



TECHNICAL UNIVERSITY OF MOMBASA

SCHOOL OF BUSINESS

DEPARTMENT OF MANAGEMENT SCIENCE

UNIVERSITY EXAMINATION FOR:

BACHELOR OF SCIENCE IN TOURISM MANAGEMENT, BACHELOR OF JOURNALISM AND MASS COMMUNICATION, BACHELOR OF COMMERCE, BACHELOR OF BUSINESS ADMINISTRATION, BACHELOR OF TECHNOLOGY IN HOTEL AND HOSPITALITY MANAGEMENT.

BMS 4201: BUSINESS STATISTICS

END OF SEMESTER EXAMINATION

SERIES: APRIL 2016

TIME: 2 HOURS

DATE: 9 May 2016

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **FIVE** questions. Attempt question ONE (Compulsory) and any other TWO questions.

Do not write on the question paper.

QUESTION ONE

(a) Describe the following types of means:

- | | |
|---------------------|-----------|
| (i) Arithmetic mean | (2 marks) |
| (ii) Geometric mean | (2 marks) |
| (iii) Harmonic mean | (2 marks) |

(b) An investor is paid 10% interest in the first year, 10% in the second year and 15% in the third year.

Required:

The average rate of return using geometric mean. (3 marks)

- (c) The following data show the number of tourist bookings per week at two coastal beach hotels:

Hotel Ocean: 86, 90, 85, 60, 70, 50, 90, 65, 44, 30, 54, 60.

Hotel Sea: 25, 37, 15, 48, 100, 36, 40, 62, 87, 20, 60, 50

Required:

- (i) The arithmetic mean number of bookings for each hotel. (6 marks)
- (ii) The median of the bookings for each hotel. (4 marks)
- (iii) The range of the bookings for each hotel. (2 marks)
- (iv) The interquartile range of the bookings for each hotel. (6 marks)
- (v) Compare the performance of the two hotels based on the results obtained in c(i) and c(iii) above. (3 marks)

Question TWO

- (a) Define the following terms as used in probability theory:
 - (i) Mutually exclusive events (2 marks)
 - (ii) Sample space (2 marks)
 - (iii) Compound events (2 marks)
- (b) Distinguish between a discrete variable and a continuous variable. (4 marks)
- (c) The following data relates to the distribution of employees of XYZ Company Ltd. in terms of job grade.

	Clerical grade	Administrative grade
Male	4	6
Female	22	8

Required:

- (i) The probability that an employee selected at random is in the administrative grade. (2 marks)
- (ii) The probability that an employee selected at random is in the clerical grade. (2 marks)
- (iii) The probability that an employee selected at random is female. (2 marks)
- (iv) The probability that an employee selected at random is male given that the employee is in administrative grade. (2 marks)
- (v) The probability that an employee selected at random is female given that the employee is in clerical grade. (2 marks)

Question THREE

- a) The following data give the actual sales of a company in each of the 8 regions of a country together with the forecast of sales.

REGION	Actual sales(Sh. 'million')	Forecast of sales
A	15	16
B	19	19
C	30	26
D	12	14
E	58	65
F	10	18
G	23	27
H	17	22

Required:

- (i) Calculate the rank correlation coefficient between actual sales and forecast of sales. (6 marks)
(ii) Comment on the degree of correlation between actual sales and forecast of sales. (2 marks)
- b) Distinguish between nominal level data and ordinal level data. Give suitable examples. (6 marks)
- c) Explain the three key methods of collecting primary data. (6 marks)

Question FOUR

The data below shows the distribution of profits realized by 100 M-Pesa agents within Mombasa for the financial year ended 31st December 2015.

Profits (Sh. 'million')	Number of M-Pesa agents
1 – 5	8
6 – 10	12
11 – 15	9
16 – 20	15
21 – 25	20
26 – 30	15
31 – 35	11
36 - 40	10

Required:

- (i) The arithmetic mean of the distribution
(ii) The Standard deviation
(iii) The coefficient of variation
(iv) The coefficient of skewness
(v) Comment on the results obtained in (iv) above. (20 marks)

Question FIVE

- (a) XYZ Company Limited, recently employed eight college graduates. The following table shows the starting monthly salaries of the graduates and the G.P.A scores obtained by the graduates in their final year examination.

GPA Score (x)	Starting Monthly Salary (Sh.000) (y)
4	54
3	45
3.5	45
2	36
3	40
3.5	50
2.5	30
2.5	40

Required:

- (i) Assuming a linear relationship of the form $Y=a+bx$, use the least squares method to find the regression coefficients a and b . (8 marks)
- (ii) Using the equation obtained in a(i) above, determine the starting monthly salary of a college graduate who obtained a G.P.A score of 3.8 in the final year examination. (2 marks)
- (b) The following data shows monthly insurance premiums paid by a certain class of employees in an organization:

Monthly Insurance Premium	Number of employees
3000 – 4000	11
4000 – 5000	24
5000 – 6000	30
6000 – 7000	10
7000 – 8000	13
8000 – 9000	8
9000 – 10000	4

Required:

- (i) Construct a cumulative frequency curve for the above data. (8 marks)
- (ii) Determine from the cumulative frequency curve, the median insurance premium per month. (2 marks)