



16

*(Knowledge for Development)*

**UNIVERSITY EXAMINATIONS  
2021/2022 ACADEMIC YEAR**

**FIRST YEAR SECOND SEMESTER  
MAIN EXAMINATION  
FOR  
DEGREE OF DOCTOR OF PHILOSOPHY IN CURRICULUM AND  
INSTRUCTIONS**

**COURSE CODE:** CUT 923

**COURSE TITLE:** ADVANCED EDUCATIONAL STATISTICS

**DATE:** 25<sup>TH</sup> MAY 2022

**TIME:** 2.00 - 4.00 PM

---

**INSTRUCTIONS TO CANDIDATES**

Answer question ONE and any OTHER TWO questions in the answer booklet provided

This Paper Consists of 2 Printed Pages. Please Turn Over. ►



### QUESTION ONE

- (a) State and explain briefly the scales measurement used in educational research (4 marks)
- (b) A student appeared for two tests. He secured 80 in the first and 75 in the second. The mean and deviation for the first were 70 and 15 respectively, while for the second it was 64 and 12 respectively. What conclusion can you make on comparing the student's performance for both exams? (4 marks)
- (c) A certain firm had 90 staff of whom 79 were men in its first year of operation. During the year, 17 staff left and 13 of these were men. The total recruitment in the year was 13 of whom 3 were women. In the second year, wastage decline by 3 among women as compared to the first year and no woman left. 6 more men but 1 fewer woman was recruited than the previous year.
- Tabulate precisely the staffing level of the firm (4 marks)
  - What conclusions would you make about the staff in this firm? (4 marks)
  - Suppose you were the CEO of this firm what recommendations would you make to the Board of Management regarding employees in the firm (4marks)

### QUESTION TWO

The following marks were obtained in an examination administered to students.

43	39	59	56	58	63	71	40
72	66	47	38	51	50	61	64
32	78	29	32	45	80	70	57
52	46	45	39	58	72	41	55
56	53	66	61	46	82	64	63

- Make a frequency distribution table starting with 25-29 as the first class (5 marks)
- Determine the mean, mode and median marks for the exam (6 marks)
- Compute the standard deviation for that examination (7 marks)
- What conclusions would you make about the performance in this examination (2 marks)

### QUESTION THREE

Suppose you conducted a drug trial on a group of animals and you hypothesized that the animals receiving the drug would show increased heart rates compared to those that did not receive the drug and obtained the following data:

	Heart Rate Increased	No Heart Rate Increase	Total
Treated	36	14	50
Not treated	30	25	55
Total	66	39	105

- State the alternate research hypothesis for the study (4 marks)



- b) Outline any two assumptions for chi square test (2 marks)
- c) Test the existence of any relationship between the variables (10 marks)
- d) What conclusions would you make (4 marks)

**QUESTION FOUR**

A researchers decide to test the impact of REM sleep deprivation on a computerized assembly line task. Subjects are required to participate in two nights of testing. On the nights of testing EEG, EMG, EOG measures are taken. On each night of testing the subject is allowed a total of four hours of sleep. However, on one of the nights, the subject is awakened immediately upon achieving REM sleep. On the alternate night, subjects are randomly awakened at various times throughout the 4 hour total sleep session. Testing conditions are counterbalanced so that half of the subject experience REM deprivation on the first night of testing and half experience REM deprivation on the second night of testing. Each subject after the sleep session is required to complete a computerized assembly line task. The task involves five rows of widgets slowly passing across the computer screen. Randomly placed on a one/five ratio are widgets missing a component that must be "fixed" by the subject and the number of missed widgets was recorded as in the table below.

<u>REM Deprived</u>	<u>Control Condition</u>
26	20
15	4
8	9
44	36
26	20
13	3
38	25
24	10
17	6
<u>29</u>	<u>14</u>

- a) State one possible research question and hypothesis for the study (4 marks)
- b) State any two statistical tools you any use to analyze the data (2 marks)
- c) Test the existence of any relationship between the variables (10 marks)
- d) What conclusions would you make about the impact of REM sleep deprivation (4 marks)



### QUESTION FIVE

A research study was conducted to examine the differences between older and younger adults on perceived life satisfaction. The data collected is as presented in the table below.

<u>Older Adults</u>	<u>Younger Adults</u>
45	34
38	22
52	15
48	27
25	37
39	41
51	24
46	19
55	26

- State the possible null and alternate hypothesis in this study? (4 marks)
- Test the null hypothesis stated in (a) above (10 marks)
- If you have made an error, would it be a Type I or a Type II error? Explain your answer. (6 marks)