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UNIVERSITY EXAMINATIONS 2023/2024

SECOND YEAR SECOND SEMESTER EXAMINATION FOR DEGREE OF BACHELOR OF SCIENCE IN APPLIED ACCOUNTING

BFH 3273: ADVANCED BUSINESS CALCULATION

DATE: APRIL 2024   **TIME: 2 HOURS**

INSTRUCTIONS: Answer Question ONE and any other TWO questions.

QUESTION ONE (30 MARKS)

a) Explain the difference between the following terms;

    i.   Type l and type ll errors   (4marks)

    ii.   One tail and two tail test   (4marks)

    iii.   Normal distribution and t-distribution   (4marks)

b) Discuss the following methods of sampling;

    i.   Stratified sampling   (2marks)

    ii.   Multi-stage sampling   (2marks)

    iii.   Systematic sampling   (2marks)

c) Strike out the difference between point estimation and interval estimation. Give illustrations.   (4marks)

d) The mean lifetime of light tubes produced by a company is supposed to be 1600hrs. a random sample of 100 light tubes is taken and its found that the mean life time is 1580 hrs with a standard deviation of 60hrs. test the hypothesis. Use 5% significance level.   (4marks)

e) A random sample of 50 packets was taken out of 400 packets. The mean weight of these packets was 50grams and standard deviation 9 grams what is the mean weight of the population?   (4marks)

QUESTION TWO (20 MARKS)

a) Calculate the mean and standard deviation of the following data.
   12,15,19,34,46,65,79,84,108   (4amarks)

b) A batch of 5000 electric lamps have a mean life of 1000 hours and a standard deviation of 75 hours. Assume a normal distribution

Required;

   i.   How many will last up to 900hrs

   ii. How many will fail before 925 hrs

   iii. How may will be there between 950 hours and 1050 hours.

   iv. Given the same life, what would the standard deviation have to be to ensure that next more than 20% of lamps fail before 916 hours   (8marks)

c) A manufacturer of truck tyres claims that the mean mileage the tyre can be driven before the threads wears out is 65,000km. assuming the mileage wear follows the normal distribution and a standard of 4500km. In a sample of 50 tyres, the mileage was found to be 59500km.

Test whether this observation is different from the claim by the manufacture at 5% significance   (8marks)

QUESTION THREE (20 MARKS)

a) A manufacturer wishes to use a random sample to estimate the average nicotine content in cigarettes. The sampling error is 1.2 milligrams with a 95% confidence coefficient. The population standard deviation is 5 milligrams what sample size should the company use in ordered to satisfy these requirements.   (7marks)

b) A factory is producing 50,000 pairs of shoes dairy. From a sample of 500 pairs, 20% were found to be of sub-standard quality. Estimate the number of pairs that can be reasonably expected to be spoiled in the daily production and assign limits at 5% level of significance.   (7marks)

c) Discuss the advantages of sampling   (6marks)

QUESTION FOUR (20 MARKS)

a) An equal opportunities committee is conducting an investigation if in comparable jobs men and women workers are paid identical wages. The following information is obtained on 75 males and 64 females.

SALARY	MALE	FEMALE
Mean (shs.000)	11,530	10,6200
S.D (shs 000)	780	750

Construct a 95% significance test for the difference between the mean of salaries,

(10marks)

b) Two Research Laboratories have independently produced drugs that provide relief to arthritis suffers.

The first drug was tested on a group of 100 victims and produced an average of 8.5 hours relief with a standard deviation of 2 hours. The second drug was tested on 75 patients produced an average of 7.8 hours of relief with standard deviation of 1.5 hours.

At the significance level of 1% does the first drug provide a significantly longer period of relief? (10marks)

QUESTION FIVE (20MARKS)

a) Explain the term statistical inference (5marks)

b) Discuss any four features of a good estimator (4marks)

c) Perform a chi-square square test on the following data. You MUST set your Null hypothesis first (11marks)

Programmes of TV watched

Age group	A	B	C
Under 30	120	30	50
30-44	10	75	15
45- Over	10	30	60