

Machakos university

School pure and applied sciences

Department of mathematics and statistics

Second semester examination for diploma in food and beverage management.

Mathematics

Instructions

Answer all the questions

Show all the working clearly

Question one

a) Solve the following equations

i) $\frac{4x-5}{2} - \frac{2x-1}{6} = x$

ii) $1.2x - 1.8y + 21 = 0$
 $2.5x + 0.6y = 65$

iii) $6x^2 - 5x + 1 = 0$ (15 marks)

b) Simplify;

I) $x - (2 - x) - (x + 4)$

II) $\frac{10}{x} \left(\frac{x^2}{5} + \frac{x}{2} \right) - x$ (5 marks)

Question two

- a) A certain sum of money is divided in the ratio $1\frac{1}{2} : 2\frac{1}{3} : 3\frac{1}{4}$. If the largest share is shs 156, what is the sum divided? (8 marks)
- b) A hall is 15m long, 8m wide and 4m high. The door and the windows occupy 14m^2 . The walls are to be painted. Find the cost of painting them at sh 75 per square meter. (6 marks)
- c) A whole number is selected at random from those numbers between 11 and 35 inclusive. Find the probability that it is (8 marks)
- i) A prime number
- ii) Greater than 17
- iii) Divisible by 3
- iv) A multiple of 8

Question three

a) Given the following data 72, 28, 12, 17, 85, 11, 14, 10, 12, 15, 22, 31, 42, 83, 61.

Determine:

- i) The range
- ii) The interquartile range
- b) Height(cm) frequency

150-157	5
158-165	18
166-173	42
174-181	27
182-189	8

use the data above to calculate

- i) the mean and the standard deviation (use a working mean of 169.5)
- ii) the median height (13marks)

question four.

- a) A metal solid cylinder, diameter 1m 10cm and of height 28cm, is melted and recast into 200solid cubes. Find the length of the edge of one of the cubes (take $\pi= 22/7$) 6marks.
- b) The mean of n numbers is 15. If the same numbers, together with 20, have a mean of 16, find the value of n (6marks).
- c) The distribution of teaching hours in a 40hour week in a college was given as below

Subject	mathematics	Applied sciences	English	Practical's
hours	8	12	8	12

Draw a pie chart to represents the information in the table above.

Question five

- a) The volume (v) of a sphere is proportional to the cube of its radius (R). if $v=24.8$ when $R=2$ find
 - i) The value of v when $R=3$
 - ii) An expression for R in terms of v (4 marks)
- b) Given that y varies inversely as x and $y=x=2$, find
 - i) Y when $x=6$
 - ii) X when $y=1\frac{1}{3}$ (4 marks)
- C i) Draw the graph of $y=x^2-3x+2$, for values of x between -1and4

Use the graph in (i) to solve the following equations, (12 marks)

$$X^2-3x+2=0$$

$$X^2-3x+1=0$$

$$X^2-4x=0$$