

**W1-2-60-1-6**

**JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY**

**UNIVERSITY EXAMINATIONS 2016/2017**

**THIRD YEAR FIRST SEMESTER UNIVERSITY EXAMINATION FOR THE DEGREE OF BPCM**

**HPS 2242: BUSINESS STATISTICS**

**DATE: NOVEMBER, 2016 TIME: 2 HOURS**

**INSTRUCTIONS:**

 **QUESTION ONE: 30 MARKS**

a. Define the following terms as used in statistics:-

 i. Discrete Random variable

 ii. Continuous Random variable

 iii. Norminal variable

 iv. Ordinal variable

 v. Qualitative variable [8 marks]

b. Define the term frequency distribution table. [2 marks]

c. Consider the data below: [2 marks]

 15.0 23.7 19.7 15.4 18.3 23.0 17.5 20.8 13.5 20.7

 17.4 18.6 12.9 20.3 23.7 21.4 18.3 29.8 17.1 18.9

 10.3 26.1 15.7 24.0 17.8 32.8 23.2 24.5 27.1 16.6

 9.2 16.5 30.8 29.6 24.6 12.5 21.6 28.4 27.9 22.4

Organize the above data into a grouped frequency table. [5 marks]

d. Use the above table to compute:-

 i. Mean ii. Median iii. Model clan

 iv. Variance v. Standard deviation [10 marks]

e. Write down the sample space of choosing an :-

 i. Integer at random from 1 to 10, inclusive

 ii. What is the probability of choosing a 4 in the above sample space.

iii. Write down the sample space of even numbers from the above sample space.

iv. What is the probability of choosing a 4 given that they are even numbers. [5 marks]

 **QUESTION TWO:**

a. In a survey of 50 students at JKUAT-IT centre it was found that 36 are in Diploma Program, 20 have personal computers and only 3 are neither Diploma students nor have computers. With the help of venn diagrams or otherwise find the probability that a randomly selected student.

 i. Has a computer but is not in Diploma program.

 ii. has a computer if he/she is in Diploma program. [10 marks]

b. For the data 23, 10, 25, 15, 22, 17, 24, 32. Calculate the following:-

 i. Median ii. 3rd quarter iii. 5th decile

 iv. 80th Percentile vi. The 5.5th value [10 marks]

**QUESTION THREE: 20 MARKS**

a. Define the following terms as used in business statistics:-

 i. Decision theory.

 ii. Decision model. [4 marks]

b. Briefly highlight the use of the above statistical parameters in the world of business. [4 marks]

c. Distinguish between description statistics and inferential statistics.

[4 marks]

d. Construct the fixed base index numbers from the following data, taking 2009 as base year: [4 marks]

 Year 2009 2010 2011 2012

 Price Ksh. 120 125 140 150

e. A bag contains 5 fruits 2 of them ripe and 3 unripe. Two fruits are randomly drawn one after the other without replacement. Find the probability that 2 ripe fruits are picked. [4 marks]

**QUESTION FOUR:**

a. Define Boye’s Theorem. [3 marks]

b. Briefly highlight the use of the above theorem in the world of probability. [3 marks]

c. In a post office, 3 clerks are assigned to process incoming mail. The first clerk B1, process 40%, the 2nd clerk, B2, process 35% and the third clerk, B3 process 25% of the mail. The 1st clerk has an error of 0.04, the 2nd clerk has an error of 0.06 and the third an error of 0.03. A mail selected at random from a day’s output is found to have an error. The post master wishes to know the probability that the mail was processed by the 1st, 2nd or 3rd clerk respectively.

 a. Complete the conditional probability:-

 i) p(B1/A) ii) p(B2/A) iii) P(B3/A) [10 marks]

 Which clerk contributed the most error in the processing a mails and by what percentage. [4 marks]

**QUOTATION FIVE: 20 MARKS**

a. Define the term skewness. [3 marks]

b. Define the term ill-mode. [2 marks]

c. Calculate the Karl -person coefficient of skewness from the following date and comment on your results.

Marks (move than) 0 10 20 30 40 50 60 70 80

No of students 150 140 100 80 80 70 30 14 0

[15 marks]