



**AMREF INTERNATIONAL UNIVERSITY**

**SCHOOL OF PUBLIC HEALTH**

**DEPARTMENT OF COMMUNITY HEALTH**

**HIGHER DIPLOMA IN COMMUNITY HEALTH**

**END OF SEMESTER EXAMINATION DECEMBER 2025**

**UNIT NAME: BIostatISTICS**

**UNIT CODE: HDCH 015**

**DATE: XX DEC, 2025**

**TIME: Two Hours**

**Start:**

**Finish**

**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)

**SECTION A: COMPULSORY (20 Marks)**

1. The data below shows marks scored by students in an end of semester examination

Marks	30-34	35-39	40-44	45-49	50-54	55-59
Frequency	6	8	10	15	12	8

Calculate the median of the marks scored by the students.

[4 Marks]

2. Highlight any four scales of measurement used in statistics and give an example in each case [4 Marks]
3. Using examples, distinguish between discrete and continuous data. [4 Marks]
4. The company's account division has compiled data on the age of accounts receivables for various employees of a media house. The data collected indicate that the age of the accounts follows a normal distribution with mean 28 days and standard deviation 8 days.
  - a. What proportion of the accounts is between 20 and 40 days old? [4 Marks]
  - b. What proportion of the accounts are less than 30 days old? [4 Marks]

## SECTION B

### ANSWER ANY TWO (2) QUESTIONS (40 Marks)

- 5.a) Use the data in the table given below to get the 40<sup>th</sup> percentile [5 Marks]

Marks (Class)	Frequency
31-40	3
41-50	5
51-60	4
61-70	6
71-80	4

- b) The Table below gives marks obtained by 48 students in a statistics exam.

Marks	31-35	36-40	41-45	46-50	51-55	56-60
Frequency	5	6	12	15	8	2

- i) Calculate the Quartile Deviation of the data. [5 Marks]
- ii) Present the above data in a histogram and a frequency polygon [10 Marks]

6. a) In order to ensure efficient usage of a server, it is necessary to estimate the mean number of concurrent users. According to records, the sample mean and sample standard deviation of number of concurrent users at 100 randomly selected times is 37.7 and 9.2, respectively. Construct a 90% confidence interval for the mean number of concurrent users.

[8 marks]

b) Differentiate between measures of dispersion and measures of central tendency

(4 Marks)

c) The probability of a customer ordering the colour of a particular model of new car in silver is 0.2. Find the probability that in next 30 random orders there will be ...

i. exactly 10 orders in silver.

[4 Marks]

ii) not more than 11 orders in silver.

[4 Marks]

7. a) Borachio eats at the same fast food restaurant every day. Suppose the time  $X$  between the moment Borachio enters the restaurant and the moment he is served his food is normally distributed with mean 4.24 minutes and standard deviation is 1.31 minutes.

i. Find the probability that when he enters the restaurant today it will be at least 55 minutes until he is served.

[4 Marks]

ii. Find the probability that average time until he is served in eight randomly selected visits to the restaurant will be at least 5 minutes.

[4 Marks]

b) The table below shows values of  $x$  and their corresponding frequencies.

$x$	1	2	3	4	5	6	7	8
$f$	5	8	12	19	7	4	3	2

(i) Calculate the standard deviation

(8 marks)

(ii) Determine the coefficient of variation

(4 marks)

