

A105

(b)   The photograph below is of a section of the human intestines of a patient suffering from a common parasitic disease.

G
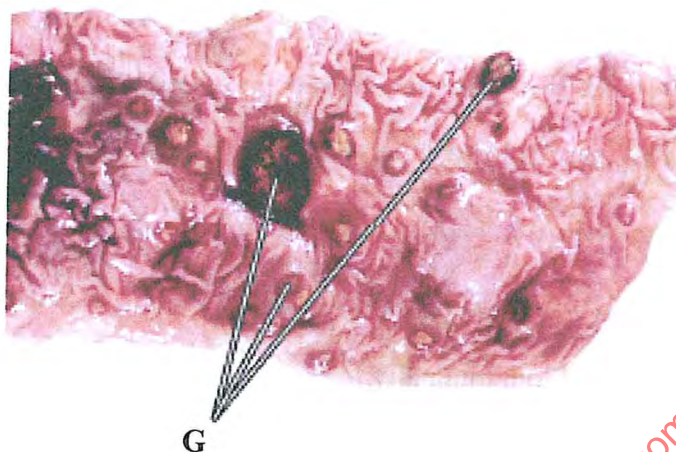
(i)   Name the disease.   (1 mark)

....

(ii)   Name the parasite that causes the disease in (b) (i) above.   (1 mark)

....

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

....

....

(iv)   State the effects of having the parts labelled **G** in the patient's intestines.
                                                                                          (2 marks)

....

....

3. You are provided with a specimen labelled **H**. With the aid of a hand lens, examine the external features of the specimen.

(a) (i) What part of a plant is specimen **H**? (1 mark)

....

(ii) Give **two** reasons for your answer in (a) (i) above. (2 marks)

....

....

(b) Open up specimen **H** longitudinally.

Use a hand lens to observe the internal structures of specimen **H**.

(i) Draw and label the internal cut surface and associated structures of specimen **H**. (5 marks)

(ii) Explain how you would determine the magnification of the drawing made in (b) (i) above. (2 marks)

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(iii)   State the mode of dispersal for seeds of specimen **H**.   (1 mark)

....

....

(iv)   Explain how seeds of specimen **H** are dispersed through the mode stated in
        (b) (iii) above.   (3 marks)

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313/2 – **CHRISTIAN RELIGIOUS EDUCATION** – **Paper 2**

Nov. 2018 – 2½ hours

Name .... Index Number ....

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

Instructions to candidates

(a) Write your name and index number in the spaces provided above.
(b) Sign and write the date of examination in the spaces provided above.
(c) This paper consists of **six** questions.
(d) Answer any **five** questions in the spaces provided at the end of question 6.
(e) Each question carries 20 marks.
(f) **This paper consists of 16 printed pages.**
(g) **Do not remove any pages from this booklet.**
(h) **Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.**
(i) **Candidates should answer the questions in English.**

For Examiner's Use Only

Question						Candidate's Total Score
Candidate's Score						

918363

Turn over

1. (a) Outline Micah's prophecy concerning the Messiah (Micah 5: 2-5). (7 marks)

    (b) Describe the annunciation of the birth of Jesus by angel Gabriel as recorded in Luke 1: 26-38. (8 marks)

    (c) State **five** lessons Christians learn from the Magnificat. (5 marks)

2. (a) Explain the teachings of Jesus on the qualities of a true disciple (Luke 6: 20-49). (8 marks)

    (b) Describe the incident in which Jesus forgave the sinful woman (Luke 7: 36-50). (7 marks)

    (c) State **five** lessons Christians learn from the incident in which Jesus forgave the sinful woman. (5 marks)

3. (a) With reference to the story of the rich man and Lazarus, explain the teaching of Jesus on the proper use of wealth (Luke 16: 19-31). (7 marks)

    (b) Outline **six** signs of the end times as taught by Jesus in Luke 21: 5-38. (6 marks)

    (c) Give **seven** ways in which Christians are preparing themselves for the second coming of Jesus Christ. (7 marks)

4. (a) Identify **eight** characteristics of love as taught by Saint Paul in 1st Corinthians 13. (8 marks)

    (b) Explain the unity of believers as expressed in the concept of the church (Ephesians 5: 21-32). (5 marks)

