



MACHAKOS UNIVERSITY

University Examinations 2016/2017

SCHOOL OF EDUCATION

DEPARTMENT OF EDUCATION MANAGEMENT AND CURRICULUM STUDIES

..... YEARSEMESTER EXAMINATION FOR MASTER OF EDUCATION

EMP 923: ADVANCED EDUCATIONAL STATISTICS

DATE:

TIME:

INSTRUCTIONS

Answer Question One and Any Other Two Questions

QUESTION ONE

- a) By the use of relevant examples, explain the following terms as applied in statistics
- i) Variable (2 marks)
 - ii) Theory (2 marks)
 - iii) Hypothesis (2 marks)
- b) Explain any four sample selection techniques that produces a representative of the population (4 marks)
- c) Below are the number of visitors received by 50 residents of Maskani Home for the aged.

Use the data to answer the questions below:

0	6	14	17	22	27	20	33	18	12
24	2	18	34	30	17	19	12	19	15
3	5	7	0	16	23	11	9	10	13
14	8	16	18	20	12	32	16	8	10
15	19	20	22	17	18	30	34	26	29

- i) Summarize this data into a frequency distribution table starting with a class of 0-4. (3 marks)

- ii) Compute the Mean of the distribution (3 marks)
- iii) Construct a histogram for the data (4 marks)

QUESTION TWO

- a) Explain the steps of hypotheses testing (5 marks)
- b) Explain the limitations of the Chi-Square as an inferential statistics (6 marks)
- c) At Machakos University, about half of the students live off campus while the other half live in hostels on the campus. The academic performance based on a random sample of 500 students is shown in table 1.0 below. Determine if there is an association between the students' academic performance and the living arrangement

Table 1.0: Living Locality and Students' Academic Performance

	Locality		
Academic Performance	Off Campus with Room mates	Off Campus with parents	On Campus
Low	32	50	54
Moderate	56	40	24
High	70	80	76

QUESTION THREE

- a) Assume that the distribution of a college entrance exam is normal with a mean of 500 and a standard deviation of 100. For each of the scores in table 2.0, find the equivalent Z score, the percentage of the area above the score and the percentage of the area below the score

Table 2.0: Z Score Table

X_i	Z Score	% Area Above	% Area Below
650			
400			
375			
586			

(12 marks)

- b) Assume that the Kenyan Police force gives all applicants an entrance examination and accepts only those applicants who score in the top 15% on this test. If the mean score this year is 87 and the standard deviation is 8, would students with the following scores
- i 93 (2 marks)
 - ii 86 (2 marks)
 - iii 67 (2 marks)
 - iv 98 (2 marks)

QUESTION FOUR

- a) A random sample of 423 students has finished an average of 12.7 years of formal education with a standard deviation of 1.7. Is this significantly different from the national average of 12.2 years? (10 marks)
- b) The coach of the Machakos University basketball team believes that his team plays better and scores more points in front of larger crowds. The number of points scored and attendance for the games last season are as reported below. Do these data support the coach's argument?

Table 3.0: Population and Scores data

Game	Points Scored	Attendance
1	54	378
2	57	350
3	59	320
4	80	478
5	82	451
6	75	250
7	73	489
8	53	451
9	67	410
10	78	215
11	67	113
12	56	250
13	85	450
14	101	489
15	99	472

(10 marks)

QUESTION FIVE

- a) Explain the limitations of Analysis of Variance (ANOVA) (6 marks)
- b) Does the rate of voter turn-out vary significantly by the type of election? A random sample of voting precincts displays the following pattern of voter turn-out by election type. Assess the results for significance

Ward	National Assembly	Presidency
32	40	30
45	48	40
42	50	40
47	55	45
48	55	45
50	60	50
51	65	52
55	70	55
60	75	55
65	75	60

(14 marks)