

**INSTITUTE OF BANKERS IN MALAWI**

**CERTIFICATE IN BANKING EXAMINATION**

**SUBJECT: FUNDAMENTALS OF BUSINESS STATISTICS**

**(IOBM – C103)**

**Date: Wednesday, 25th November 2020**

**Time Allocated: 3 hours (08:00 – 11:00 Hours)**

**INSTRUCTIONS TO CANDIDATES**

1 This paper consists of **TWO** Sections, A and B.

2 Section A consists of 20 multiple questions; each question carries 2 marks.

Answer **ALL** questions.

3 Section B consists of 5 questions; each question carries 20 marks. Answer **ANY THREE** questions.

4 You will be allowed **10 minutes** to go through the paper before the start of the examination when you may write on this paper but not in the answer book.

5 Begin each answer on a new page.

6 **Please write your examination number on each answer book used. All answer books without examination number will not be marked.**

7 All persons writing examinations without payment will risk expulsion from the Institute.

8 If you are caught cheating, you will be automatically disqualified in all subjects seated this semester

9 DO NOT open this question paper until instructed to do so.

**SECTION A (40 MARKS)**

Answer **ALL** questions from this section by circling the right answers in the answer sheet provided.

1. The arithmetic mean of a data set comprising 10 observations is 40. 8 of the observations are: 60, 34, 43, 37, 52, 48, 38, 18. The ninth observation is four times the tenth. Find the tenth observation.

(a) 14

(b) 16

(c) 56

(d) 40

1. A variable that interferes with other variables in a study is called

(a) A confounding variable.

(b) An explanatory variable.

(c) An outcome variable.

(d) An interfering variable.

1. What is the value of the mode when all values in the data set are different?

(a) 0

(b) 1

(c) There is no mode.

(d) It cannot be determined unless the data values are given.

1. When data are categorized as, for example, places of residence (rural, suburban, urban), the most appropriate measure of central tendency is the;

(a) Mean

(b) Median

(c) Mode

(d) Midrange

1. What is another name for the ogive?

(a) Histogram

(b) Frequency polygon

(c) Cumulative frequency graph

(d) Lorenz curve

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1. Regression analysis is
2. A statistical technique that measures the strength of the relationship between the unknown variable and the set of known variables.
3. A statistical technique that builds a model of the relationship between the unknown variable and the set of known variables.
4. A statistical technique that is used for gathering data involving the unknown variable and the set of known variables.
5. A statistical technique for testing hypotheses
6. The following is an example of a measure of dispersion.
7. Mode
8. Mean
9. Variance
10. Median
11. The set of all possible outcomes in an experiment is called

a) population

b) event

c) sample space

d) none of these

**Use the information below to answer questions 14 and 15 that follow immediately after:**

Following is a stem and leaf display of ages of customers applying for an overdraft facility:

|  |  |
| --- | --- |
| 2 | 3 5 6 8 |
| 3 | 1 2 2 5 5 6 7 |
| 4 | 6 7 8 8 8 9 |
| 5 | 1 2 2 6 6 7 |
| 6 | 1. 5 7 8 |

14. The mode of this distribution is \_\_\_\_\_\_.

a) 45

b) 48

c) 14

d) 39

1. The range of this distribution is \_\_\_\_\_\_.

a) 35

b)48

c)52

d)45

1. The probability that an event happens is 0.42. What is the probability that the event will not happen?

(a) 0.42

(b) 0

(c) 0.58

(d) 1

1. Consider the following data: 310, 420, 45, 40, 220, 240, 180, 90. Compute the quartile Q3.
2. 220
3. 240
4. 200
5. 320
6. A researcher divided subjects into two groups according to gender and then selected members from each group for her sample. What sampling method was the researcher using?

(a) Cluster

(b) Random

(c) Systematic

1. Stratified
2. Name the scale on which data are classified according to colour.

(a) Nominal

(b) Ratio

(c) Ordinal

(d) Interval

1. A study that involves no researcher intervention is called

(a) An experimental study.

