TECHNICAL UNIVERSITY OF MOMBASA

UNIVERSITY EXAMINATIONS 2018/2019

EXAMINATION FOR DIPLOMA

BAC 2103: BUSINESS STATISTICS

END OF SEMESTER EXAMINATIONS

SERIES: AUGUST 2019

DATE: AUGUST 2019 B DURATION: 2 HOURS

INSTRUCTIONS: ANSWER QUESTION ONE AND ANY OTHER TWO

QUESTION ONE

(a) Briefly, give definitions of these terms as used in statistics

(i.) Primary data **(3 marks)**

(ii.) Secondary data **(3 marks)**

(b) The sampling techniques most commonly used in business and commerce can be split into three categories.

(i.) List these three categories **(3 marks)**

(ii.) Give a brief description of what is Simple random sampling and advantages and disadvantages of using it. **(6 marks)**

(c) The number of minor industrial accidents of a particular type reported per month over six successive months were 41, 62, 87, 96, 32, 39. Calculate the absolute and relative errors for the six-monthly totals of rounded figures, if rounding is performed

(i.) to the nearest 10 **(2 marks)**

(ii.) to the highest 10 **(2 marks)**

(iii.) to the lowest 10 **(2 marks)**

(d) Sales of gas (thousands of therms) in a particular region

Year	1	2	3	4	5	6	7	8	9	10	11
Domestic	2382	2812	3194	3522	3910	4489	4796	5360	5869	6174	6569
Industrial	894	956	1081	1472	2720	4278	4827	6011	5870	6258	6399

(i.) Plot the graphs of domestic and industrial sales on a semi-logarithmic scale **(7 marks)**

(ii.) Comment on the results shown **(2 marks)**

QUESTION TWO

The following figures relate to the length of time spent by cars in a particular car park during one day

Time parked (hrs):	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8
Number of cars :	450	730	640	120	40	30	20	20

(a) Calculate the (i.) mean **(4 marks)**

(ii.) variance **(5 marks)**

(b) (i.) Draw a Histogram **(7 marks)**

(ii.) Using the Histogram in (a) to estimate the Mode **(4 marks)**

QUESTION THREE

The distribution of advertising expenditure for a number of companies in a month are given in the table below:

Expenditure ($)	**Number of companies**
Less than 500	210
500 and up to 1000	184
1000 and up to 1500	232
1500 and up to 2000	348
2000 and up to 2500	177
2500 and up to 3000	83
3000 and up to 3500	48
3500 and up to 4000	12
4000 and over	9

(a) Draw a Cumulative frequency distribution **(8 marks)**

(b) Using the cumulative frequency distribution in (a) to estimate

(i.) the Median **(3 marks)**

(ii.) the quartile deviation **(3 marks)**

(c) Estimate the quartile measure of skewness and comment about it **(6 marks)**

QUESTION FOUR

(a) Give a definition of what is correlation **(3 marks)**

(b) Give two uses of rank correlation **(4 marks)**

(c) The following data relate to the number of vehicle owned and road deaths for the populations of 12 countries.

Vehicles per 100 Population :	30	31	32	30	46	30	19	35	40	46	57	30
Road deaths per 100,000 Population:	30	14	30	23	32	26	20	21	23	30	35	26

(i.) Calculate Spearman's rank correlation coefficient **(10 marks)**

(ii.) Comment on the result **(3 marks)**

QUESTION FIVE

(a) Give a definition of a Time Series **(3 marks)**

(b) The two main models of Time Series are the additive and the multiplicative models. Give a definition of each of them **(6 marks)**

(c) The following data is of UK outward passenger movement by sea.

	Year 1				**Year 2**				**Year 3**			
Quarter :	1	2	3	4	1	2	3	4	1	2	3	4
Number of Passenger (millions):	2.2	5.0	7.9	3.2	2.9	5.2	8.2	3.8	3.2	5.8	9.1	4.1

Calculate trend values for the working data using moving averages with an appropriate period. **(11 marks)**