

THARAKA



UNIVERSITY

COLLEGE

(A Constituent College of Chuka University)

UNIVERSITY EXAMINATIONS

EXAMINATION FOR THE AWARD OF DEGREE OF DOCTOR OF PHILOSOPHY IN EDUCATION

CPSY 912/EDUC 902: ADVANCED APPLICATION OF EDUCATION STATISTICS

STREAMS: LIBI

TIME: 3 HOURS

DAY/DATE: TUESDAY 21/04/2020

8.30 AM – 11.30 AM

INSTRUCTIONS:

- Answer Question One and any other Two Questions
- Do not write on the question paper

Question One

- (a) Explain the condition when a researcher is likely to apply t-test during data analysis. [4 marks]
- (b) Students in a PHD class had the following scores. Prepare a frequency distribution using the class interval range of 5

| | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|
| 93 | 90 | 49 | 72 | 82 | 80 | 93 | 78 | 74 | 79 |
| 96 | 86 | 57 | 38 | 85 | 90 | 79 | 84 | 45 | 78 |
| 98 | 72 | 68 | 47 | 83 | 76 | 88 | 81 | 62 | 60 |
| 65 | 63 | 78 | 49 | 36 | 50 | 86 | 46 | 59 | 49 |
| 61 | 41 | 70 | 74 | 71 | 72 | 46 | 61 | 60 | 39 |

- (i) Calculate the mode [2 marks]
- (ii) Calculate the median [4 marks]
- (iii) Construct a frequency polygon [4 marks]
- (c) Explain the four levels of measurements [4 marks]
- (d) Explain the characteristics of a mean [2 marks]

Question Two

- (a) Using the data below, find the products moment correlation [5 marks]

| | | | | | | | | | |
|------|----|----|----|----|----|----|----|----|----|
| CAT | 22 | 24 | 16 | 14 | 17 | 22 | 23 | 18 | 19 |
| EXAM | 73 | 77 | 52 | 48 | 54 | 70 | 75 | 73 | 70 |

- (b) Calculate the coefficient determinations and give an interpretation. [3 marks]
- (c) Continuous and discrete variables are applied in research. Using examples, distinguish them. [4 marks]
- (d) Given $\bar{x} = 130.5$, $Sx = 11.8$, $\bar{Y} = 5.8$, $Sy = 0.9$ and $r = 0.72$ if a student scored 115, what rating is predicted for him? [4 marks]
- (e) In a class, the height of boys and girls was measured in metres and recorded as follows.

| Boys | Girls |
|------|-------|
| 1.3 | 1.2 |
| 1.1 | 1.3 |
| 1.5 | 1.6 |
| 1.2 | 1.4 |
| 1.0 | 1.1 |

Test the hypothesis that there is no significant difference in variation of heights by gender. [4 marks]

Question Three

A researcher wanted to find out if the educated females like jobs. He selected 48 females and asked them if they liked their jobs. Each was told to choose one out of three answers (alternatives) {yes, No, Neutral}. The researcher got answers as follows: 24, 12, 12 respectively per response. On the basis of normal distribution, he tested if the obtained distribution was significantly differing from distribution of [16, 16, 16] expected

- (a) What statistical test is best for this hypothesis? [2 marks]
- (b) Calculate that value. [4 marks]
- (c) Comment or interpret on the results found in (b) above. [2 marks]
- (d) Discuss the elements or factors which will influence correlation. [8 marks]

(e) Using Spearman rho, estimate the correlation

| X | Y |
|----|----|
| 3 | 5 |
| 8 | 7 |
| 11 | 9 |
| 7 | 10 |
| 4 | 6 |
| 15 | 14 |
| 17 | 13 |

Question Four

The data below was obtained from a Continuous Assessment Test that was marked out of twenty

| Class interval | Frequency |
|----------------|-----------|
| 5 – 7 | 5 |
| 11 – 13 | 4 |
| 14 – 16 | 9 |
| 17 – 19 | 4 |
| 20 – 22 | 2 |

- (a) Determine the mean [4 marks]
- (b) Calculate the standard deviation. [6 marks]
- (c) A basket contains 6 white balls, 8 black balls and 3 yellow balls. If two balls are drawn without replacement, determine the probability of getting a white and a yellow ball. [6 marks]
- (d) Distinguish between influential and descriptive statistics using relevant examples. [4 marks]
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