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 **GARISSA UNIVERSITY**

**SCHOOL OF BUSINESS AND ECONOMICS**

 **DBM 04: QUANTITATIVE TECHNIQUES**

 **MAIN EXAMINATION AUGUST 2021**

**Instructions: Answer Question ONE and Any other TWO Questions from Section B**

**Question One**

1. Define the following terms as used in sampling Distributions:
2. Population ( 2 marks)
3. Sample (2 marks)
4. Discuss the methods used in collecting primary data. (8 marks)
5. Outline four properties of good measure of dispersion (4 marks
6. Summarize four limitations of index numbers (4 marks)

 The table below shows the distribution of the number of orders received by a

 Supplier on a weekly basis.

|  |  |
| --- | --- |
| **Number of orders**  | **Frequency** |
| 23-29 | 4 |
| 30-36 | 9 |
| 37-43 | 6 |
| 44-50 | 8 |
| 51-57 | 3 |

**Required:**

1. The semi-interquartile range of the distribution.
2. The modal weekly number of orders.
3. The standard deviation. (10 marks)

**Total** (**30marks)**

**Question Two**

a)A group of 8 Accountancy students are tested in Business Statistics (BS) and Management Accounting (MA).Find the value of Spearman’s rank correlation coefficient between the marks for BS and MA.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Candidate | A | B | C | D | E | F | G | H |
| Score in BS | 12 | 78 | 52 | 32 | 36 | 41 | 27 | 28 |
| Score in MA | 22 | 60 | 64 | 61 | 38 | 41 | 37 | 36 |

 (10 Marks)

b) Suppose we have the following data on the age versus price of Datsun Z’s.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Age (Yrs.) | 5 | 7 | 6 | 6 | 5 | 4 | 7 | 6 | 5 | 5 | 2 |
| Price($100) | 80 | 57 | 58 | 55 | 70 | 88 | 43 | 60 | 69 | 63 | 118 |

i) Determine the regression equation for the data.

ii) Describe the apparent relationship between the age and price for Dutsun Z’s.

iii) What does the slope of the regression equation represent in terms of prices for Dutsun Z’s?

iv) Use the regression equation to predict the price for a two-year-old z and a five-year-old z

1. Marks

**Question Three**

.a) ).The following table shows the profit distribution of 150 companies in a given county:

|  |  |
| --- | --- |
| Profit(sh million) | Number of Companies |
| 5-10 | 10 |
| 10-15 | 18 |
| 15-20 | 20 |
| 20-25 | 30 |
| 25-30 | 18 |
| 30-35 | 12 |
| 35-40 | 20 |
| 40-45 | 12 |
| 45-50 | 8 |

**Required:**

1. The lower quartile (Q1) of the profit distribution. (2 marks)
2. The Median or middle quartile (Q2) of the profit distribution. (2 marks)
3. The upper quartile (Q3) of the profit distribution**.** (2 marks)
4. Define the term quantitative techniques (2 marks)
5. Briefly explain the uses of statistics to a business organization (6 marks)
6. ) Define the following terms as used in probability theory:
7. Mutually exclusive events (2 marks)
8. Complementary events. (2 marks)
9. Equally likely events. (2 marks)

**Total (20marks)**

**QUESTION FOUR**

1. A Manufacturing company uses three machines in its production process namely,Machine A, machine B and machine C. The daily production of machine A, B and C is12,000 units,10,000 units and 18,000 units respectively. Past experience shows that The percentage of defective output produced by machines A, B and C is1.5%, 1.8% and 3% respectively. An item is drawn at random from the daily Production run ad is found to be defective.

Required:

1. A probability tree for the above events.
2. The probability that the defective item was from machine A
3. The probability that the defective item was from machine B
4. The probability that the defective item was from machine C

10 marks

a) Explain four factors that could be considered in the construction of Index numbers. 5 Marks

b) Highlight five objectives of classification of data (5 marks)

**Total (20marks)**

**QUESTION FIVE**

The following data relate to a set of products sold in Umojamarket for the years 2012 and 2013

**Required:**

|  |  |  |
| --- | --- | --- |
|  | **2012** | **2013** |
| **Product** | **Quantity(units)** | **Price(sh)** | **Quantity(units)** | **Price(sh)** |
| A | 100 | 36 | 95 | 40 |
| B | 12 | 80 | 10 | 90 |
| C | 16 | 45 | 1841 |  |
| D | 1,100 | 5 | 1,200 | 6 |

**Required:**

1. Laspeyre`s price index .
2. Paasche`s price index.
3. Marshalll-Edgeworth (10 marks)
4. Define the terms correlation (2 marks)
5. Highlight four advantages of probability sampling (4 marks)
6. Distinguish between Measures of central tendency and measure dispersion. (4 marks)

**Total (20marks)**