    (c) Identify **seven** factors that hinder effective cooperation among Christians in Kenya today. (7 marks)

5. (a) Outline the importance of professional Codes of Ethics. (6 marks)

    (b) Identify **seven** factors that have led to an increased rate of child labour in Kenya today. (7 marks)

    (c) State **seven** ways through which Christians in Kenya are helping to reduce child labour in the society. (7 marks)

6. (a) Give **seven** reasons why Christians are opposed to plastic surgery. (7 marks)

(b) State **seven** effects of pollution on the environment in Kenya today. (7 marks)

(c) Identify **six** ways through which Christians in Kenya can control desertification.

(6 marks)

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232/2 –   **PHYSICS**   – **Paper 2**

Nov. 2018 – 2 hours

Name ....   Index Number ....

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

Instructions to candidates

(a) Write your name and index number in the spaces provided above.
(b) Sign and write the date of examination in the spaces provided above.
(c) This paper consists of **two** sections: **A** and **B**.
(d) Answer **all** the questions in sections **A** and **B** in the spaces provided.
(e) All working **must** be clearly shown in the spaces provided in this booklet.
(f) Non programmable silent electronic calculators may be used.
(g) **This paper consists of 16 printed pages.**
(h) **Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.**
(i) **Candidates should answer the questions in English.**

For Examiner's Use Only

Section	Question	Maximum Score	Candidate's Score
A	1–14	25	
B	15	10	
	16	11	
	17	12	
	18	11	
	19	11	
Total Score		80	

Turn over

SECTION A (25 marks)

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

1. Explain why the walls of a studio are padded with woollen materials. (2 marks)

   ....

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   ....

2. State **one** characteristic of soft X-rays that distinguish them from hard X-rays. (1 mark)

   ....

   ....

3. **Figure 1** shows a bar magnet AB suspended by a string.
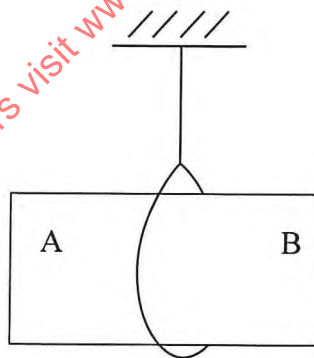
Figure 1

   When the North pole of another magnet is brought close to end A, there is repulsion. State the polarity of end B. (1 mark)

   ....

4. State what happens to the image formed by a pin hole camera when the size of the hole is increased. (1 mark)

   ....

   ....

5. The angle of incident for a ray of light moving from air to a certain liquid is 30°. Given that the refractive index of the liquid is 1.36, determine the angle of refraction. (2 marks)

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6. An electric kettle is rated 1.8 kW, 240 V. Determine the rating of the fuse that may be used in the kettle. (3 marks)

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....

7. **Figure 2** shows the image of an object O placed on the principle axis of a convex mirror.
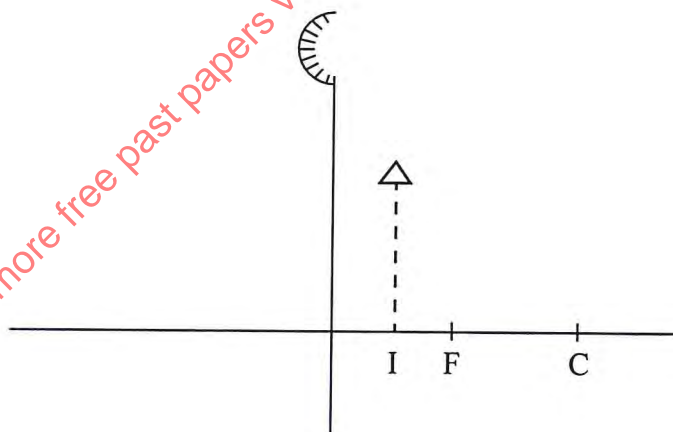
Figure 2

On the figure, draw a ray diagram to locate the object. (3 marks)

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Turn over

8. Define *radioactivity.* (1 mark)

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....

