Seat No.: _____

May – 2021

B. B. A., Sem. – IV

CC - 210 : Business Statistics

Time : 2 Hours] **[Max. Marks : 50**

INSTRUCTIONS: I. All questions in **Section I** carry equal marks.
II. Attempt **Any 2** Question from Section I.
III. Question V in **Section II is compulsory and attempt 10 out of 15..**

Section – I

Q. 1 **(A)** Johanna Ltd. has taken the observations of a population are 10,12,20,22 & 26. How many different samples of size 2, without replacement can be taken from it? Preparing a list of the samples and verify the following results. **(10)**

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

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

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

(B) Jannet Ltd. follows Normal Distribution. If 33% of the observation are less than 45 and 8% are more than 64. Find mean and standard deviation of the distributions. **(10)**

Q.2 **(A)** With respect to Large Sample Test, Joyaan Ltd. found the average life of 150 electric bulbs of a company A is 1400 hours with a S. D. of 120 hours while the average life of 200 electric bulb of company B is 1200 hours with S. D. of 80 hours. Is the difference between the average lives of the bulbs significant? **(10)**

(B) Explain Confidence Interval with respect to Testing of Hypothesis – Large Sample Tests. **(10)**

Q.3 **(A)** Two horses A & B were tested for running a particular track. The time taken (In Seconds) taken by them are given below.

Horse A	28	30	32	33	33	29	34
Horse B	29	30	30	24	27	29	-

Can it be concluded that Horse A is faster than Horse B? **(10)**

(B) The following samples are drawn from two normal population by Viyaan Ltd. Test the hypothesis that the population variances are equal. **(10)**

Sample A	8	10	14	10	13	-	-
Sample B	12	15	11	16	14	14	16

Q.4 **(A)** Taksh & Jilvi Ltd. tossed five coins for 320 times and the following distribution of number of heads is obtained. **(10)**

Number of Heads	0	1	2	3	4	5
Frequency	8	42	116	90	52	12

(B) The following table extract from the Vallary Ltd. and shows the awake time in bed before getting to sleep by 10 young women and 10 old women.

Young Women	50	35	68	15	10	30	22	38	26
Old Women	110	162	157	80	70	105	100	122	50

Using U – Test, test the hypothesis that there is no difference in times to get to sleep between Young and Old – Women. **(10)**

Section – II

Q. 5 Give the following answer. **(Attempt any 10)** **(10)**

1. In _____ study, all units are examined hence it takes more time.

(A) Population (B) Sample (C) Both (D) None

2. If each and every unit of the population is given equal chance to enter into the sample, the method of sampling is known as _____.

(A) Simple Random Sampling (B) Stratified Random Sampling

(C) Both (D) None

3. Normal Distribution was first given by whom?

(A) De Movire (B) Karl Pearson (C) TK (D) None

4. Mean, Median and Mode are ____ in Normal Distribution.

(A) Equal (B)Different (C) Anything (D) None

5. A statistical hypothesis which is taken for the possible acceptance is called ____.

(A) Null Hypothesis (B) Hypothesis (C) Any (D) None

6. The fixed value of type – I error is called_____.

(A) Hypothesis (B) Level of Significance

(C) Null Hypothesis (D) None

7. If Ztab= 2.58, Zcal = 1.92, Ho may be _____.

(A) Rejected (B) Accepted (C) Both (D) None

8. The probability curve of t distribution is _____.

(A) Skew - Symmetrical (B) Symmetrical (C) Any (D) None

9. What is the sample size required for Small Sample Test?

(A) 100 or more than 100 (B) 30 or less than 30 (C) Any Size (D) None

10. ____ F test can be used for testing the hypothesis that the variances of the populations are equal.

(A) De – Movire's (B) Snedecore's (C) VT's (D) None

11. In such situations t test cannot be applied, _____ is used.

(A) K test (B) 3J test (C) ANOVA (D) None

12. The observations of the sample should be independent, This is the limitations of ____.

(A) A Test (B) Fisher

(C) Chi – Square Test (D) None

13. When there is Test of Independence of Two Variables in Chi – Square, What is formula of Degree of Freedom? variables?

(A) (r+1) (B) (c+1) (C) (r-1)(c-1) (D) None

14. One Sample Sign and Run test are the methods of which test?

(A) Parametric (B) T Test

(C) Non – Parametric (D) None

15. Calculate the Run from the following data.

TTT, VVVVV, T, VV, TT, V, TTTT, VVV, TTTTTT, VVVVVVV.

(A) 8 (B) 9 (C) 10 (D) 11

Statistical Value:

P=0.42, Z = 1.4.. P=0.19, Z = 0.5.

5% Level of Significance for Large Sample, Two tail Test = 1.96

D.F. = 11, Value of t = 1.796 – for One tail Test

D.F. = 4 & 6, Value of f = 4.53

D.F. = 5, Chi – Square value = 11.07