GARISSA UNIVERSITY

UNIVERSITY EXAMINATION 2017/2018 ACADEMIC YEAR <u>ONE</u> <u>THIRD</u> SEMESTER EXAMINATION

SCHOOL OF BIOLOGICAL AND PHYSICAL SCIENCE

FOR THE DIPLOMA IN INFORMATION TECHNOLOGY

COURSE CODE: DIT 002

COURSE TITLE: QUANTITATIVE SKILLS

EXAMINATION DURATION: 3 HOURS

DATE: 06/08/18   **TIME:9.00-11.00 AM**

INSTRUCTION TO CANDIDATES

- **The examination has FIVE (5) questions**

- **Question ONE (1) is COMPULSORY**

- **Choose any other TWO (2) questions from the remaining FOUR (4) 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 FOUR (4) printed pages   *please turn over*

QUESTION ONE (COMPULSORY)

a. Write down all subsets of A $=\{e, s, x, 0\}$ **[4 marks]**

b. With relevant example explain the term 'compliment of a set' **[2 marks]**

c. Solve for the variables in; $X_1 + x_2 + x_3 = 10$, $x_2 + x_3 = 3$, $2x_1 + 2x_2 + x_3 = 5$ **[8 marks]**

d. In a set of eight scores the mean is 5. If seven of these scores are 9, 3,4 ,5,6,4,7.Find the median of the set. **[4 marks]**

e. Discuss merits of standard deviation **[4 marks]**

f. Discuss properties normal distribution **[5 marks]**

g. With relevant example distinguish correlation and regression **[3 marks]**

QUESTION TWO

6. The following table shows the grouped data, in classes.

height (in cm) - classes	frequency
120- 129	6
130 -139	5
140-149	15
150-159	10
160-169	8

a) Calculate

a. Mode **[4 marks]**

b. Mean **[3 marks]**

c. Standard deviation **[4 marks]**

d. Median **[4 marks]**

e. Discuss disadvantages of the mean and mode **[5 marks]**

QUESTION THREE

What is correlation **[2 marks]**

Explain two methods of studying correlation **[4 marks]**

Marks for 11 students in local colleges

Student	Statistics marks	Research marks
1	69	69
2	74	56
3	48	72
4	54	85
5	72	68
6	71	87
7	96	86
8	75	71
9	69	91
10	100	31
11	23	72

Use the above data to calculate and comment on;

    (i) Pearson (r) **[7 marks]**

    (ii) Spearman's Rank (Rho) **[7 marks]**

QUESTION FOUR

    a) With relevant examples distinguish the following terms; **[6 marks]**

    (i) Set and statistics

    (ii) Intersecting sets and universal set

    (iii) Empty set and finite set

b) Country-Western songs seem to emphasize three basic themes: love, prison, and trucks. A survey of the local country-western radio station produced the following data:

- 12 songs were about a truck driver who was in love while in prison
- 13 were about a prisoner in love
- 28 were about a person in love
- 18 were about a truck driver in love
- 3 were about a truck driver in prison who was not in love
- 2 were about a prisoner who was not in love and did not drive a truck
- 8 were about a person who was not in prison, not in love, and did not drive a truck
- 16 were about truck drivers who were not in prison

a) How many songs were surveyed

b) Find the number of songs about

c) truck drivers

d) prisoners

e) truck drivers in prison

f) people not in prison   **[12 marks]**

QUESTION FIVE

a) The table below shows the

R	19	17	21	9	10	11	22	13	24
Y	6.6	4.9	8.6	8.0	3.2	3.2	1.6	8.3	1.7

Find regression line of R on Y and values of R when Y = 4.5   **[8 marks]**

a. In a mock examination, the overall mean score was 100 and the standard deviation 20. Assuming that the scores were normally distributed and the classes which did the mock had 200 pupils altogether:

    i) How many pupils scored marks between 80 and 120?

    ii) How many scored between 110 and 120?

    iii) Which score separates the upper 20% of scores from the lower 80 in the mock examination?   **[7 marks]**

b. Find the inverse of $\begin{pmatrix} 12 & -13 & 2 \\ 9 & 5 & -7 \\ 4 & -14 & 3 \end{pmatrix}$ **[5 marks]**