



# MACHAKOS UNIVERSITY

University Examinations for 2018/2019 Academic Year

SCHOOL OF BUSINESS AND ECONOMICS

DEPARTMENT OF BUSINESS ADMINISTRATION

SECOND YEAR FIRST SEMESTER SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF COMMERCE

BMS 200: BUSINESS STATISTICS

DATE:

TIME:

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INSTRUCTIONS: Attempt Question ONE and any other TWO question

## SECTION A

### QUESTION ONE (30 MARKS)

- a). Define the term statistics giving a fundamental difference between descriptive and inferential statistics (5 marks)
- b). Discuss three applications of statistics in business (3 marks)
- c). Differentiate between primary and secondary data giving an appropriate example on the methods of data collection used for each. (5 marks)
- d). The managing director of XYZ wholesalers has received complaints from the trade union that the monthly salaries of his employees at the various retail outlets vary widely. The accountant of the firm has provided the data below with respect to the two largest retail outlets as follows

| Monthly salary Shs 000 | No.of employees Machakos branch | No.of employees Kisumu branch |
|------------------------|---------------------------------|-------------------------------|
| 5-10                   | 3                               | 1                             |
| 10-15                  | 20                              | 22                            |
| 15-20                  | 16                              | 15                            |

|       |   |   |
|-------|---|---|
| 20-25 | 6 | 8 |
| 25-30 | 2 | 8 |
| 30-35 | 2 | 4 |
| 35-40 | 1 | 2 |

### Required

- i).The mean monthly salary for each branch (5 marks)
- ii).The standard deviation of monthly salary for each branch (5 marks)
- iii).The median monthly salary for each branch (5 marks)
- iv).The coefficient of variation of monthly salary for each branch (2 marks)

### SECTION B

#### QUESTION TWO (20 MARKS)

- a) The table below shows the quantities of four types of cereals consumed by certain household in the years 2016 and 2017 and the unit price for each type of cereals

| Type of cereals | 2016            |             | 2017            |             |
|-----------------|-----------------|-------------|-----------------|-------------|
|                 | Price per kg.sh | Quantity kg | Price per kg.sh | Quantity kg |
| <b>Maize</b>    | 50              | 100         | 80              | 120         |
| <b>Rice</b>     | 80              | 140         | 100             | 120         |
| <b>Beans</b>    | 40              | 150         | 80              | 110         |
| <b>Peas</b>     | 50              | 100         | 90              | 100         |

### Required

Using year 2016 as the base year, calculate

- i).Laspeyres price index (5 marks)
  - ii).Paasches price index (5 marks)
  - iii).Fishers ideal price index (5 marks)
- b) Define skewness and distinguish between positive and negative skewness (5 marks)

### QUESTION THREE (20 MARKS)

- a).The following information was obtained from an NGO which was giving small loans to some small scale business enterprises in 2016.The loans are in the form of thousands of thousands of Ksh.

|       |       |       |       |       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| loans | 46-50 | 51-55 | 56-60 | 61-65 | 66-70 | 71-75 | 76-80 | 81-85 | 86-90 |
| units | 32    | 62    | 97    | 120   | 92    | 83    | 52    | 40    | 50    |

Using the Pearsons measure of skewness, calculate:

- i.) The coefficient of Skewness (15 marks)
- ii.) Hence comment briefly on the nature of the distribution of the loans. (5 marks)

### QUESTION FOUR (20 MARKS)

- a) Describe the relationship of mean, median, and mode in skewed data (5 marks)
- b) For the construction of price index numbers several factors should be put into consideration. Discuss these factors (5 marks)
- c) A box contains 4 green apples and 8 red apples which are identical in all aspects except colour. A customer picks 2 apples at random from the box one at a time without replacement.
  - (i) Present this information using a probability tree diagram. (3 marks)
  - (ii) Hence determine the probability that all the apples picked are of different colours. (2 marks)
- d) Define the term kurtosis and with an aid of a diagram and illustrate three different curves of kurtosis (5 marks)

### QUESTION FIVE (20MARKS)

- a) Discuss any three levels of measurement (6 marks)
- b) State three uses of probability in business management (6 marks)
- c) A college collected the following set of bivariate data on the number of Credit grade and the number of hours of study taken during the week. A random sample of 6 students was taken and the data relating the hours of study and the number of credits is as shown in the table.

| Student | A  | B  | C  | D  | E  | F  |
|---------|----|----|----|----|----|----|
| Hours   | 20 | 50 | 30 | 50 | 25 | 23 |
| Credits | 13 | 16 | 12 | 16 | 15 | 16 |

Determine the Spearman's rank correlation co-efficient between the number of hours and credits: (8 marks)