



MACHAKOS UNIVERSITY

University Examinations for 2016/2017 Academic Year

SCHOOL OF BUSINESS AND ECONOMICS

DEPARTMENT OF ECONOMICS

SECOND YEAR FIRST SEMESTER EXAMINATION FOR DEGREE IN

BACHELOR OF ECONOMICS AND FINANCE

EAE 201: STATISTICS FOR ECONOMIC I

DATE: 2/6/2017

TIME: 8:30 – 10:30 AM

INSTRUCTIONS:

Answer Question One and Any Other Two Questions

QUESTION ONE (COMPULSORY 30 Marks)

- a) i. Suppose bread is sold at three prices sh.17, shs 19 and shs 22 a loaf. Calculate the arithmetic mean price of a loaf. (3 marks)
- ii If the weekly sales of the three types of bread in (i) are 50,000, 30,000, and 20,000 loaves respectively, calculate the weighted arithmetic mean price of a loaf. (3 marks)
- iii A researcher finds that for 20 women in a particular industry, the mean annual salary is shs 434,000. After having completed the computation the researcher discovered that the salary of the woman with the highest income was recorded as shs 575,000, should actually have been recorded as shs 714,000. Determine the mean annual salary using the correct value. (4 marks)

- b) i Compare the three most commonly applied measures of central tendency in statistical data. (12 marks)
- ii Suppose the weekly wages of males and females have the following properties:
- Males: Mean = 3,500, Standard deviation = Shs 350
- Females: Mean = 2,800, Standard deviation = Shs 336
- Determine the relative dispersion for males and females (5 marks)
- iii Which of the two wages show greater relative variability? (3 marks)

QUESTION TWO (20 MARKS)

- a) Explain the following terms
- i. Quartile deviation (3 marks)
- ii. Coefficient of variation (3 marks)
- iii. Coefficient of skewness (3 marks)
- b) The following is a frequency distribution of 200 rents. The rents are normally or symmetrically distributed.

Rent (000) shs	Frequency
7.5 and under 12.5	12
12.5 and under 17.5	26
17.5 and under 22.5	45
22.5 and under 27.5	60
27.5 and under 32.5	37
32.5 and under 37.5	13
37.5 and under 42.5	5
42.5 and under 47.5	2
Total	200

Use a suitable formula and compute values for the following statistical measures

- i. Mean (3 marks)
- ii. Median (2 marks)
- iii. Mode (2 marks)

- c) Given the standard deviation of the distribution of rents in (b) is Kshs 7200. Calculate:
- The range within which about two-thirds of the observations lie. (2 marks)
 - The pearsonian coefficient of skewness (2 marks)

QUESTION THREE (20 MARKS)

- a) The means for the weight and height of a group of persons are 150 kilograms and 69 inches, respectively. The corresponding standard deviations are 10 kilograms for the weight and 2 inches for the height. Suppose a man's average weight is 160 kg and his average height is 72 in. is he relatively more above average in weight or height given standard deviations as 10kg and 2kg respectively? (3 marks)
- b) Explain the term "percentile" (3 marks)
- c) A university classified relative percentile position of its graduates in terms of their grade point average (GPA). The following data apply to a particular class having exactly 800 graduates.

GPA	Percentile
3.9	99
3.7	95
3.5	90
3.1	75
2.5	50
2.3	25

- Identify the first three quartiles (i.e, Q1,Q2 and Q3) and give appropriate interpretation in each case. (6 marks)
- Calculate the inter-quartile range (5 marks)
- Calculate the quartile deviation (3 marks)

QUESTION FOUR (20 MARKS)

- a) A researcher has a large distribution that is grouped. If the largest class is 20-24 and the smallest is 0-4.
- Find the mid-points (2 marks)
 - Calculate the range of the distribution (3 marks)
 - The range is unsatisfactory measure of dispersion. List its two disadvantages (4 marks)
- b) Using the following table lists the list of probability distribution of number of breakdown of a machine based on past data.

No of breakdown per week	Probability P (x)	X (PX)
0	0.15	0.00
1	0.20	0.20
2	0.350	0.70
3	0.3	0.90

The machine is expected to breakdown 1.8 times per week.

- Find the standard deviation. (6 marks)
- Using binomial formula find the following probability
 $P(x = 5)$ for $A =$ and $P = 0.6$ (5 marks)

QUESTION FIVE (20 MARKS)

- a) The political party and religious preference of 399 members of the 1972 US house of representatives were as follows

Religious Preferences	Political party	
	Democrat	Republican
Protestant	150	146
Roman Catholic	68	23
Jewish	10	2

- What proportion of members is
 - Democrats
 - Protestants(6 marks)

- ii. What is the proportion of democrats who are roman catholic (3 marks)
 - iii. What proportion of roman catholic members is democrat (3 marks)
 - iv. What is the relative frequency for the class of member who are;
 - Protestant and Republican (3 marks)
- b) X is a discrete variable that possess a binomial distribution. Using binomial formula ,find the probability of the following
- i. $P(X < 4)$ for $n = 7$ and $P = 0.8$ (5 marks)