International Islamic University Chittagong
Department of Economics & Banking
Final Examination
Program: BSS (Hons.) in E&B
Semester: Spring-2023

Course Title: Elementary Statistics **Time: 2.5 Hours**
Course Code: STAT-1201 **Full Marks: 50**

[NB: Answer the following questions. All parts of a question must be answered serially. Figures in the right margin indicate full marks.]

QN	Description of Question	Marks	CLOs & PLOs	Cognitive Learning
1(a)	What is the coefficient of variation (CV)? When is CV more appropriate than variance?	3	CLO-2 PLO-3	Understanding Evaluating
1(b)	The frequency distribution below indicates how many hours a randomly chosen group of 400 industrial workers worked each month.	7		

Number of hours worked per month	120-130	130-140	140-150	150-160	160-170	170-180	180-190
Number of workers	45	55	58	57	69	61	55

Estimate
i) Standard deviation (ii) Coefficient of variation.

2(a)	Differentiate between absolute and relative dispersion measures. Which measurement, and why, is the best one for dispersion?	3	CLO-2 PLO-3	Understanding /Remembering Evaluating
2(b)	The following data lists the eight most recent ODI cricket matches for two batters: Batter-A: 65, 68, 25, 78, 85, 51,11,37. Batter-B: 40, 100, 35, 81, 28, 61,56, 0. (i) Who has the highest average run as a batter? (ii) Who is the most reliable batter?	7		
3(a)	Define Raw moments and central moments. Discuss the shape of the distribution.	3	CLO-2 PLO-3	Understanding Evaluating
3(b)	The profits of 150 randomly chosen firms within a nation are the subject of the frequency distribution:	7		

Profits (in Lac Tk.)	Number of companies
70-90	10
90-110	110
110-130	20
130-150	15
150-170	5

Calculate the first four central moments and comment on the distribution's skewness and kurtosis.

4(a)	Give definitions for weighted and unweighted index numbers. For example, why is Fisher's index considered ideal, and how come it is?	3	CLO-3 PLO-4	Understanding /Analyzing

4(b) The following data shows the price and quantity of different commodities over the past two years: 7 **Applying**

Commodity	Price per unit		Number of units	
	2018	2020	2018	2020
A	6	10	50	56
B	2	2	100	120
C	4	6	60	60
D	10	12	30	24
E	8	12	40	36

i) Calculate Laspeyre's and Paasche's price and quantity index numbers and comments.

ii) Show that Fisher's index number is ideal.

OR

4(a) What do you mean by consumers price index? Discuss the steps involved in the construction of it. Also mention the uses of consumer's price index. 3 **CLO-3 PLO-4** **Understanding**

4(b) An enquiry into the budgets of middle-class families in Chittagong gave the following information: 7 **Evaluating**

Item	Food	Rent	Clothing	Fuel and electricity	Transport and others
Expenses on	35%	15%	20%	10%	20%
Price (2015)	150	50	100	20	60
Price (2019)	174	60	125	25	90

i) What changes in the cost-of-living index for 2019 have taken place as compared to 2015?

ii) What will be a person's actual income if his income is TK 40000?

5(a) What is statistical quality control? Briefly describe the variations in the quality of the product. 3 **CLO-3 PLO-4** **Understanding**

5(b) To examine the quality of an engineering product, ten samples of 100 items each were taken from a day's production, and the number of defective items in each sample was recorded as follows: 7 **Creating**

Sample	1	2	3	4	5	6	7	8	9	10
Defective	11	20	31	31	20	19	22	20	13	7

Construct a defective control chart and examine whether the process is under control.

OR

5(a) What is control chart? Why is it called Schwartz control chart? 3 **CLO-3 PLO-4** **Understanding**

5(b) Control on measurements of pitch diameter of thread in aircraft fittings in checked with 5 successive items measured at regular intervals, 5 such samples are given below: 7 **Creating**

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

Build the mean chat, and then infer the quality control chart.