Mathematics
Paper 1
P.T.E. MOCK
Time: 2¼ hours

INSTRUCTIONS TO CANDIDATES
This question paper has **TWO** sections; **A** and **B.**
Answer **ALL** the questions in section **A.**
Answer any **FIVE** questions from section **B.**
Do **NOT** remove any pages from this question paper.

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Section	Question	Maximum Score	Candidate's Score
A	1- 20	60	
B	21	8	
	22	8	
	23	8	
	24	8	
	25	8	
	26	8	
Total Score		100	

SECTION A (60 marks)

Answer *ALL* questions in this section in the spaces provided after every question.

1. Evaluate $\dfrac{1 \frac{1}{2} \times 3 \frac{1}{7} - 2 \frac{1}{7}}{3/7}$ **(3marks)**

2. The area of the curved surface of a cylinder whose height is 7cm is 286cm^2. What is the radius of the cylinder? (Take $\pi = 22/7$). **(3marks)**

3. Make **a** the subject of the formula below **(2 marks)**

$$q = \left\{ \frac{a}{y + a} \right\}^{\frac{1}{2}}$$

4. Using a ruler and a pair of compass only, construct a parallelogram **WXYZ** in which **WX** = **8**cm, **XY** = **6**cm and angle **XWZ** = **75** ^{0}. By construction, determine the perpendicular distance between **WX** and **YZ**. **(4 marks)**

5. Amina bought **4** pencils and **6** pens for Kshs. **66** and Adija bought **2** pencils and **5** pens for Kshs. **51**. Find the price of each item. **(3 marks)**

6. Find the value of **x** in the inequality **3 (2x - 4) – 5 ≥ 4 (x-3) + 3x.** **(2 marks)**

7. Kwamboka walked from home to the market a distance of **4/5 km** at a constant speed of **4km/h**. What fraction of the journey did she cover in **2** minutes? **(3 marks)**

8. State the co-ordinates of the point of intersection of two lines whose equations are; **x – 3 = 0** and **y + 4 = 0** **(2 marks)**

9. Two cylindrical jars have diameters of **12cm** each. The smaller jar is **8cm** high while the larger one is **20cm** high. What is the ratio of their surface areas? (**3 marks**)

10. A train left Mlolongo at **ten minutes to nine am** and reached Kibwezi, a distance of **17.5km** at **twenty five minutes past nine am**. What was its speed in metres per second? (**3 marks**)

11. Express **0.142857142857---** as a fraction in its **simplest** form. **(3 marks)**

12. A **cylindrical** block of metal of diameter **14cm** is **18cm** long. The metal is melted and recast into a **cuboid** measuring **14cm** wide and **6cm** high. What is the length of the cuboid formed? **(3 marks)**

13. A hall is **15m** wide, **20m** long and **9m** high. Find the distance from a corner of the floor to the opposite corner of the ceiling. **(4 marks)**

14. A pie chart was drawn to represent a farmer's produce of maize, millet, sorghum and carrots in one season. There were **30 bags** of maize, **24 bags** of carrots and **15 bags** of millet. If the angle sector representing maize was **120⁰** and that of sorghum was **84⁰**. What total number of **bags** of sorghum was there? **(3 marks)**

15. Find the value of **z** in the figure below. **(3 marks)**
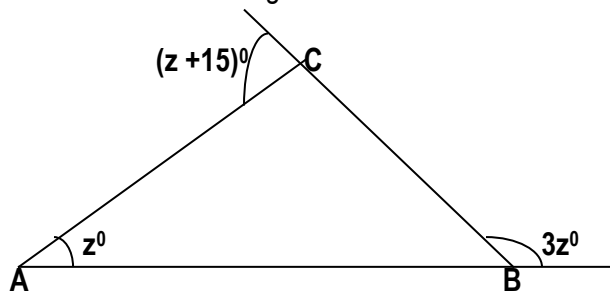
16. Angela borrowed Kshs. **156,000** for **1½** years and paid simple interest of Kshs. **35,100**. What was the percentage interest rate per annum charged by the lender? **(3 marks)**

