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**GARISSA UNIVERSITY**

**UNIVERSITY EXAMINATION 2020/201 ACADEMIC YEAR ONE**

**SECOND SEMESTER EXAMINATION**

**SCHOOL OF SCHOOL OF PURE AND APPLIED SCIENCES**

**DIPLOMA IN INFORMATION TECHNOLOGY**

**COURSE CODE: DIT 002**

**COURSE TITLE: QUANTITATIVE TECHNIQUES**

**EXAMINATION DURATION: 2 HOURS**

**DATE: 24/08/2021 TIME: 12.00-2.00 PM**

**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)**

1. In a test the mean of 56 marks and a standard deviation of 5, if a student gets the following marks, calculate the Z score.
   * 1. 71 Marks (2 Marks)
     2. 59 Marks (2 Marks)
2. The table below shows the glucose level by the age of the six patients who attended a clinic

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Age | 13 | 21 | 15 | 22 | 27 | 39 |
| Glucose level | 79 | 55 | 49 | 65 | 57 | 59 |

Compute Pearson’s product –moment correlation coefficient (6 Marks)

1. The following were the number of times the students in a physics class scored:

0 7 6 4 8 9 2 4

8 4 2 6 1 1 7 2

2 4 9 10 9 3 4 7

4 2 3 5 8 2 1 0

1. Prepare a frequency and tally distribution table (6 Marks)
2. From the above prepared table, calculate the cumulative frequency for the data (4 Marks)
3. The data below shows the recording of frequency of people in a market.

105 113 109 111 102. Find the:

1. Arithmetic mean (2 Marks)
2. Geometric mean (4 Marks)
3. Harmonic mean (4 Marks)

**QUESTION TWO (20 Marks)**

Thirty AA batteries were tested to determine how long they would last. The results to the nearest minute were recorded as follows:

423 369 387 411 399 394 371 377 391 363 401 431

408 392 409 389 403 382 400 381 399 415

428 422 396 372 410 419 386 390

1. Construct a frequency distribution table with eight classes starting with

360-369 (5 Marks)

1. For the batteries to be reliable, they should have a standard deviation of 18 hours. Does the data meet the requirement? (8 Marks)
2. Find the arithmetic mean. (4 Marks)
3. Find the mode. (3 Marks)

**QUESTION THREE (20 Marks)**

* 1. Find the product moment correlation coefficient of the following variables and comment on the results:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| X | 15 | 5 | 10 | 14 | 3 | 47 |
| Y | 3 | 12 | 7 | 4 | 13 | 39 |

(10Marks)

* 1. Below is a record of scores in Mathematics and English tests. Compute the Spearman’s rank correlation coefficient and comment on the results.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| English | 40 | 46 | 54 | 60 | 70 | 70 | 82 | 85 | 90 | 70 |
| Mathematics | 45 | 45 | 50 | 54 | 40 | 75 | 55 | 65 | 42 | 40 |

(10 Marks)

**QUESTION FOUR (20 Marks)**

1. The grouped frequency distribution for the light (hours) of 200 electric lights is as shown below:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Lights(hours) | 90-99 | 100-109 | 110-119 | 120-129 | 130-139 | 140-149 | 150-159 | 160-169 |
| Frequency | 4 | 9 | 23 | 21 | 41 | 19 | 9 | 4 |

Use the data to calculate the:

1. Mean
2. Mode
3. Median
4. Variance and standard deviation (12 marks)

The data below show examination results for mathematics and Physics during Random assessment of 30 students at Jitahidi School**.**

|  |  |
| --- | --- |
| Maths | 75, 69, 58, 58, 46, 44, 32, 50, 53, 78, 81, 61, 61, 45, 31, 44, 53, 66, 47, 57,75,  69, 58, 58, 46, 44, 32, 50, 53, 78 |
| Physics | 52, 58, 68, 77, 38, 85, 43, 44, 56, 65, 65, 79, 44, 71, 84, 72, 63, 69, 72, 79,  65, 79, 44, 71, 84, 72, 63, 69, 72, 79 |

1. Prepare a back to back stem and leaf diagram to represent the data above (8 marks)

**QUESTION FIVE (20 Marks) Using** the data below:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| X | 57 | 58 | 59 | 60 | 61 | 62 | 64 | 65 |
| Y | 68 | 67 | 65 | 72 | 72 | 69 | 71 | 64 |

* + - * 1. Compute correlation coefficient of 𝑦
        2. Find regression of 𝑦 on 𝑥
        3. Find regression of 𝑥 on 𝑦
        4. Estimate 𝑥 when 𝑦 = 57 (20marks)