

**International Islamic University Chittagong**  
 Department of Business Administration  
**Final Examination**

Trimester: Spring 2022

Course Code: STAT-4202

Time: 3 hours

[Answer any four (4) questions]

Program: MBA

Course Title: Business Statistics

Full Marks: 40

- 1.a) Define population, sample and sampling with example. What are advantages of sample survey over census? Distinguish between sampling error and non-sampling error. 4
- b) The monthly sales (in Tk.'000) of 35 companies are given below: 6  
 172, 182, 177, 195, 120, 97, 101, 94, 145, 147, 182, 184, 140, 137, 142, 139, 150, 89, 137, 142, 188, 176, 198, 185, 106, 120, 115, 151, 130, 92, 181, 101, 121, 132, 148.  
 (i) Draw a simple random sample of size 12  
 (ii) Estimate total monthly sale of the above companies and its standard error and give your comment.

- 2.a) What do you mean by Correlation & Regression? Define Correlation Coefficient and Regression Coefficient. Indicate some properties & uses of Correlation & Regression. 4
- b) The following data represent monthly income and expenditure of 10 families in a particular month: 6

Income('000 tk)	6	8	11	13	16	21	26	31	19	45
Expenditure ('000 tk)	5	8	10	12	14	19	23	28	17	43

- i) Fit an appropriate linear regression line expenditure on income.  
 ii) Estimate expenditure if income of a family is 20 thousand.
- 3.a) What is Index Number? Define with example Price Index Number, Quantity Index Number and Value Index Number. Also discuss the weighted index numbers. 4
- b) The following data show prices (Tk) and quantities (kg) of different commodities: 6

Commodities	2019		2020	
	Price	Quantity	Price	Quantity
A	11	21	14	25
B	16	23	17	25
C	17	18	20	30
D	21	10	22	11

- i) Calculate Laspeyre's and Paasche's price index numbers and comment.  
 ii) Show that Fisher's index number is an ideal index number.

4.a) What is the forecasting of time series analysis? Discuss the components of time series. What are the methods of measuring trend? 4

b) The following table gives annual dividends per share as given in annual report of a corporation: 6

Year :	1992	1993	1994	1995	1996	1997	1998	1999	2000
Dividend per share:	162	170	175	185	200	210	210	220	230

- i) Fit a linear trend by least square method.
- ii) Estimate annual dividend per share in 2004.

5.a) What is statistical quality control? Briefly describe the variations of quality of product. State the uses of control chart. 4

b) Control on measurements of pitch diameter of thread in aircraft fittings is checked with five successive items measured at regular intervals, such five samples are given below: 6

Sample	Measurement on each item of 5 item per hour				
1	43	44	43	47	42
2	42	40	44	42	41
3	40	40	42	40	42
4	42	43	42	42	45
5	44	43	46	47	44

- (i) Construct the R and  $\bar{X}$  charts.
- (ii) What inference do you draw from these quality control charts?

6.a) Define probability of an event. Define with example: i. Sample space and ii. Conditional probability. Derive the laws of probability for the two events A and B. 4

b) From a survey involving 1000 people in a certain city, it was found that 500 people had tried a certain brand of diet cola, 600 had tried a certain brand of regular cola, and 200 had tried both types of cola. If a resident of the city is selected at random, what is the probability that the resident has tried; 6

- i) The diet or regular cola?
- ii) Only one cola?
- iii) Regular cola given that the resident has tried diet cola?