

PARUL UNIVERSITY
FACULTY OF LAW
I-B.B.A. LL.B. Examination Summer 2017-18

Semester: 4

Date: 18/05/2018

Subject Code: 17300254

Time: 10:30AM TO 01:00PM

Subject Name: BUSINESS STATISTICS-II

Total Marks: 60

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 Do as directed: (All Compulsory)**(15)**

- 1 The shape of the Normal Curve is
 - a) Bell Shaped
 - b) Flat
 - c) Circular
 - d) Spiked
- 2 The process of drawing a sample from a population is known as _____.
 - a) Census
 - b) Sampling
 - c) Survey research
 - d) None of the above
- 3 Which of the following is true of the null and alternative hypotheses?
 - a) Exactly one hypothesis must be true
 - b) both hypotheses must be true
 - c) It is possible for both hypotheses to be true
 - d) It is possible for neither hypothesis to be true
- 4 In semi averages method, we divide the data into:
 - (a) Two parts
 - (b) Two equal parts
 - (c) Three parts
 - (d) Difficult to tell
- 5 An orderly set of data arranged in accordance with their time of occurrence is called:
 - a) Arithmetic series
 - b) Harmonic series
 - c) Geometric series
 - d) Time series
- 6 The area under a standard normal curve is _____.
- 7 The degrees of freedom for the Chi-Square test statistic when testing for independence in a contingency table with 4 rows and 4 columns would be _____.
- 8 When z-calculated value is more than z-tabular value then we _____ the null hypothesis.
- 9 We always test a null hypothesis against an alternative. (True or False)
- 10 For n=10 sample size, which test we are using?
- 11 What is one-tailed test ?
- 12 Define Stratified random sampling.
- 13 Define: Uniform Distribution
- 14 Name any one method that are commonly used for studying and measuring the trend component in a Time Series.
- 15 Write one advantage of Simple Random Sampling.

Q.2 Write short notes on : (Each of three mark)**(15)**

- 1 10 observations are obtained for a distribution are as under: 7,4.4,4.9,1.3 ,2.6 ,6.2 ,3.5, 3.4 , 2.1 ,2.2 .Test the hypothesis that the population median is more than 2,using One Sample sign Test.
- 2 Fit a trend line to the following data by the method of semi-averages.

Year	2000	2001	2002	2003	2004	2005	2006
Sales in Lac Units	200	150	120	155	185	105	100

- 3 In a large consignment of apples, 64 fruits out of a sample of 400 fruits are found to be bad. Test the hypothesis that the population proportion of bad apples in the consignment is 20. (Use 1% level of significance)
- 4 In a big city 480 men out of a sample of 800 men are smokers. Does this information support the hypothesis that the majority of men in the city are smokers? (Use 5% level of significance)
- 5 A personnel specialist of a major corporation is recruiting a large number of employees for an overseas assignment. During the testing process, management asks how things are going and she replies "Fine, I think the average score on the aptitude test will be around 90", when management reviews 20 of the test results compiled, it finds that the mean score is 84 and S.D is 11.

Q.3(A) The result in the last exam of a sample of 100 students is given below: (08)

	1 st class	2 nd class	3 rd class	Total
Boys	10	28	12	50
Girls	20	22	2	50
Total	30	50	20	100

Can it be said that the performance in the exam depends upon gender. Use chi-square test.

OR

(A) Below are given the gain in weights (in lbs) of cows fed on two diets X and Y. (08)

Diet X	25	32	30	32	24	14	32			
Diet Y	24	34	22	30	42	31	40	30	32	35

Test at 5% level whether the two diets differ as regard their effects on mean increase in weight.

(B) X is normally distributed and the mean of X is 12 and the SD is 4. Find out the probability of the following: (07)

(i) $X \geq 20$ (ii) $X \leq 20$ (iii) $0 \leq X \leq 12$

OR

(B) (i) Distinguish between Population Inquiry and Sample Inquiry. (07)
(ii) Write three merits and demerits of sampling.

Q.4 Fit a straight line trend to the following data and estimate the likely profit for the year (07)

(A) 2012. Use Method of Least Squares.

Year	2003	2004	2005	2006	2007	2008	2009
Profit (in lakhs)	60	72	75	65	80	85	95

(B) Answer the following (Any four) (08)

- 1 Define Type I Error and Type II Error.
- 2 Write any four Characteristics of good sample.
- 3 A continuous random variable T has the following probability density function

$$f_x(u) = \begin{cases} 0, & u < 0 \\ u^2, & 0 \leq u \leq 1 \\ 0, & u > 1 \end{cases}$$

Find E(T)

- 4 (i) Doctors believe that the average teen sleeps on average no longer than 9 hours per

day. A researcher believes that teens on average sleep longer. Write H_0 and H_a

(ii) The school board claims that at least 60% of students bring a phone to school. A teacher believes this number is too high and randomly samples 25 students to test at a level of significance of 0.02. Write H_0 and H_a

5 Define Null and Alternative Hypothesis.