17. In the figure below, line **UX** is parallel to line **VW** and line **UVZ** is a straight line. **UW** and **VX** intersect at **Y**. Angle **UYX** = **80⁰** and angle **WVZ** = **72⁰**
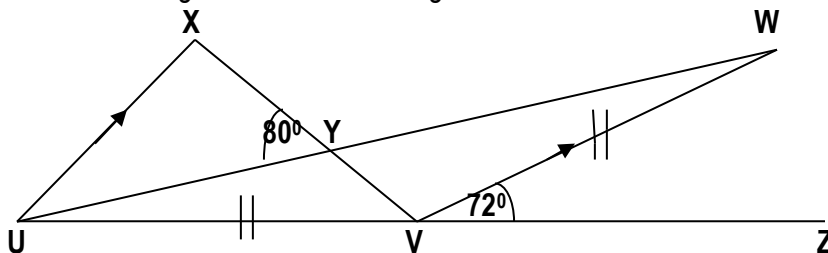
Calculate the size of angle **VXU**. **(3 marks)**

18. On a scale drawing, a line measuring **3.5cm** represents a length of **70m**. What is the actual area, in hectares, of a square whose area is **2cm²**? **(3 marks)**

19. Three **525** seater trains were used to send students on a tour. The first train had all the seats filled; the second had **7** seats empty while the third had **twice** as many empty seats as the second train. If each passenger paid **Kshs. 154** for the tour, how much money was paid altogether? **(3 marks)**

20. **(a)** Write down an expression in terms of **a** and **b** for the total value of a two digit number having **a** and **b** as tens and ones' digits respectively. **(1 mark)**

    (b) The number in **(a)** above is such that **three** times the **sum** of its digits is less than the value of the number by **8**. When the digits are reversed, the value of the number increases by **9**. Find the number. **(3 marks)**

SECTION B (40 marks)

Answer any **FIVE** questions in this section in the spaces provided after every question.

21. The ratio of **married** to **unmarried** people who visited a **VCT** centre in one week was **1: 7**. That of **unmarried** to **children** was **2: 2**. One sixth of all those who attended tested negative. The ratio of **unmarried** to the **married** and to the **children** who tested positive was **4: 3: 1**. One eighth of those who tested negative were **unmarried** people and half were **children**. The **married** people who tested negative were **60**.

    (a) Find the ratio of **unmarried** to **married** to **children** who visited the centre. **(2 marks)**

    (b) Find the **total** number of people who visited the centre. **(3 marks)**

    (c) Find the number of **unmarried** who tested positive. **(2 marks)**

    (d) Find the number of **children** who visited the centre. **(1 marks)**

22. Using the table of distribution of marks scored by **60** learners in a test below:

Marks	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90
Frequency	2	5	6	10	14	11	9	3

Find the following:
       (a) The **mean** mark.   **(3 marks)**

       (b) The **modal** class.   **(1 mark)**

       (c) The **median** mark.   **(4 marks)**

(a) Make **c** the subject of the expression below:

$$a/b = \sqrt{\frac{(c^2 + d)}{(c^2 - e)}}$$

      (3 marks)

       (b) Solve the **inequality** below and represent the solution on a cartesian plane.

$$\frac{5}{12}(x + 7) - \frac{1}{5}(4x + 5) \leq 0$$

      (5 marks)

23. An **agent** charges commission for **sale** of property as follows:
3¼% on the first **Kshs. 280,000** and **11/7%** on the remainder.
The **agent** sold properties worth **Kshs. 315,000**, calculate the amount of money:
       (a) The **agent** got.   **(6 marks)**

       (b) The **owner** of the properties got.   **(2 marks)**

24. Water **flowed** through a pipe of internal diameter **2.1cm** at the rate of **10m/s**. It flowed for **11/3 hours** into an empty rectangular tank whose length is **3m** and width **2m**. What would be the height of the water in the tank in **millimetres**?   **(8 marks)**