9. A transformer has 600 turns in the primary coil and 9000 turns in the secondary coil. If the transformer is 100% efficient and the current in the secondary coil is 0.15A, determine the current in the primary coil. (3 marks)

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10. The sharp point of a pin is brought near the cap of a positively charged electroscope. State and explain the observation made on the leaf of the electroscope. (3 marks)

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11. Arrange the following radiations in the order of increasing wavelengths;

Purple light, Gamma rays, infrared and ultraviolet. (1 mark)

....

12. State the purpose of manganese (IV) oxide in a dry cell. (1 mark)

....

....

13. State the meaning of the term *battery*.

....

....

14. **Figure 3** shows two current-carrying wires A and B passing through a cardboard.
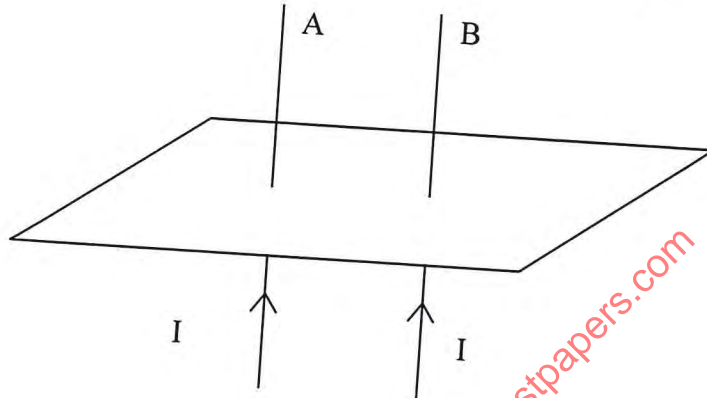
Figure 3

On the diagram, sketch the magnetic field lines around the wires to show how the fields interact.

(2 marks)

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Turn over

SECTION B (55 marks)

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

15. (a) Electrical energy is transmitted at very high voltages and low current.

(i) Describe how the high voltages are attained. (1 mark)

....

....

(ii) State **two** reasons why thick aluminium wires are preferred to copper wires for transmission over long distances. (2 marks)

....

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....

(b) **Figure 4** shows an electric cooker connected to the mains supply. X, Y and Z are the mains wires.
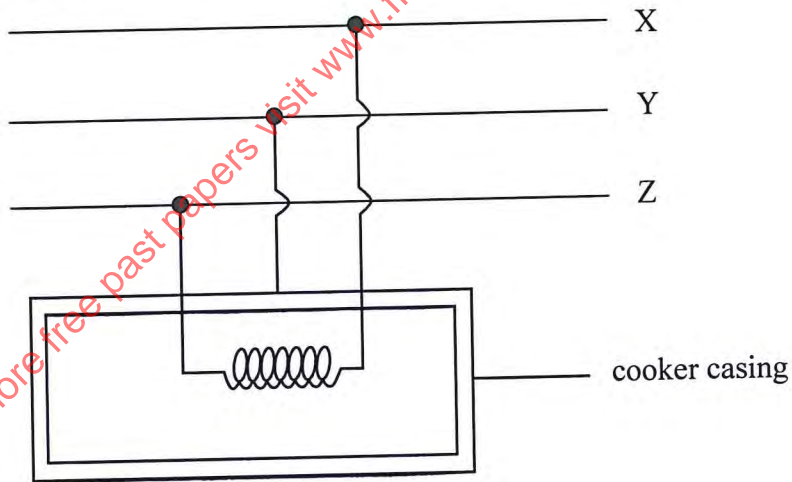
Figure 4

State with a reason the name of wire Y. (2 marks)

....

....

....

(c)   A student has some coloured bulbs rated 60 W, 240 V to be connected for decorations.

(i)   State the number of such bulbs that can be connected normally to a 240 V supply through a 5A fuse.   (2 marks)

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(ii)   If the cost of electric energy is Ksh 3.00 per kWh, determine the cost of running the bulbs in (c) (i) for 5 hours daily for 20 days.   (3 marks)

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16. (a) State the meaning of the following terms:

    (i) *Photoelectric effect* (1 mark)

    ....

    ....

    (ii) *Threshold frequency* (1 mark)

    ....

    ....