(b) A noninvolvement study.

(c) An observational study.

(d) A quasi-experimental study.

**SECTION B (60 MARKS)**

Answer **ANY THREE** questions from this section

**QUESTION 2**

At the end of the year a bank summarised closing balances in Mk ‘000 for 30 customers as follows:

34 46 51 36 53 43 55 43 63 71

67 57 44 52 66 47 61 38 44 55

1. 40 37 58 38 41 56 50 54 42
2. Taking class intervals of width 5 and starting from 30 tabulate the data as a frequency distribution (6 marks)
3. Using the frequency distribution in part (a) above, estimate the mean (4 marks)
4. Describe the difference between primary data and secondary data.

*(6 marks)* d)Describe **three** sources of data and state one advantage for each source

(6 marks)

**(Total 20 marks)**

**QUESTION 3**

For each of the following data collection methods, explain what it involves and state **one** advantage and **one** disadvantage.

1. Personal interview
2. Questionnaire
3. Direct observation
4. Experiments  **(Total 20 marks)**

**QUESTION 4**

1. The hourly earnings (K) of a random sample of 11 workers of a company were found to be as shown below:

600, 900, 600, 1200, 800, 600, 700, 1000

400, 1100, 900

From the above data, find the following measure of location:

1. Median *(2 marks)*
2. Arithmetic mean *(2 marks)*
3. Geometric mean (*2 marks)*
4. The following data show the dividend paid to a random sample of 500 shareholders in 2007.

|  |  |
| --- | --- |
| Dividend (K) | Percentage of shareholders |
| 0 and under 500 | 10 |
| 500 and under 1000 | 22 |
| 1000 and 1500 | 36 |
| 1500 and under 2000 | 15 |
| 2000 and under 3000 | 9 |
| 3000 and under 5000 | 8 |

Using the data given, calculate the following

1. Mean *(5 marks)*
2. Median *(5 marks)*
3. Standard deviation *(4 marks)*

**(Total 20 marks)**

**QUESTION 5**

1. A bank recorded the number of days’ cheques were referred to drawer for a sample of 250 days as follows: -

|  |  |
| --- | --- |
| Number of cheques | Number of days |
| 0 | 100 |
| 1 | 70 |
| 2 | 45 |
| 3 | 20 |
| 4 | 10 |
| 5 | 5 |

1. Determine the mean, median and mode. *(9 marks)*
2. Which statistic do you think best described this data and explain why  *(2 marks)*
3. A bank recorded the number of new investments accounts over a period of four years across the country

Region 2001 2002 2003 2004

North 86 78 124 112

Centre 112 65 156 143

South 385 350 326 341

East 40 56 87 88

1. Construct a fully labelled component bar chart using the data provided  *(5 marks)*
2. Cite any two preferred compared to pie charts. *(4 marks)*

**(Total 20 marks)**

**QUESTION 6**

1. What is the difference between discrete date and continuous data? Give **an example** for each data classification ( 4 marks)
2. Write down one graphical method that may be used to present such kind of data
3. Concrete data
4. Continuous data (2 marks)
5. The values of the orders received by a bank over the past financial year are given below:-

|  |  |
| --- | --- |
| Value of order(K’000) | Number of orders |
| 100 and under 200 | 3 |
| 200 and under 300 | 16 |
| 300 and under 400 | 28 |
| 400 and under 500 | 30 |
| 500 and under 600 | 25 |
| 600 and under 800 | 14 |
| 800 and under 1,000 | 6 |
|  |  |

1. Draw a fully labelled histogram to represent the data *(5 marks)*
2. Calculate the percentage cumulative frequencies and hence sketch

fully labelled cumulative frequency curve *(5 marks)*

1. Calculate the quartile deviation *(4 marks)*

**(Total 20 marks)**

**END OF EXAMINATION PAPER**