Bangladesh Open University

BBA Program

Semester: 221 (5th Level)

Course Title: Business Statistics for Decision Making **Date: 24 May 2024**

Instructions

- Answer all questions in your own handwriting on A4 size white paper.
- Fill in the cover page of your assignment with care.
- Enclose the photocopy of your ID Card with the assignment (next to the cover page).
- Don't make the spiral binding. Instead, make the soft binding.
- Submit the assignment to the respective course tutor and ensure his/her signature on your Assignment Acknowledgement Form (see page#4 of the Semester Calendar).

Questions

1. (a) "Theoretically, geometric mean is the best average in the construction of index numbers but in practice mostly arithmetic mean is used." Why?

   (b) Calculate Laspeyres', Paasche's, and Fisher's Ideal Index from the following data:

Commodity	Price	Value	Price	Value
A	10	100	8	96
B	16	96	14	98
C	12	36	10	40
D	15	60	5	25

2. (a) Suppose you are provided with a given time series data and asked to analyse its general pattern and fluctuations. Describe in detail the steps you would follow in determining the pattern of trend and whether a seasonal and/ or a cyclical component contributed to movements in the series.

   (b) The number of units produced during 2011 – 2018 are given below:

Year	:	2011	2012	2013	2014	2015	2016	2017	2018
Unit produced	:	56	55	51	47	42	38	35	32

   (i) Fit a straight line trend and obtain the trend values.

   (ii) Eliminate the trend. What components of the time series are thus left over?

   (iii) What is the monthly increase in the number of units produced?

3. (a) In a factory manufacturing pens. Machines X, Y, and Z manufacture 30, 30, and 40 percent of the total production of pens, respectively.

   Of their output 4, 5, and 10 percent of the pens are defective. If one pen is selected at random it is found to be defective, what is the probability that it is manufactured by machine Z?

   (b) The probability that any customer who enters the store will purchase Colgate toothpaste is 0.3. If 1,000 customers enter the store, what is the minimum number of Colgate toothpastes the store must have on hand, if the probability that will be out of stock is to be at most 1%?

Bangladesh Open University

BBA Program

Semester: 221 (5th Level)

Course Title: Business Statistics for Decision Making **Date: 12 July 2024**

Instructions

- Answer all questions in your own handwriting on A4 size white paper.
- Fill in the cover page of your assignment with care.
- Enclose the photocopy of your ID Card with the assignment (next to the cover page).
- Don't make the spiral binding. Instead, make the soft binding.
- Submit the assignment to the respective course tutor and ensure his/her signature on your Assignment Acknowledgement Form (see page#4 of the Semester Calendar).

Questions

1. (a) What is the difference between 'Statistic' and 'Parameter'? Explain, with examples, the methods employed for the estimation of population parameters based on sample means, difference of two means, sample proportion, and difference of the sample proportions.

   (b) A random sample of six castings drawn from a universe of 75 castings shows the following weight for each. Compute an interval estimate for μ at 2% level of confidence.

Casting No.	:	1	2	3	4	5	6
Weight (kg)	:	82.9	83.5	84.1	83.6	82.5	84.4

2. (a) Describe the various steps involved in testing of hypothesis.

   (b) Two brands of bulbs are quoted at the same price. A buyer tested a random sample of 100 bulbs of each brand and found the following:

	Mean life (hours)	S.D. (hours)
Brand I	1300	82
Brand II	1248	83

   Is there a significant difference in the quality of two brands of bulbs at 5% level of significance?

3. (a) Explain Yates's method of correction for small frequencies in contingency table.

   (b) Boys and girls were sampled from a school and tested for their mathematical skills. Their classification into well skilled and poorly skilled categories was as below:

	Mathematical Skills		
	Good	Poor	Total
Boys	50	10	60
Girls	20	20	40
Total	70	30	100

   Apply χ^2 test to find whether boys are better in mathematical skills to girls.

4. (a) What is 'analysis of variance' and where it is used? Give two suitable examples.

   (b) The performances of a class of 300 students in the subjects of Statistics and Finance were graded into four classes A, B, C, and D. The table below gives the cross tabulation of the number of students by grades in each of the two subjects:

	Statistics			
Finance	A	B	C	D
A	12	12	10	6
B	16	25	12	7
C	18	21	14	17
D	4	12	9	5

Test at significance of 5% and 1%, whether the performance can be inferred as independent.