(b) **Figure 5** shows some light incident on the cathode of a photocell. The photocell is connected in series with a battery, a variable resistor and a microammeter.
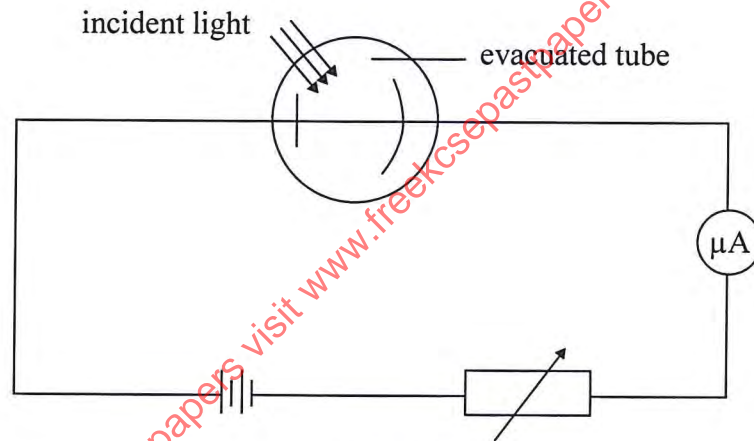
Figure 5

    (i) Explain how the microammeter reading is affected when the intensity of the incident light is increased. (2 marks)

    ....

    ....

    ....

    ....

    (ii) State the reason why the tube is evacuated. (1 mark)

    ....

    ....

(c) **Figure 6** shows a graph of maximum kinetic energy (KE_{max}) of photoelectrons against the frequency of the incident radiation.
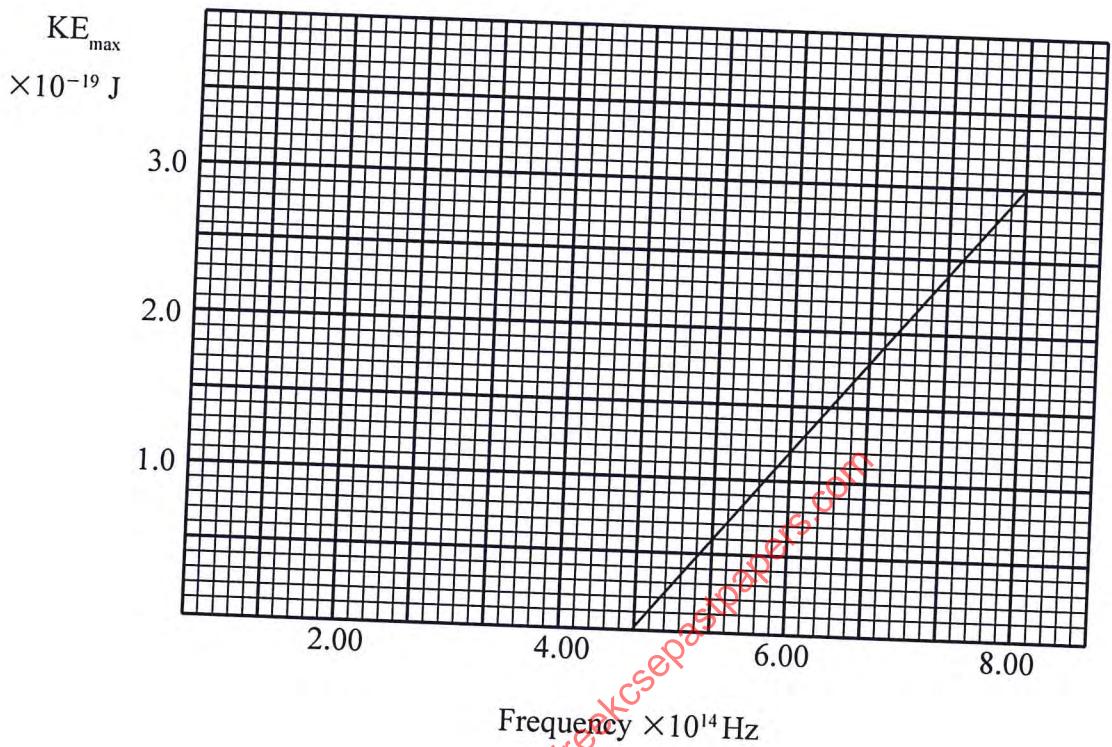
Figure 6

From the graph, determine:

(i) Plank's constant h, (3 marks)

....

