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**GARISSA UNIVERSITY**

**OFFICE OF THE DEPUTY PRINCIPAL ACADEMIC AND STUDENT AFFAIRS**

**UNIVERSITY EXAMINATION 2021/2022 ACADEMIC YEAR TWO SECOND SEMESTER EXAMINATION**

**DEPARTMENT OF COMPUTER A& INFORMATION SCIENCES**

**COURSE CODE: CIT 006**

**COURSE TITLE: BASIC MATHEMATICS**

**DATE: TIME:**

**INSTRUCTION TO CANDIDATES:**

* **The examination has FIVE (5) questions.**
* **Question one (1) is COMPULSORY (must be done).**
* **Choose any other TWO (2) questions from the remaining FOUR (4) questions.**
* **Use sketch diagrams to illustrate your answer where necessary.**

**This paper consists of FOUR (4) printed pages**

**QUESTION ONE (COMPULSORY 30 MARKS)**

a) Let U = (0, 1, 2, 3… 8, 9) and given that $P=\left\{x|x<5\right\}, Q=\left\{x|x\geq 3\right\} $find explicitly: **(6marks)**

i) P

ii) Q

iii) PUQ

iv) P’

v) P’$∩Q$

b) Classify the following numbers: **(6marks)**

i) $\sqrt{7}$

ii) $x^{2 }+ 36=0 (Hint:Solve for x then classify the solution obtained)$

iii) $\sqrt[4]{256}$

iv) $7.51\dot{6}$

v) 22/7

c) Outline the **Four** types of matrices and give an example in each (8 marks)

d) The following data represents the ages in months at which six babies started walking.

9, 11, 12, 13, 11, and 10. Calculate:  **(10 marks)**

i) Mean

ii) Median

iii) Mode

iv) Mean deviation

v) Inter quartile range.

**QUESTION TWO**

a) Given that A=$\left[\begin{matrix}2&5\\6&8\end{matrix}\right]$ and B = $\left[\begin{matrix}4&9\\6&2\end{matrix}\right]$. Find **(9 marks)**

i) A+B

ii) A-B

iii) BA

iv) AB

v) B t

b) 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 |

 Prepare a back to back stem and leaf diagram to represent the data above. **(7 marks)**

c) In a test, the mean of 56 marks and a standard deviation of 5, determine the z- score if the student gets the following marks. **(4 Marks)**

a) 71 marks

b) 59 marks

c) 49 marks

d) 56 marks

**QUESTION THREE**

1. What is the area of the probability that a standard normal variate Z will be: **( 8 marks)**
2. > 1.09
3. <- 1.65
4. Lying between -1.00 and 1.96
5. Lying between 1.25 and 2.75
6. Using an applicable example, show that AI=IA=A**. ( 5 Marks)**
7. Given that U=(0,1,2,3…9), A=(4,5,6,8 ) and B=(2,3,1,5) Find: (using a Venn diagram)

I. A U B **(2 marks)**

II. A n B **(2 marks)**

1. There are three copies each of four different books. In how many ways can they be arranged in a shelve ? (Leave your answer in factorial form). **(3marks)**

**QUESTION FOUR**

1. A committee of 5 men and 4 women is to be chosen from 8 men and 6 women. In how many ways can this be done? **(4 marks)**

b) Define the following types of matrices with examples**: (6 marks)**

I. Square matrix

II. The transpose of a matrix

III. Identity matrix

c) 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

i) Prepare a frequency and tally distribution table **(6 Marks)**

ii) From the above prepared table, calculate the cumulative frequency for the data **(4Marks)**

**QUESTION FIVE**

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

i) Construct a frequency distribution table with eight classes starting with 360-369 **(5 Marks)**

ii) For the batteries to be reliable, they should have a standard deviation of 18 hours. Does the data meet the requirement? **(8 Marks)**

iii) Find the arithmetic mean. **(4 Marks)**

iv) Find the mode. (**3Marks)**