

PARUL UNIVERSITY
FACULTY OF MANAGEMENT
BBA Summer 2021 - 22 Examination

Semester:4

Subject Code: 06191256

Subject Name: **Business Statistics-II**

Date: 1-04-2022

Time: 10:30am To 1:00pm

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. (Each of 1 mark)****(05)**

1. Skewness of normal distribution is _____.

a) Positive skewness	c) zero
b) Negative skewness	d) None of these
2. Which among the following is not a parameter

a) Population Standard deviation	c) Population mean
b) Population Statistics	d) Population median
3. Binomial distribution tends to which distribution, when number of trials n is very large, p and q are not very small.

a) Normal distribution	c) Poisson distribution
b) Binomial distribution	d) Discrete probability distribution
4. Degree of freedom of correlation coefficient is _____.

a) n	c) $n-1$
b) $n+1$	d) $n-2$
5. The total number of samples of size 2 from the population of 10,12,20,22,26 without replacement is _____.

a) 10	c) 8
b) 16	d) 12

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

1. Analysis of Variance
2. Time Series
3. Two tailed test
4. Chi square test of goodness of fit
5. Simple random sampling

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

1. Differentiate between type I and type II error
2. What are the components of time series
3. What are the formulas for mean and variance of stratified random sampling?
4. Write any two uses of t - distribution.
5. What is the formula for standard error of difference of two mean?

Q.2 Answer the following questions.

- A) 1. Differentiate between Population study and sample study. (03)**
- 2. 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)
- B) 1. A stenographer claims that he can write at 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 the claim justified? Use 5% level of significance. (04)**
 (*Table value* = 1.96)

2. Below are given the gain in weight(in lbs) of cows fed on two diets X and Y. (04)

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 regards their effects on mean increase in weight (*Table value* = 2.131)

Q.3 Answer the following questions.

- A) 1. What is stratified sampling? Give its advantages and limitations. (03)

2. 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 the days by using Chi-square test (04)

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

(Table value=12.59)

- B) 1. The average life of 150 electrical bulbs of a company A is 1400 hours with a standard deviation of 120 hours. while the average life of 200 electric bulbs of company B is 1200 hours with a standard deviation of 80 hours. Is the difference between the average lives of the bulbs significant? (*Table value* = 1.96) (04)

2. A sample of 4 observation from a normal population gave the following results: $\sum x_i = 7$, (04)

$\sum x_i^2 = 15$. Test the hypothesis that the mean of the population is 2. (*Table value* = 1.96)

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

1. In a normal distribution 31% of the observation are less than 45 and 8% are more than 64. Find mean and standard deviation of the distribution. [*Z for 0.19 = -0.5 and for 0.42 = 1.4*]
2. In an industry, 200 workers employed for a specific job were classified according to their performance and training received/not received. Test independence of training and performance by chi-square test. The data are summarized as follows. (*Table value* = 3.84)

	Performance		
	Good	Not Good	Total
Trained	100	50	150
Untrained	20	30	50
Total	120	80	200

3. For studying characteristics the observations of a population are 6, 8, 12, 16, 20 and 22. How many samples of size 2, without replacement can be taken from it? Making a list of all the samples verify the following results:

(i) $E(\bar{y}) = \bar{Y}$

(ii) $V(\bar{y}) = \left(\frac{N-n}{N}\right) \cdot \frac{S^2}{n}$

(iii) $E(s^2) = S^2$

- 4.(1) Below are given the figures of production (million tonnes) of a sugar factory :

Year	2003	2004	2005	2006	2007	2008	2009
Production(m. Tonnes)	80	90	92	83	94	99	92

Fit a straight line trend to these figures.

- (2) Give comparison between Parametric and Non-Parametric tests.