JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF MATHEMATICS AND ACTUARIAL SCIENCE

SPECIAL RESIT 2 2020/2021 ACADEMIC YEAR

COURSE CODE: **SAS 101**
COURSE TITLE: **Descriptive Statistics**
EXAM VENUE:
STREAM: **BSC. ACTUARIAL, BED SCI/ARTS**

DATE:…… **EXAM SESSION …….**

TIME: **2 HOURS**

Instructions:

1. **Answer all questions in Section A and any other 2 questions in Section B**
2. **Candidates are advised not to write on the question paper**
3. **Candidates must hand in their answer booklets to the invigilator while in the examination room**

SECTION A

QUESTION ONE

a) Given the data below calculate the coefficient of correlation. (8 marks)

SMA MARKS	48	35	17	23	47
SCS MARKS	45	20	40	25	45

b) Explain one importance of studying regression. (2 marks)

c) Consider the frequency distribution below. (8 marks)

Class	0-10	10-20	20-30	30-40	40-50
frequency	2	5	10	9	4

Find

i) Mean

ii) Mode

iii) Median

d) Explain three methods of data collection. (3 marks)

e) From the following data, construct an index for 1998 taking 1997 as base by the average price relative. Calculate (6 marks)

i) the arithmetic mean

ii) geometric mean

commodity	Price 1997	Price 1998
A	50	70
B	40	60
C	80	100
D	20	30

f) Give two properties of mean (3 marks)

SECTION B

QUESTION TWO

a) The table below shows the breaking strength of steel cables in tonnes. (10 marks)

Breaking strength	7.8-8.0	8.0-8.2	8.2-8.4	8.4-8.6	8.6-8.8	8.8-9.0	9.0-9.2	9.2-9.4	9.4-9.6
No of cables	1	7	13	23	47	39	19	5	3

i) Find an estimate of median

ii) Find the first and third quartile

iii) Determine the interquartile range

iv) Determine the 10^{th} and 90^{th} percentile

b) The table below shows masses of bolts in a company.

Masses	10-14	15-19	20-24	25-29	30-34	35-39	40-44
No. of Bolts	7	13	25	40	15	6	4

Using assumed mean of 27, calculate:

i) Mean
ii) Standard deviation
iii) Median

QUESTION THREE

a) The table below shows marks collected into groups of 400 students in an exam. The maximum mark was 99. (10 marks)

Marks	0-9	10-19	20-29	30-39	40-49	50-59
Number of candidates	10	26	42	66	83	71
	60-69	70-79	80-89	90-99		
	52	30	14	6		

i) Compile cumulative frequency table and draw cumulative frequency curve.
ii) Use the curve to estimate: a) Median b) 25^{th} percentile
iii) If the minimum mark for grade A was fixed at 74 estimate from you curve the percentage of candidate who obtained grade A.

b) The table below shows various IQ's of 50 children.

86	120	77	130	124	95	96	84	101	99
108	90	107	97	96	99	104	100	108	110
95	88	111	79	81	91	89	118	56	75
110	65	105	87	110	98	106	140	102	92
100	86	114	97	95	94	113	92	97	101

i) Arrange in order by grouping them in classes 55-64, 65-74, 75-84,….. and form cumulative frequency table.
ii) Find the mean
iii) Draw an ogive
iv) Estimate the median

QUESTION FOUR

a) Construct the price index number from the following data by applying:
   i) Laspeyre's method
   ii) Paasche's method
   iii) Fischer's method
   iv) Marshal-Edge worth method

Commodity	2000		20001	
	price	quantity	price	quantity
A	2	8	4	5
B	5	12	6	10
C	4	15	5	12
D	2	18	4	20

QUESTION FIVE

a) Consider the frequency distribution below

Marks	10-12	13-15	16-18	19-21	22-24	25-27	28-30
Frequency	3	7	16	10	8	5	1

   i) Draw an histogram
   ii) Use the histogram to estimate the mode
   iii) Using assumed mean of 17, find the mea

b) Consider the following data (10 marks)

Independent X	1	2	3	4	5	6
Dependent Y	5	8	10	12	16	20

Find the regression line if X and Y are linearly related.