



GARISSA UNIVERSITY

UNIVERSITY EXAMINATION **2017/2018** ACADEMIC YEAR **TWO**
SECOND SEMESTER EXAMINATION

SUPPLEMENTARY/SPECIAL EXAMINATION

SCHOOL OF BIOLOGICAL AND PHYSICAL SCIENCES

FOR THE DEGREE OF BACHELOR OF BUSINESS MANAGEMENT

COURSE CODE: BBM 221

COURSE TITLE: BUSINESS STATISTICS

EXAMINATION DURATION: 3 HOURS

DATE: 19/03/18

TIME: 09.00-12.00 PM

INSTRUCTION TO CANDIDATES

- The examination has **SIX (6)** questions
- Question **ONE (1)** is **COMPULSORY**
- Choose any other **THREE (3)** questions from the remaining **FIVE (5)** questions
- Use sketch diagrams to illustrate your answer whenever necessary
- Do not carry mobile phones or any other written materials in examination room
- Do not write on this paper

This paper consists of **FIVE (5)** printed pages

please turn over



QUESTION ONE (COMPULSORY)

(a) Define the following terms as used in statistics

- i. Target population [1 mark]
- ii. Survey [1 mark]
- iii. Census [1 mark]

(b) Differentiate between descriptive and inferential statistics [4 marks]

(c) The mean mark of 100 students was found to be 40. If later it was found that the mark 53 was misread as 83, find the correct mean mark [3 marks]

(d) The data below show marks obtained by 120 students in their final statistics examination.

Marks	30 - 39	40 - 49	50 - 59	60 - 69	70 - 79	80 - 89	90 - 99
No of students	10	3	11	12	43	32	9

Calculate the

- i. Median [3 marks]
- ii. Lower quartile [2 marks]
- iii. Upper quartile [2 marks]
- iv. Quartile deviation [2 marks]

(e) The following data give the test scores and sales made by nine salesmen during the last one year

Test scores	14	19	24	21	26	22	15	20	19
Sales (ksh 1000)	31	36	48	37	50	45	33	41	39

- i. Obtain the regression equation of test scores on sales [6 marks]



QUESTION TWO

The following is a set of data representing marks in a Business statistics class of 109. The marks are ordered for convenience.

6	11	11	12	13	14	16	17	18	20	21	21	23	24
	25	25	25	25	26	26	27	27	28	28	28	29	29
	29	30	31	31	32	32	32	33	33	34	34	35	36
	36	37	37	37	37	38	38	38	39	39	39	39	39
	39	39	39	40	40	40	40	40	40	41	41	41	42
	42	42	42	43	43	43	44	45	46	46	47	47	47
	47	48	50	50	51	51	52	52	52	53	53	54	54
	55	57	58	58	59	59	61	62	63	64	66	66	67
	70	75	77	82									

- (a) Construct a grouped frequency distribution table using a class width of 10 with the first class having a lower class limit of 0 **[6 marks]**
- (b) Find the mean and the standard deviation using 44.5 as the assumed mean **[7 marks]**
- (c) Find the 70th percentile. **[2 marks]**

QUESTION THREE

- (a) A vacancy exists for a typist at Garissa University College. Six people applied for the job. The Human Resource Officer (HRO) gives each applicant a test which consists of typing a page. The table below shows the results of the test

Typist	A	B	C	D	E	F
Completion time (sec)	56	34	60	50	80	30
Number of errors	3	4	2	4	1	8



- i. Compute the Spearman's rank correlation coefficient **(4 marks)**
- ii. Applicant A got the job. Give a reason why you think this was a sensible decision by the HRO. **(2 marks)**

(b) The number of driver deaths per 100,000 for different age groups in the year 2015 was given as shown below.

Age group	15 - 24	25- 29	30 - 34	35 - 39	40 - 44
No of deaths per 100,000	30	18	25	15	12

- i. Determine the product moment correlation coefficient **[4 marks]**
- ii. Determine the least squares regression line for the data **[4 marks]**
- iii. Interpret the slope of your line in (ii) above **[1 mark]**

QUESTION FOUR

The table below shows the distribution of marks of 40 candidates in a test

Marks	1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100
Frequency	2	2	3	9	12	5	2	3	1	1

Find the

- i. 4th decile
- ii. 80th percentile
- iii. Mean
- iv. Standard deviation **[15 marks]**



QUESTION FIVE

- (a) The mean of a set of six numbers is 2 and the mean of another set of ten numbers is x . If the mean of the combined set of numbers is 7, find the value of x **[5 marks]**
- (b) A manufacturer investigates how far a car travels before it needs a new set of tyres. 100 cars were observed and the results are as shown below

Distance km $\times 10^3$	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 - 30
Number of cars	10	23	31	19	12	5

- i. Calculate the value of Pearson's coefficient of skewness **[10 marks]**

QUESTION SIX

- (a) Peter plays college soccer. He scores a goal 65 % of the time he shoots. Peter is going to attempt to score two goals in a row in the next game. The probability that he scores the second goal given that he scored the first goal is 0.9
- What is the probability that he scores both goals **[3 marks]**
 - What is the probability that he scores either the first goal or the second goal **[3 marks]**
 - Are the events “ he is successful in his first attempt” and “he is successful in his second attempt” independent **[2 marks]**
- (b) Research shows that out of every seven women, (approximately 14.3%) who live up to 90 years, or above develop breast cancer.. Suppose that of the women who develop breast cancer, a test is negative 2% of the time. Suppose also that in the general population of women, the test for breast cancer is negative 85% of the time,
- What is the probability that a woman has breast cancer and tests negative **[3 marks]**
 - What is the probability that a woman has breast cancer or tests negative **[3 marks]**
 - Are “having breast cancer” and “testing negative” mutually exclusive events **[1 mark]**

