

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

Course Title: Statistics for Economists
 Course Code: STAT-3503

Time: 1.5 Hours
Full Marks: 30

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

Q/N	Description of Question	Marks	CLOs & PLOs	Cognitive Learning
1(a)	Why estimation is essential? Mention the criteria of a good estimator. Illustrate 95% confidence interval of population mean.	3	CLO-2 PLO-1	Understanding
1(b)	A sample of size 28 is taken from a normal distribution with standard deviation 3, the sample mean is 50. (i) Measure a 95% confidence interval for population mean μ of the distribution and interpret. (ii) Measure a 99% confidence interval for population mean μ of the distribution and interpret (iii) Also estimate the size of samples in both cases required to obtain a width of maximum 2.	7		Evaluating
2(a)	Two types of batteries are tested for their length of life and the following data are obtained: Type A (Hours): 450, 500, 600, 900, 850, 750, 930, 750, 800, 750, 630, 450, 620 Type B (Hours): 360, 530, 420, 620, 720, 420, 560, 850, 650, 450, 610. Construct a 95% confidence interval for the difference between the two means.	5	CLO-2 PLO-1	Creating
2(b)	A survey was made on the opinion of mobile phone users of a particular operator whether the service provided by them is sufficient to satisfy a customer. 1500 users were randomly selected and 900 of them answered in affirmative. Construct a 95% confidence interval for the corresponding true proportion of negative answers regarding such opinion of all users.	5		Creating/ Evaluating
3(a)	Explain the purpose of stratification in carrying out a sample survey. Explain the concept of proportional allocation in context to stratified random sampling.	3	CLO-1 PLO-1	Remembering/ Understanding
3(b)	The following data refers to the income (Lac Tk.) of 50 small firms and it is classified into three groups according to income: Group-I: 47, 41, 42, 39, 38, 36, 36, 34, 37, 38, 32, 31, 39, 41, 47, 40, 32, 43, 44, 46, 40, 48. Group-II: 56, 52, 54, 49, 57, 58, 51, 52, 57, 52, 51, 49, 59, 60, 59, 61, 63. Group-III: 68, 63, 51, 68, 68, 63, 61, 60, 63, 60, 69 (i) Draw an appropriate random sample of size 10. (ii) Estimate average income of the firms. (iii) Find the standard error of the estimate and comment.	7		Evaluating
OR				
4(a)	Explain the procedure of conducting quota sampling. How does it differ from judgment sampling or convenient sampling?	3	CLO-1 PLO-1	Remembering/ Understanding
4(b)	A market survey was conducted to 45 respondents in a market area regarding the acceptability of a new product. The scores of the respondents on appropriate sales are as follows: 117, 250, 226, 338, 377, 366, 235, 280, 480, 251, 242, 440, 425, 331, 455, 427, 378. 151, 411, 450, 309, 451, 301, 339, 891, 401, 314, 242, 340, 242, 430, 444, 365, 332, 800, 300, 601, 602, 389, 487, 560. (i) Draw a systematic random sample of size 9 using random number table. (ii) Estimate sample mean and its standard error and comment	7		Evaluating