



(The University of Choice)

**MASINDE MULIRO UNIVERSITY OF
SCIENCE AND TECHNOLOGY
(MMUST)**

UNIVERSITY EXAMINATIONS

2021/2022 ACADEMIC YEAR

THIRD YEAR SECOND SEMESTER EXAMINATIONS

MAIN EXAMINATION

**FOR THE DEGREE
OF
BACHELOR OF CRIMINOLOGY
BACHELOR OF SOCIAL WORK**

COURSE CODE: SCR 310

COURSE TITLE: SOCIAL STATISTICS

DATE: 27/4/2022 TIME: 3:00-5:00PM

INSTRUCTIONS TO CANDIDATES

Answer Question 1 and any other Two (2) Questions

TIME: 2 Hours

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 3 Printed Pages. Please Turn Over.

Question One (30 marks)

- a) Define the following terms as used in social statistics
- i) Sample (1 mark)
 - ii) Sampling unit (1 mark)
 - iii) Stratified sampling (1 mark)
 - iv) Snowball sampling (1 mark)
- b) Explain two reasons for adoption of the 95% confidence criterion by social scientists (4 marks)
- c) Assess four ways in which knowledge in statistics is useful to a social worker and criminologist (4 marks)
- d) Explain four roles of descriptive statistics in social statistics (4 marks)
- e) State four reasons why social science researchers may prefer samples to census (4 marks)
- f) In a study, 20 young pigs are assigned at random among 4 experimental groups. Each group is fed a different diet. (This design is a completely randomized design.) The data are the pigs' weights in kg after being raised on these diets for 10 months. The results are presented below

Data from study of pigs weights			
Feed_1	Feed_2	Feed_3	Feed_4
60.8	68.3	102.6	87.9
57.1	67.7	102.2	84.7
65.0	74.0	100.5	83.2
58.7	66.3	97.5	85.8
61.8	69.9	98.9	90.3

- i) Explain one reason why an ANOVA is suitable for this analysis (1 mark)
- ii) State the null hypothesis to be tested (1 mark)
- iii) At 0.05 level of significance test the hypothesis (**Critical F value = 3.0983**) (8 marks)

Question Two (20 marks)

- a) What is your understanding of the following terms as used in social statistics?
 - i) Data (1 mark)
 - ii) Significance level (1 mark)
 - iii) Statistic (1 mark)
 - iv) Descriptive statistics (1 mark)
- b) Enumerate four ways in which data is important in social statistics (4 marks)
- c) Explain two ways a researcher can benefit by presenting data using pie charts (2 marks)
- d) A random sample of 395 people were surveyed and each sex was asked to report the highest education level they obtained. The data that resulted from the survey is summarized in the following table:

	High School	Bachelors	Masters	Doctorate	Total
Female	60	54	46	41	201
Male	40	44	53	57	194
Total	100	98	99	98	395

- i) State two reasons why the chi-square test is deemed fit to analyse the data (2 marks)
- ii) Are gender and education level dependent at 5% level of significance? (**Chi-Square critical =7.815**) (8 marks)

Question Three (20 marks)

- a) Using a well-illustrated diagram explain **three** characteristics of a normal curve.(3 marks)
- b) You are given the following list of numbers: 4, 4, 2, 11, 6, X, 1, 3, 2. The arithmetic mean is 4. What is the value of X? (3 marks)
- c) The list of numbers 41, 35, 30, X,Y, 15 has a median of 25. The mode of the list of numbers is 15. To the nearest whole number, what is the mean of the list? (3marks)
- d) The table below indicates data on students' performance. Use the table to calculate the statistics below.

Marks	1-10	11-20	21-30	31-40	41-50
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Frequency	2	7	10	3	1
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- i) The mean (3 marks)
- ii) Median (3 marks)
- iii) Standard deviation (3 marks)
- iv) From the information above data, construct a bar graph (2 marks)

Question Four (20 marks)

- a) Which scale of measurement would be used for the following data
 - i) The perimeter of a circle (1 mark)
 - ii) The jerseys of players (1 mark)
 - iii) The blood pressure of patients (1 mark)
 - iv) The velocity of a vehicle (1 mark)
- b) State two reason for collecting data of a variables at its highest possible measurement scale (2 marks)
- c) Operationalize the variable age so that it is measured across each of the four measurement scales (4 marks)
- d) The samples data below shows the ages of 10 married couples. It is assumed that people tend to marry persons almost similar their age.

Husband (x)	36	72	37	36	51	50	47	50	37	41
Wife (y)	35	67	33	35	50	46	47	42	36	41

- i) Explain one reason why a Pearson product moment coefficient is suitable for this analysis (1 mark)
- ii) State the null hypothesis to be tested (1 mark)
- iii) At 0.05 level of significance test the hypothesis (**Critical value = 0.6320**) (8 marks)