Seat No: _____ Enrollment No:_____

# PARUL UNIVERSITY

## FACULTY OF MANAGEMENT

## BBA., Summer 2017-18 Examination

**Semester: 4** **Date: 24-05-2018**
**Subject Code: 06191256** **Time: 02:00PM to 04:30PM**
**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.**

**A). Multiple choice type questions.** **(05)**

1. What are the parameters of normal distribution?
   a) $np, npq$ c) «, ±
   b) $n, p$ d) $p, q$
2. If Population is not homogeneous, then _____ sampling will be used.
   a) Stratified random sampling c) Sampling with replacement
   b) Sampling without replacement d) Simple random Sampling
3. Degree of freedom of mean is
   a) n-1 c) n-1
   b) n d) n+2
4. Parameter is constant value of _____.
   a) Statistics c) Sample
   b) Sampling d) Population
5. The Ratio-To-Moving average method is
   a) Shifting the trend c) Percentage of moving average method
   b) Secular trend d) Trend moving method

**B). Define the following.** **(05)**

1. Strata
2. Null hypothesis
3. Type-I error
4. Non- parametric test
5. Time series

**C). Direct questions.** **(05)**

1. Write probability function of exponential distribution.
2. If population size is 5 and sample size is 2, the how many samples drawn from population by sampling with replacement?
3. State only difference between large sample and small sample.
4. The observed frequency and expected frequency are equal then, what will be value of ¡ $^2$?
5. Write Full form of ANOVA table.

**Q.2 Answer the following questions.**

**A).** 1. The average height of a group of soldiers is 68.22” and the variance of heights is 10.89”. Out of 1000 soldiers how many soldiers do you expect to be at least 6 feet tall? **(04)**
[Table value = 0.3749]

2. 1000 units of a population are divided into three strata. The information is given below: **(03)**

| Stratum | Number of Units in stratum | Variance of stratum | Sample Size |
|---|---|---|---|
| 1 | 200 | 96 | 16 |
| 2 | 500 | 120 | 40 |
| 3 | 300 | 72 | 24 |

Find variance of stratified mean $V(\bar{y}_{st})$.

**B).**1. The average daily wage of 1000 labourers of a factory A is Rs 47 with S.D of Rs. 28. The average daily wage of 1500 labourers of a factory B is Rs. 49 with S.D of Rs. 40. Can it be said that the average daily wage factory B is more than the average daily wage of factory A? **(05)**

[ Table value =1.645]

2. Write properties of normal distribution **(03)**

**Q.3 Answer the following questions.**

**A)** 1. In a certain sample of 2000 families, 1400 families are consumers of tea. Out of 1800 Hindu families 1236 families consume tea. Use ¡ $^2$ test and state whether there is any significant difference between consumption of tea among Hindu and Non-Hindu families. **(04)**

[Table value=3.84]

2. Explain Stratified random sampling with example. **(03)**

**B)** 1. A sample of 4 observations from a normal population gave the following results: **(04)**

$\sum x_i = 7, \sum x_i^2 = 15$

Test the hypothesis that the mean of the population is 2.

[Table value=3.183]

2. In a hospital sequence of birth of Boy (B) and Girl (G) is given below: **(04)**

GGGGG, BBB, GGGGGG, BBB, GGGGGGGGG, BBBB, GGGGGGGGGGG, BBB, GGGGGGGGGG, BBBB.

Test whether distribution of birth of boys and girls is random at 5% level.

[Table value=1.96]

**Q.4 Attempt any two questions. (Each of 7.5 mark)** **(15)**

1. A stenographer claims that he can write an average speed of 120 words per minute. In 100 trials he obtained an average speed of 116 words per minute with a standard deviation of 15 words. Is claim justified? Also find confidence interval for 99% confidence limit.

[ Table value=1.645]

2. Fit a trend line to the following data by the method of least squares.

| Year | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|---|---|---|---|---|---|---|---|
| Sales | 80 | 90 | 92 | 83 | 94 | 99 | 92 |

3. Perform a two ways ANOVA on the data given below:

| | Treatment I | | |
|---|---|---|---|
| Treatment II | I | II | III |
| I | 30 | 26 | 38 |
| II | 24 | 29 | 28 |
| III | 33 | 24 | 35 |
| IV | 36 | 31 | 30 |
| V | 27 | 35 | 33 |

Use coding method subtracting 30 form given numbers.

[Table value (i) 2 degree of freedom and 8 degree of freedom is 4.46 (ii) 4 degree of freedom and 8 degree of freedom is3.84]

4. Five coins are tossed for 320 times and the following distribution of number of heads is obtained.

| Number of heads | 0 | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| Frequency | 8 | 42 | 116 | 90 | 52 | 12 |

Test the hypothesis that the coins are unbiased.

[ Table value=11.07]