MACHAKOS UNIVERSITY

University Examinations 2018/2019

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF MATHEMATICS STATISTICS AND ACTUARIAL SCIENCE

SECOND SEMESTER EXAMINATION FOR

DIPLOMA IN FOOD AND BEVERAGE MANAGEMENT.

2802/102: MATHEMATICS 1

DATE: 16/4/2019 **TIME: 8:30 – 11:30 AM**

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 divide 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 11and35 inclusive. Find the probability that it is

i) A prime number
ii) Greater than 17
iii) Divisible by 3
iv) A multiple of 8 (6 marks)

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 (7 marks)

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 (13 marks)

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 $\pi = 22/7$) (6 marks)

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 (6 marks)

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. (8 marks)

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

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

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

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

$X^2-4x=0$