

**PARUL UNIVERSITY**  
**FACULTY OF MANAGEMENT**  
**BBA Winter 2019 - 20 Examination**

Semester: 4

Subject Code: 06191256

Subject Name: Business Statistics-II

Date: 13/12/2019

Time: 2:00 pm to 4:30 pm

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 is the mean and standard deviation of normal distribution?
 

a) $\frac{1}{\sigma}, \sigma$	c) $\mu, \sigma$
b) $\frac{1}{\sigma}, \frac{1}{\sigma}$	d) $p, q$
2. If population size N and sample size n, then how many samples are there using sampling without replacement.
 

a) ${}^N C_n$	c) ${}^{N+1} C_n$
b) ${}^n C_N$	d) ${}^N P_n$
3. The constant value obtained from population
 

a) statistics	c) parameters
b) sampling	d) none of these
4. If observed frequency and expected frequency are equal then value of  $\chi^2$  is
 

a) 1	c) n
b) -1	d) 0
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. Sampling
2. Alternative hypothesis
3. Type-II error
4. Time series
5. Seasonal variation

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

1. Write probability function of normal distribution.
2. Write a limitation of random sampling.
3. What is the standard error of mean?
4. What is analysis of variance?
5. What are the components of time series?

**Q.2 Answer the following questions**

- A) 1. The daily profit of a business man is Rs.120 and the standard deviation of the profit is Rs.15. Find the number of days out of 365 days on which his profit will be less than Rs. 100. **(04)**  
 [Table value =0.4082]
2. A population is divided in three strata as follows. If 10% sample is to be taken find  $V(\bar{y}_{st})$ . **(03)**

Stratum	$N_h$	$n_h$	$S_h$
I	400	50	10
II	200	20	8
III	400	30	6

- B) 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? Use 5% level of significance. [ Table value =1.645] (05)
2. The average marks of 400 students in statistics are 52 and S.D of the marks is 8. If the student securing marks between 48 and 60 are given second class, Find the number of students getting second class. [ $P\{-0.5 \leq Z \leq 0\} = 0.1915$  &  $P\{0 \leq Z \leq 1\} = 0.3413$ ] (03)

**Q.3 Answer the following questions**

- A) 1. The number of road accidents on a high way during a week is given below. Can it be concluded that the proportion of accidents are equal for all days. (04)

Day	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Number of accidents	14	16	8	12	11	9	14

[Table value=12.59]

2. State three differences between population study and sample study. (03)
- B) 1. A machine is designed to produce insulating washers for electrical devices of average thickness of 0.025 cm. A random sample of 10 washers was found to have an average thickness of 0.024 cm. Test the significance of the deviation. [Table value=2.26] (04)
2. A sample of 400 students has a mean height of 171.38 cm. Can it be reasonably regarded as a random sample from a large population with mean height 171.17 cm and standard deviation 3.3 cm? [Table value Z=1.96] (04)

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

1. Ten individuals are chosen at random from a population and their heights are found to be in inches as 63, 63, 66, 67, 68, 69, 70, 70, 71, and 71. In the height of these data, test the hypothesis that the mean height of the population is 66. [Table value=2.26]
2. Fit a trend line to the following data by the method of least squares.

Year	2005	2006	2007	2008	2009	2010	2011
Sales	80	90	92	83	94	99	92

3. The following yields were obtained by using three fertilizers in different plots.

Fertilize r	Yields			
A	1	4	3	3
B	6	5	4	2
C	7	3	5	6

Test the hypothesis that there is no significant difference between fertilizers [Table value=4.26]

4. Define Chi-Square test.

Test the hypothesis that the coins are unbiased if 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

[Table value=11.07]