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MAASAI MARA UNIVERSITY

**REGULAR UNIVERSITY EXAMINATIONS**

**2016/2017 ACADEMIC YEAR**

**THIRD YEAR SECOND SEMESTER**

**SCHOOL OF BUSINESS AND ECONOMICS**

**BACHELOR OF BUSINESS MANAGEMENT**

**COURSE CODE: BBM 350**

**COURSE TITLE: MANAGERIAL STATISTICS**

**DATE: 24TH APRIL 2017 TIME: 2.00PM-4.00PM**

**INSTRUCTIONS TO CANDIDATES**

* ***Answer question ONE (compulsory) and any other THREE***
* ***Question one carries 25 marks***
* ***All other questions carry 15 marks***

 *This paper consists of 4 printed pages. Please turn over*

**QUESTION ONE**

a) Citing appropriate examples, explain the rationale of sampling in statistical estimation and hypothesis testing **(5marks)**

b) A marketing research firm wants to estimate the share that foreign companies have in the American market for certain products. A random sample of 100 consumers is obtained, it is found that 34 people in the sample are users of foreign made products, the rest are users of domestic products. Give a 95% confidence interval for the share of foreign products in the market

 **(10marks)**

c) Twenty per cent of items produced on a machine are outside stated tolerances. Determine the probability distribution of the number of defectives in a pack of five items. Draw a probability histogram to represent the distribution **(10marks)**

**QUESTION TWO**

a) Briefly explain the properties or the characteristics of a good population estimator **(4marks)**

b) A random sample of 500 people was chosen from a locality and 65 people were found using a given brand of bathing soap. Calculate the mean proportion and standard deviation of proportions **(5marks)**

c) A researcher is worried about the ever increasing trend of business close down in a certain locality and wants to estimate the proportion of businesses closing down during a certain period of hard economic times. If he took a random sample of 150 businesses in that locality, and finds out that 60 of them had closed down. Find;

(i) 95%

(ii) 90% and

(iii) 99% confidence intervals for the proportion of all the businesses that are closing down during the defined economic periods **(6marks)**

**QUESTION THREE**

During an internal audit, an accountant had to sample a very large batch of invoices for value and for errors. A simple random sample of 200 invoices revealed a mean value of Ksh 90 with a standard deviation of Ksh 40. **Required:**

a) Find the standard error of the mean **(3marks)**

b) Find 99% confidence limits for the mean value of the whole batch

 **(3marks)**

c) Explain briefly why it is not possible to find 100% confidence limit for the mean value of the batch from a sample **(3marks)**

d) Find 95% confidence limits for the error rate of the whole batch if 20 invoices showed errors **(3marks)**

e) Find the size of the sample required in (b) and (d) in order to double the accuracy of your answers **(3marks)**

**QUESTION FOUR**

A random sample of 100 recorded deaths in Kenya during the past year showed an average lifespan of 71.8 years with a standard deviation of 8.9 years. Does this seem to indicate that the average lifespan today is greater than 70 years at 1% level of significance? **(15marks)**

**QUESTION FIVE**

A researcher wishes to determine whether there is a relationship between the gender of an individual and the amount of alcohol consumed. He takes a random sample of 68 people and obtains the following data

|  |  |  |
| --- | --- | --- |
| Gender |  | Alcohol consumed |
| low | moderate | high |
| male | 10 | 9 | 8 |
| female | 13 | 16 | 12 |

At 0.05 significance level, can the researcher conclude that the amount of alcohol consumed is related to gender? **(15 marks)**