

Seat No. : _____

AP-102

April-2022

B.B.A., Sem.-IV

CC-210 : Business Statistics

Time : 2 Hours]

[Max. Marks : 50

SECTION - I

1. (A) Explain Simple Random Sampling and if 10 observations of a population are divided into two strata as follows : 10

Stratum I	12	14	16	19	11	16
Stratum II	19	10	21	24	-	-

Find $V(\bar{y}_{st})$, if sample of size 3 is taken from the first stratum and that of size 2 is taken from the second stratum.

- (B) Write probability density function and 4 properties of Normal Distribution and if $P(x < 45) = 31\%$ and $P(x > 64) = 8\%$, find parameters of the distribution. 10

Table value :

$$Z = 0.5 \Rightarrow A = 0.19$$

$$Z = 1.41 \Rightarrow A = 0.42$$

2. (A) Answer the following : 10
- (1) The mean of a random sample of 500 is 90 with standard deviation of 15. Test the hypothesis that population mean is 95.
 - (2) Out of a sample of 650 students from Ahmedabad 62% favoured online teaching, Out of a sample of 430 students, 30% were against online teaching. check at 5% level of significance whether there is any significance difference between the two group of students in their attitude towards online teaching.

- (B) Answer the following : 10
- (1) The following information is about the Marks of students of SY A and SY B Class.

	SYA	SYB
Mean Marks	68.85	68.55
Standard Deviation	3.48	3.40
Sample Size	900	1100

Do the data indicate that the Marks of students from SYA are on the average more than that of students from SY B.

(2) In Ahmedabad 430 students out of a sample of 770 students watch IPL (Indian Premier League). Does this information support the hypothesis that the majority of students in Ahmedabad watch IPL ?

3. (A) Write any three difference between Large Sample Test & Small Sample Test and explain Paired t-test with necessary steps. 10

(B) Answer the following: 10

(1) A sample from a normal population gave the following information

$$n = 20, \sum x_i = 1020, \sum x_i^2 = 52760.$$

Test the hypothesis that population mean is 54.

$$[t_{(19, 0.05)} = 2.093]$$

(2) Is the difference in the performance of the following students significant ?

A	B	C	D
301	351	501	321
301	351	401	251
321	251	301	401
381	101	551	331

$$[F_{((3, 12), 0.05)} = 3.49]$$

4. (A) Fit Poisson Distribution. 10

x	0	1	2	3	4	5	6
f	110	90	75	50	12	6	4

$$[e^{1.4178} = 0.2422, [F_{(5, 0.05)} = 11.07]$$

(B) Answer the following : 10

(1) From a population with Median 6 following sample is drawn at random.
13, 9, 15, 8, 10, 14, 18, 4, 12, 10, 7, 5

Check whether the population median is 6 or not.

(Critical value at 5% is 2)

(2) Check randomness of following sample.

P, P, P, N, N, P, P, N, P, P, N, N, P, N, N, N, N

[Critical values of runs for $n_1 = 8$ & $n_2 = 10$ from Tables are :

($C_1 = 5$) & ($C_2 = 15$)]

SECTION - II

5. Multiple Choice Questions : (Attempt Any 10)

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- (1) The degrees of freedom to test the independence of two attributes in $r \times c$ contingency table is $(r - 1)(c - 1)$.
- (i) True
 - (ii) False
- (2) Degree of Freedom is the number of _____ observations of the variable.
- (i) Dependent
 - (ii) Independent
- (3) Analysis of Variance can be useful in testing equality of Variances.
- (i) True
 - (ii) False
- (4) Type II Error is also called Level of significance.
- (i) True
 - (ii) False
- (5) Mean of standard normal variate Z is 1
- (i) True
 - (ii) False
- (6) In Simple Random Sampling, the given population is ____.
- (i) Homogeneous
 - (ii) Heterogeneous
- (7) The main aim of a sample survey is to obtain reliable information about the population in less time and at a lower cost.
- (i) True
 - (ii) False
- (8) Mean, Median & Mode in _____ distribution is equal.
- (i) Poisson
 - (ii) Binomial
 - (iii) Hypergeometric
 - (iv) Normal
- (9) The tail of the normal curve does not meet 'x' axis.
- (i) True
 - (ii) False

- (10) Population characteristics under study is called ____.
- (i) Parameter
 - (ii) Sample
- (11) Randomness of the sample can be tested by Run Test.
- (i) True
 - (ii) False
- (12) Non-parametric Test procedure is also known as Distribution free test.
- (i) True
 - (ii) False
- (13) The area of the curve for the values of Z between $-\infty$ and 0 is
- (i) 0.5
 - (ii) 1
- (14) Chi-Square is a ____ distribution.
- (i) Discrete
 - (ii) Continuous
- (15) In F-test, the numerator is ____ the denominator.
- (i) less than
 - (ii) greater than
 - (iii) equal to