



TECHNICAL UNIVERSITY OF MOMBASA

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Faculty of Applied and Health Sciences

Department of Environment & Health Sciences

UNIVERSITY EXAMINATION FOR:

DIPLOMA IN MEDICAL LABORATORY

DIPLOMA IN COMMUNITY HEALTH AND HIV MANAGEMENT

AMA 2201 : BIOSTATISTICS

END OF SEMESTER EXAMINATION

SERIES: AUGUST 2019

TIME: 2 HOURS

**Instruction to Candidates:**

You should have the following for this examination

- *Answer booklet*
- *Non-Programmable scientific calculator*

This paper consists of **FIVE** questions. Attempt question **ONE** and any other **TWO** questions.

Maximum marks for each part of a question are as shown.

**Do not write on the question paper.**

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**QUESTIONS ONE**

a) The data was collected during an experiment regarding a certain variable.

12	16	8	20	70	1000	6	17	14
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- I. Explain the best measure of average for this data. [3mks]
- I. Calculate the best measure of average of the data [3mks]

- b) The data below relates two variable x and y
  - i. Calculate the correlation coefficient [6mks]
  - ii. Calculate the regression of y on x [6mks]
  - iii. Use the regression equation to estimate y at x=5 [3mks]

X	1	2	3	4	6
Y	4	6	8	11	14

- c)
- d) A random variable  $X \sim N(40, 6)$ , calculate
  - i.  $P(x < 30)$  [4mks]
  - ii.  $P(28 < x < 40)$  [4mks]

**QUESTION TWO**

- e) In a sample of 100 patients aged over 80 years, the mean pressure is 138 with a variance of 625 estimate the 95% confidence limits [4mks]
- f) The mean calling amount by university students is estimated at Sh.20 a day. A sample of 16 students from one university department had a mean of calling amount of sh. 18 with a standard deviation sh.8. Can it be concluded that the sample calling time was less than the university average at 95% confidence interval.
- g) The probability of a machine break down is 0.1. In a sample of 4 similar machines, calculate
  - I. The mean and variance [2mks]
  - II. the a probability distribution [5mks]

**QUESTION THREE**

The data below relates two variable x and y

- iv. Calculate the correlation coefficient [6mks]
- v. Calculate the regression of y on x [6mks]
- vi. Use the regression equation to estimate y at x=5 [3mks]

X	2	6	8	7	9
Y	5	9	12	11	14

#### QUESTION FOUR

The data in the table below shows the scores of students in the biostatistics class.

Required

- the mean and standard deviation [8mks]
- the median and mode of the following data [7mks]

scores	0-10	10-20	30-40	40-50	50-60	60-70	70-80	80-90	90-100
Frequency	3	5	7	10	10	6	4	2	1

#### QUESTION FOUR

- A professor wants to know if her introductory statistics class has a good grasp of basic math. Six students are chosen at random from the class and given a math proficiency test. The professor wants the class to be able to score above 70 on the test. The six students get scores of 62, 92, 75, 68, 83, and 95. The professor wanted to test if the mean is different from 70,

Required

- The mean and standard deviation [5mks]
- The standard error of the mean [3mks]
- State the null and alternative hypotheses and what did the professor conclude? [7mks]