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MAIN EXAMINATION

JANUARY – APRIL 2015 TRIMESTER

FACULTY OF SCIENCE

DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE

REGULAR PROGRAMME

DMAT 262: PROBABILITY AND STATISTICS

Date: April 2015	**Duration: 2 Hours**
INSTRUCTIONS: Answer Question ONE and ANY OTHER TWO Questions	

Q1. a) The probability that Mary will play soccer is 0.3, the probability that Samuel will play soccer is 0.4 and they make their decision independently.

i) What is the probability that both of them will play soccer? **(1 mark)**

ii) The probability that both Mary and Samuel will not play soccer. **(2 marks)**

b) Explain why an educator needs to have at least a basic knowledge of statistics. **(2 marks)**

c) State **TWO** limitations of statistics**.** **(2 marks)**

d) Given the scores 3,4,4,5,6,6,7,8,10. Compute:

i)	Mean	**(2 marks)**
ii)	Range	**(1 mark)**
iii)	Mean deviation	**(2 marks)**
iv)	Median	**(1 mark)**
v)	Variance	**(3 marks)**
vi)	Standard deviation	**(1 mark)**

e) 20 students in a class had obtained the following test scores.

54,48,58,50,25,47,75,46,60,70,67,39,68,35,56,66,33,62,65,67

i) Construct frequency distribution tale stating with class 25-34, 35-44…… **(4 marks)**

ii) Draw the frequency polygon for the data above. **(3 marks)**

f) State the **FOUR** major levels of measurements from the highest to the lowest. **(4 marks)**

g) Define the following terms:

i) Sample **(1 mark)**

ii) Population **(1 mark)**

Q2. a) The marks scored out of 50 by 15 students in a statistics CAT are as shown below:

27,36,24,17,35,18,23,25,34,25,41,18,22,24,42

Construct a stem and leaf diagram to represent this data. (**6 marks)**

b) The table below shows the weight of the language for passengers on one plane

Weight, w(kg)	6-10	11-15	16-20	21-25	26-30
Frequency	14	28	12	9	2

Compute:

i) The mean **(6 marks)**

ii) Lower and upper quartile **(6 marks)**

iii) Interquartile range **(2 marks)**

Q3. The following is a score of a small class in two tests, Test A and Test B. Test A is taken as variable x and test B as variable y

Name	**Test A**	**Test B**
Muchoki	5	4
Njeri	6	6
Langat	5	5
Otieno	3	2
Juma	2	3
Osoro	3	4

a) Compute the Pearson product correlation coefficient r_{xy} . **(8 marks)**

b) Find the least square regression **(3 marks)**

c) Plot a scatter diagram for the above test scores. **(6 marks)**

d) State **THREE** assumptions underlying use of r_{xy} **(3 marks)**

e)

Q4. a) Distinguish between descriptive and inferential statistics. **(2 marks)**

b)

Class interval	5-7	8-10	11-13	14-16	17-19	20-22	23-25
Frequency	2	4	8	7	5	3	1

Compute:

i) Standard deviation **(6 marks)**

ii) Median **(6 marks)**

iii) Mode **(6 marks)**

iv) Draw an Ogive graph of the data above **(2 marks)**

Q5. a) John rolled a six sided die. Find the probability of the following event?

i) Event A: Rolling a 3

ii) Event B: Rolling a 7

iii) Event C: Rolling a number less that 5 **(3 marks)**

b) Classify each statement as an example of classical probability, empirical probability or subjective probability.

i) the probability of your phone ringing during dinner is 0.5.

ii) probability that a vote chosen at random will vote republican is 0.45

iv) the probability of winning a 1000-ticket raffle with one ticket is $\frac{1}{1000}$

(6 marks)

c) Briefly define the term Kurtosis using a diagram. **(3 marks)**

d) The following were the scenes obtained by a form II class in a Mathematics test.

49,	63,	59,	58,	44,	49,	51,	62,	37,	30,	49,	45
52,	50,	42,	54,	32,	57,	41,	42,	56,	44,	46,	63
44,	40,	50,	46,	53	48,	37,	46,	53,	68,	66,	58
36,	40,	56,	37,	66,	43,	40,	46,	51,	59,	42,	52
46,	57,										

d) Make a frequency distribution table for 7 class of this data. The table should show both tally marks and frequencies. The total frequency (w)=0.

(8 marks)

f) Plot a histogram for this data. **(3 marks)**

END