



**AMREF INTERNATIONAL UNIVERSITY  
UNIVERSITY EXAMINATIONS 2021  
SCHOOL OF PUBLIC HEALTH  
DEPARTMENT OF COMMUNITY HEALTH  
HIGH DIPOMA IN COMMUNITY HEALTH  
MARCH 2024 SPECIAL AND SUPPLEMENTARY EXAMINATION**

**UNIT CODE: HDCH 015**

**UNIT NAME: BIostatISTICS**

**DATE: Thursday 14th March 2024**

**TIME: 2 HOURS**

**START: 4:30 PM FINISH: 6.30PM**

**INSTRUCTIONS**

1. This exam is marked out of 60 marks
2. This Examination comprises TWO Sections  
**Section A:** Compulsory Question (20 Marks)  
**Section B:** Long Answer Questions (40 Marks)
3. Answer ALL questions in Section A and B
4. Write your student registration number on all your answer sheets
5. This online exam shall take 2 Hours
6. Late submission of the answers will not be accepted
7. Ensure your web-camera is on at all times during the examination period
8. No movement is allowed during the examination \
9. Idling of your machine for 5 min or more will lead to lock out from the exam
10. The Learning Management System (LMS) has inbuilt integrity checks to detect cheating
11. Any aspect of cheating detected during and or after the exam administration will lead to nullification of your exam
12. In case you have any questions call the invigilator on Head of Department on Tel +254720573449 or Ag Head of Department +254723742370

13. For adverse incidences please write an email to: [amiu.examinations@amref.ac.ke](mailto:amiu.examinations@amref.ac.ke)

**SECTION A: SHORT ANSWER QUESTIONS. ANSWER ALL QUESTIONS**

**(20 Marks)**

1. Define the following terms

a. Population

**(1 Mark)**

b. Variable

**(1 Mark)**

2. Explain the following Statistical terms

a. Categorical Data

**(1 Mark)**

b. Discrete Data

**(1 Mark)**

3. State any four (3) sources of statistical data in your country?

**(3 Marks)**

4. Twelve (12) students obtained the following marks in three examination papers in statistics. In which paper is the general level of knowledge highest? Give reasons for your answer. Hint comment on their mean and standard deviation values.

A: 36, 56, 41, 46, 54, 59, 55, 51, 52, 44, 37, 59

B: 58, 54, 21, 51, 59, 46, 65, 31, 68, 41, 70, 36

C: 65, 55, 26, 40, 30, 74, 45, 29, 85, 32, 80, 39

**(3 Marks)**

5. The following is the distribution (below) of 136 individuals clustered by 10 years age groups. Calculate the sample mean and interpret it (show all the steps)

**(10 Marks)**

Age groups	No of Persons (Frequency)
0 -9	48
10 – 19	26
20 – 29	27
30 – 39	11
40 – 49	13
50 - 59	4
60 - 69	3
70 - 79	4
Total	136

**SECTION B: ANSWER ALL QUESTIONS (20 Marks for Each Question)**

6. You are the new health officer in charge of these 09 health facilities. You went and collected data on out patients seen in the 09 health facilities. The table below summarizes the information from these clinics

	<i>Health Facility</i>	<i>Out patients In 9 clinics</i>
1	Mandera	30
2	Masarbit	30
3	Kwale	22
4	Kilifi	42
5	Samburu	44
6	Isiolo	60
7	Nairobi	63
8	Migori	70
9	Kitui	81

Required:

- a. Calculate the mean **(2 Marks)**
- b. Calculate the mode **(2 Marks)**
- c. Calculate the median **(2 Marks)**
- d. Calculate the Range **(2 Marks)**
- e. Calculate the Inter Quartile Range **(2 Marks)**
- f. Calculate the variance **(4 Marks)**
- g. Calculate the standard deviation **(4 Marks)**
- h. As you can see Mandera only sees 20 patients in the outpatient department in a month, while Kitui sees 81 patients in a month. Since you are the new health officer what are you going to do to resolve this problem of some health facilities seeing less while others see more patients? Give any three immediate actions you will do from the dataset provided. **(20 Marks)**

7. In a random sample of 100 individuals who ate breakfast, 45 reportedly experienced mid-morning fatigue, and in another random sample of 400 individuals who skipped breakfast, 120 reportedly experienced mid-morning fatigue. Using chi-square test, at a level of significance of 5%, are there real differences between the two proportions of individuals reporting mid-morning fatigue in the population sampled – state your conclusion? Show all the steps in hypothesis testing, being able to interpret and state correct conclusion alone carries 05 marks. **(20 Marks)**

	Breakfast	Total
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Fatigue	Ate	Skipped	
Fatigue	45	120	165
No Fatigue	55	280	335
Total	100	400	500

ANNEX