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**UNIVERSITY EXAMINATION 2016/2017**

**SCHOOL OF BUSINESS AND ECONOMICS**

**DEPARTMENT OF PHYSICAL SCIENCES AND MATHEMATICS**

**BBM/BCOM**

**VIRTUAL VARSITY**

**UNIT CODE: BMA3102 UNIT TITLE: BUSINESS STATISTICS II**

**DATE: JULY 2017 SUPP/SPECIAL EXAM TIME 2 HOURS**

**INSTRUCTION:**

**ANSWER QUESTION ONE AND ANY OTHER TWO QUESTIONS**

**QUESTION ONE (30 MARKS)**

1. Identify and explain FOUR primary data collection techniques. **(8 marks)**
2. Differentiate by giving examples One tailed and two tailed tests in hypothesis testing. **(4 marks)**
3. The standard deviation of the life times of a sample of 200electric light bulbs in 100 hours. Find the (a) 95% and (b) 99% confidence limits for the standard deviation of all such electric light bulbs. **(6 marks)**
4. A large company’s sales manager has tabulated the price $ against engine capacity (c.c) for 10 models of car available for salesmen as follows:

Price 4900 5200 6160 7980 7930 3190 3190 5160 4050 7150

Capacity 1000 1270 1750 2230 1990 600 650 1500 1450 1650

Required: obtain the least squares regression line of price on engine capacity

 **(6 marks)**

1. From a random sample of 529 televisions off the production line it was found that each set had 8 faults on average with a standard deviation of 3.45 faults. What are the confidence limits for the production as a whole:
2. at the 99% level
3. at the 95% level **(6 marks)**

**QUESTION TWO (20 MARKS)**

1. Identify and briefly discuss THREE non-probabilistic sampling methods

 **(6 marks)**

1. Surveys were conducted in Nairobi and Kampala to ascertain viewer’s habits regarding channel 4 television. In Nairobi 1000 people were interviewed and 680 said they viewed channel 4. In Kampala 600 people were interviewed and 444 said they viewed channel 4. Is there a significant difference between the viewing habits in Nairobi and Kampala?
2. At the 5% level?
3. At the level 1% level? **(8 marks)**
4. Discuss THREE conditions to be met for application of *x2* (chi square test).

 **(6 marks)**

**QUESTION THREE (20 MARKS)**

1. A company makes a micro-chip in batches of 6. In a sample of 100 batches the following number of rejects were found:

**Number of rejects found in batch** **Number of batches**

0 17

1 32

2 21

3 18

4 9

5 2

6 1

**Total 100**

Test at the 5% level to see whether the frequency of rejects in a batch conforms to a binomial distribution.

**QUESTION FOUR (20 MARKS)**

1. A firm ordered sacks of chemicals with a nominal weight of 50 kg. A random sample of 8 sacks was taken and it was found that the sample mean was 49.2 kg with a standard deviation of 1.6 kg. The firm wishes to test whether the mean weight of the sample of sacks is significantly less than the nominal weight, using a 5% level of significance. **(10 marks)**
2. Identify THREE assumptions of Mann Whitney U test. **(6 marks)**
3. Using examples briefly explain TWO uses of Mann Whitney. **(4 marks)**

**QUESTION FIVE (MARKS)**

1. A sample of 400 electors selected at random gives 51% majority to political party XY. Could such a sample have been drawn from population with a 50 – 50 division of political opinion. Test at 5% level. **(10 marks)**
2. Draw a normal curve depicting the acceptance region for the above (question, a) and explain the decision for accepting or rejecting the hypothesis.

  **(10 marks)**