GARISSA UNIVERSITY

UNIVERSITY EXAMINATION 2017/2018 ACADEMIC YEAR ONE SECOND SEMESTER EXAMINATION

SCHOOL OF COMPUTER AND INFORMATION SCIENCE

FOR THE DIPLOMA INFORMATION TECHNOLOGY

COURSE CODE: DIT 027

COURSE TITLE: MATHEMATICS FOR INFORMATION TECHNOLOGY

EXAMINATION DURATION: 3 HOURS

DATE: 11/04/18 **TIME: 09.00-12.00 PM**

INSTRUCTION TO CANDIDATES

- **The examination has SIX (6) questions**
- **Question ONE (1) is COMPULSORY**
- **Choose any other THREE (3) questions from the remaining FIVE (5) questions**
- **Use sketch diagrams to illustrate your answer whenever necessary**
- **Do not carry mobile phones or any other written materials in examination room**
- **Do not write on this paper**

This paper consists of FIVE (5) printed pages ***please turn over***

QUESTION ONE (COMPULSORY)

A. Express 13x12x11 in factorial notation (3 Marks)

B. Two unbiased dice are thrown. Find the probability of obtaining
I A sum of 8 (4mks)

Solve for x : $16^{2} = 0.25$

(3Marks)

Solve

i) $2y^2+5y--3$
ii) $5x^2+3x = 2$

C. Simplify:

$$\frac{7!}{12!\,5!} + \frac{12!}{13!\,4!}$$ (3 Marks)

Evaluate : a) ${}^{11}P_8$ b) ${}^{10}C_6$ (6 Marks)

i. A mixed hockey team containing 5 men and 6 women is to be choosen from 7men and 9 women. In how many ways can this be done? (2Marks)

QUESTION TWO(15 Marks)

I. The following are the marks obtained by 40 pupils in a Mathematics test:

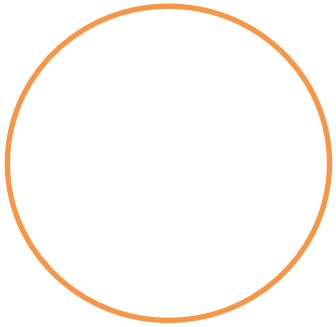
14	10	7	6	9	7	15	10	13	11
8	11	6	10	12	8	7	11	12	7
7	10	12	10	11	10	9	10	9	13
9	13	10	9	7	11	11	8	12	8

Construct a frequency table for the data. (3Marks)

II. The below pie-chart represents the number of football teams in Division one league in Six Counties in Kenya. If there are 11 teams in Garissa County, find:
i. The value of x.

ii. The number of teams in each of the remaining 5 counties.

iii. Illustrate this information by a bar-chart.



(8Marks)

IV. a) A sequence is defined by S(n)=(-1) (n – 3n) where n is a natural number. Find the first three terms and the tenth term of the sequence. (4 marks)

b) Find the domain of the function f(x)=4/x for the range -4 f(x) -1/4 (1 Marks)

QUESTION THREE (15 Marks)

A. Solve $2x^2+ 3x + 1 = 0$ using the quadratic formula. (4Marks)

B. The sum of two digits is 10 and the sum of their squares is 58. Find the digits. (3 Marks)

A. In an examination the marks scored by 50 candidates were recorded as shown below:

Marks	1-10	11-20	21-30	31-40	41-50	51-60
Frequency	2	4	7	6	10	8

Marks	61-70	71-80	81-90	91-100
Frequency	5	5	2	1

Calculate :

III. the mean of the data using the assumed mean method. (4 marks)

IV. Median (3 marks)

V. The Modal class (1 marks)

QUESTION FOUR (15 Marks)

I. From the foot of a tower 30 Metres high, the top of a flagpole has an angle of elevation of 30°. From the top of the tower, it has an angle of depression of 45°. Find the height of the flagpole and its distance from the tower. (4 Marks)

II. Find the range of the functions *f(x) – 2x - 3x + 4 for the domain (-2,0, 2)* (3 Marks)

III. In a group of 60 people, 27 like cold drinks and 42 like hot drinks and each person likes at least one of the two drinks. How many like both coffee and tea?

(3 Marks)

QUESTION ONE (COMPULSORY)

a) Define:
i) Probability
ii) Statistics
(2marks)

b) The data below gives the marks scored by 30 students in a test

42 10 80 64 20 8416
46 34 56 43 28 49 51
74 78 60 55 49 64 46
66 47 37 55 69 15 41
81 50

i) Find the range in the data (1 mark)
ii) Prepare a frequency table with classes 1 – 10, 11 – 20,……..(4 marks)
iii) State the modal class (1 mark)
iv) Estimate :The median and mean (7 marks)
v) Draw a frequency polygon using the data in (b) (3 marks)

c) The probability Omarto solves correctly the first sum in a quiz is $^2/_5$ Solving the second correct is $^3/_5$ if the first is correct and it is $^4/_5$ if the first was wrong. The chance of the third correct is $^2/_5$ if the second was correct and it is $^1/_5$ if the second was wrong. Find the probability that
(i) All the three are correct (3 Marks)
(ii) Two out of three are correct (4 Marks)
(iii)At least two are correct (3 Marks)

QUESTION FIVE (15 Marks)

I. The probabilities of three candidates K, M and N passing an examination is $^{2}/_{3}$, ¾ and $^{4}/_{5}$ respectively. Find the probability that :

(a) All pass: (2mks)

(b) At least one fails: (3Mks)

II. The table below shows the number of letters collected from the post office by a school messenger during a school year.

Letters per day	6 – 10	11 – 15	16 – 20	21 – 25	26 – 30	31 – 35	36 – 40	41 – 45	46 – 50	51 – 55
Frequency	5	19	21	23	25	27	20	25	13	12

(i) State the modal class 1mk

(ii) Estimate the median of this data. 4mks

(iii) Estimate the mean of this data. 3mks

iv) On the grid provided, draw a histogram to represent this data. 2mks