....

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....

(ii) the threshold wavelength λ_0 given that the speed of light C is $3.0 \times 10^8 \, ms^{-1}$.

(3 marks)

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17.　(a)　Water waves from a certain source move from the shallow end to the deep end. State the change that occurs at the deep end on the following:

(i)　Frequency　　　　　　　　　　　　　　　　　　　　　　　　(1 mark)

....

(ii)　Wavelength　　　　　　　　　　　　　　　　　　　　　　　(1 mark)

....

(iii)　Velocity　　　　　　　　　　　　　　　　　　　　　　　　(1 mark)

....

(b)　(i)　A biconvex lens forms an upright image twice the size of the object. If the focal length of the lens is 20 cm, determine the object distance.　(4 marks)

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(ii)　State **two** optical instruments which produce a magnified real image using a convex lens.　(2 marks)

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....

(c)　State **one** difference between the working of the human eye and the lens of a camera.

(1 mark)

....

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(d)   A lens of focal length 20 cm forms a virtual image when an object is placed 60 cm from the lens. State with a reason the type of lens used.   (2 marks)

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18.   (a)   (i)   Draw a circuit diagram showing the depletion layer of a p–n junction diode connected in the reverse bias mode.   (2 marks)

(ii)   State the reason why increasing the external voltage in (i) makes the depletion layer wider.   (1 mark)

....

....

(iii)   State the meaning of *breakdown voltage* of a junction diode.   (1 mark)

....

....

(iv)   State **one** application of diodes.   (1 mark)

....

....

(b)   **Figure 7** shows the output on a screen of a CRO when an a.c. signal is connected to the y-plates with the time base on.
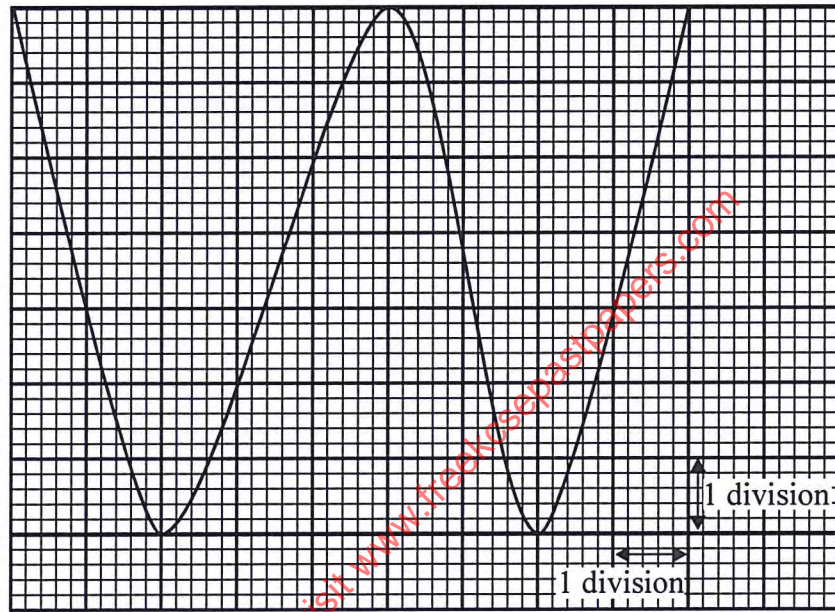
Figure 7

(i)   Given that the time control is 5 ms per division and the y-gain is 100 V per division, determine the:

(I)   frequency of the a.c. signal   (2 marks)

....

....

....

(II)   peak voltage of the input signal   (3 marks)

....

....

....

(ii)   State the adjustment that may be made in order to halve the frequency of the a.c. signal.

