

International Islamic University Chittagong
Department of Economics & Banking
Final Examination: Spring-2018
Program: BSS (Honours)

Course Code: STAT-1201

Course Title: Elementary Statistics

Time: 2.5 Hours

Full Marks: 50

Answer any Five of the following questions. All parts of a question must be answered sequentially. Figures in the right margin indicate full marks.

1. (a) What are the purposes of the measures of dispersion? State the desirable properties of good measures of dispersion? 04
- (b) The frequency distribution given below gives the number of hours worked per month by randomly selected 350 workers of a factory: 06

Number of hours worked per month	120-130	130-140	140-150	150-160	160-170	170-180	180-190
Number of workers	37	45	48	56	66	60	38

Find (i) Variance (ii) Standard deviation and (iii) Coefficient of variation.

2. Particulars regarding the income of two factories are given below: 10

	Factory A	Factory B
Number of Employees	500	400
Average Income	1650	1750
S.D of income	90	71

- i. In which factory is the variation in income greater?
 - ii. Which factory shows more homogeneity in distribution of income?
 - iii. Which factory shows more consistency in distribution of income?
 - iv. What is the combined standard deviation and combined mean of the factory A and B put together?
 - v. A person got job in both the factories, which factory will he prefer to join?
3. (a) Define skewness. What are the possible shape characteristics of a distribution in measuring skewness? 04
- (b) The arithmetic mean, mode, and standard deviation of a distribution are 37.70, 36.67, and 8.29. Compute skewness and comment on the shape and characteristics of the distribution. 02
- (c) Describe various types of Kurtosis. The first four central moments are 0, 2.5, 0.7 and 18.75, find β_1 and β_2 . Comment on the shape and characteristics of the distribution. 04
4. (a) What are the reasons behind to understand correlation analysis? Prove that the value of correlation coefficient lies between -1 to +1. 05
- (b) A company gives on the job training to its salesmen which are followed by a test. It is considered whether it should terminate the services of any salesman who does not do well in the test. 05

Test Scores	14	19	24	21	26	22	15	20	39
Sales in thousand taka	31	36	48	37	50	45	33	41	39

Compute the correlation coefficient between the test scores and the sales. Does it indicate that the termination of the service of salesman with low test scores is justified?

5. The following data give the ages and blood pressure of 10 women.

Age (X)	56	42	36	47	49	42	60	72	63	55
Blood Pressure(Y)	147	125	118	128	145	140	155	160	149	150

- Determine the regression equation of blood pressure on age. 03
 - Estimate the blood pressure of a woman whose age is 45 years. 01
 - Determine the regression equation of age on blood pressure. 03
 - Estimate the age of a woman whose blood pressure is 120. 01
 - Calculate the correlation coefficient using original formula and regression coefficient. 02
6. (a) Explain the coefficient of determination r^2 . Why do you need to understand coefficient of Determination? 04
- (b) The following summary data refers to the rainfall and production of a robi crop in a particular region: 06

	Rainfall (In inches)	Production (In quintals)
Mean	29	40
Standard deviation	3	6

Coefficient of correlation between rainfall and production is 0.8.

- Find the regression line of production on rainfall.
 - Find the most probable production corresponding to a rainfall of 40 inches.
7. Write short note on following(any two): 5*2= 10
- (a) Find the missing information from the following: 05

	Group 1	Group 2	Group 3	Combined
Number	50	?	90	200
Standard deviation	6	7	?	7.746
Mean	113	?	115	116

- Suppose $Q_1 = 20$ and $Q_3 = 50$ for a symmetrical distribution, find Quartile Deviation, Mean Deviation, and Standard Deviation of the Distribution. 02
- Distinguish between Simple correlation and Simple Regression Analysis. 03

End.