(1 mark)

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19.   **Figure 8** shows two waves of nearly equal frequency produced simultaneously.
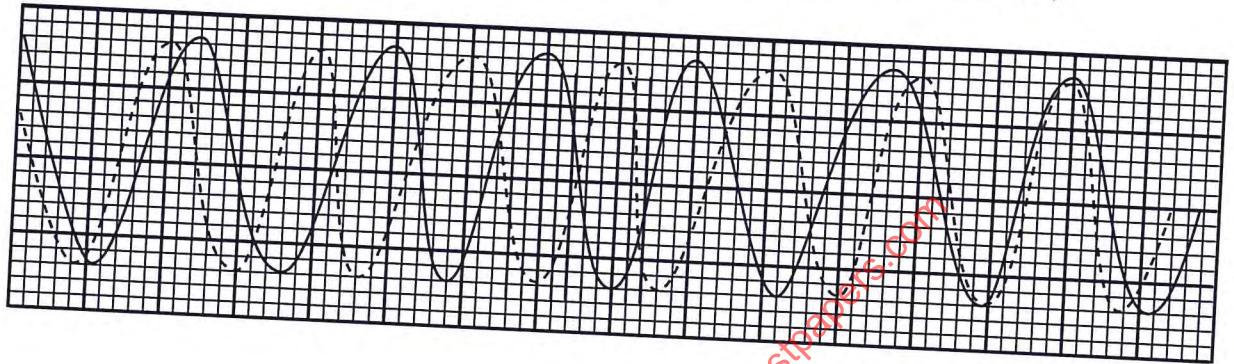
Figure 8

On the space provided, sketch the resultant of the two waves (beats).

(2 marks)

(b)   **Figure 9(a)** and **9(b)** show barriers placed in the path of plane waves.
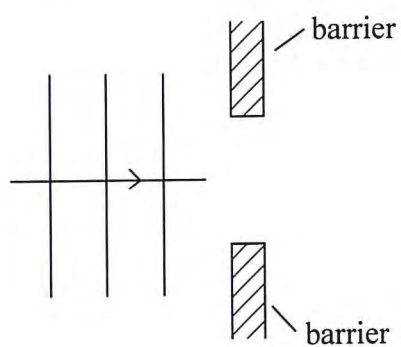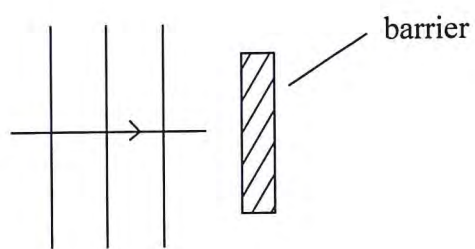
Figure 9(a)   Figure 9(b)

On each figure, sketch the pattern of waves after they pass the barrier.   (2 marks)

918360

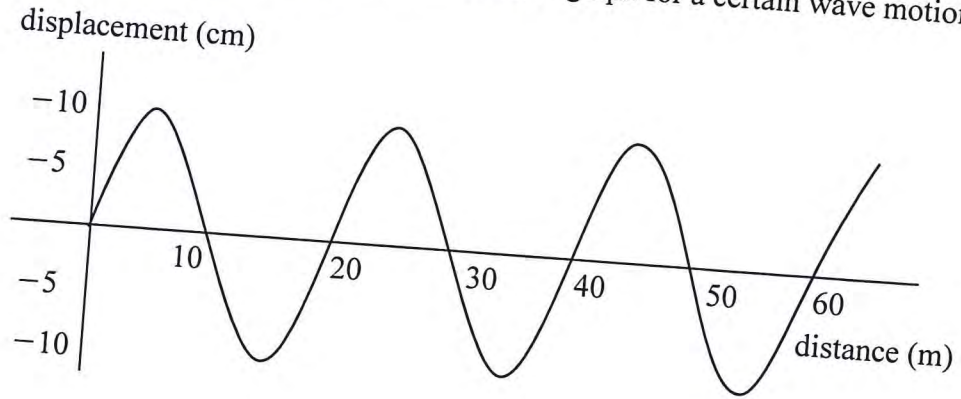(c) **Figure 10** shows a displacement–distance graph for a certain wave motion.

Figure 10

(i) Indicate on the figure with letters **A** and **B** any two points that are in phase.

(1 mark)

(ii) Determine the:

(I) amplitude of the wave

(1 mark)

....

....

(II) wavelength of the wave

(1 mark)

....

....

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Turn over

(iii)   Given that the frequency of the waves is 50 Hz, determine the:

(I)   period   (1 mark)

....

....

(II)   speed of the wave   (3 marks)

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