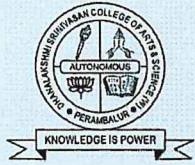


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**DHANALAKSHMI SRINIVASAN COLLEGE  
OF ARTS & SCIENCE FOR WOMEN  
(AUTONOMOUS)**



(For Candidates admitted from 2019-2020 onwards)

**UG DEGREE EXAMINATIONS APRIL - 2021**

**B.SC - MATHEMATICS**

**BIOSTATISTICS - II**

**Time: 3 Hrs**

**Max.Marks: 75**

**PART- A**

**CHOOSE THE CORRECT ANSWER.**

**(10\*1=10)**

- The regression analysis measures-----between X and Y.
  - dependence
  - independence
  - constant
  - none of these
- The equation of the line of regression on X and Y is-----,
  - $X - \bar{x} = r \frac{\sigma_x}{\sigma_y} (Y - \bar{y})$
  - $X - \bar{x} = \frac{\sigma_x}{\sigma_y} (Y - \bar{y})$
  - $X - \bar{x} = r \frac{\sigma_y}{\sigma_x} (Y - \bar{y})$
  - $X - \bar{x} = r(Y - \bar{y})$
- Bowley's coefficient of skewness is also known as-----,
  - moments
  - symmetry
  - quartile coefficient of skewness
  - negatively skewed
- The formula for Karl Pearson's Co-efficient of skewness is-----,
  - $\frac{3(M_0 - M)}{\sigma}$
  - $\frac{3(M - M_0)}{\sigma}$
  - $\frac{3(M + M_0)}{\sigma}$
  - $\frac{4(M - M_0)}{\sigma}$
- If  $P(E) = 1$  then E is called-----,
  - certain event
  - impossible event
  - favourable
  - exhaustive
- Probability of the impossible event is-----,
  - Non-zero
  - zero
  - neither zero nor non-zero
  - none of these
- If  $n \geq 30$  then the sample is called----,
  - large sample
  - small sample
  - both a) and b)
  - neither a) nor b)
- The procedure which enables us to decide whether to accept or reject the hypothesis is called
  - confidence limits
  - test of significance
  - large sample
  - small sample
- The formula for test of significance of difference of two means t is equal to-----,
  - $\frac{\bar{x}_1 - \bar{x}_2}{S \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$
  - $\frac{\bar{x}_1 + \bar{x}_2}{S \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$
  - $\frac{\bar{x}_1 + \bar{x}_2}{S \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$
  - $\frac{\bar{x}_1 - \bar{x}_2}{S \sqrt{\frac{1}{n_1} - \frac{1}{n_2}}}$
- Number of degrees of freedom associated with a set contingency table equal to----,
  - $(s + 1)(t - 1)$
  - $(s - 1)(t + 1)$
  - $(s - 1)(t - 1)$
  - $(s + 1)(t + 1)$

**PART - B**

**ANSWER ALL THE QUESTIONS**

**(5\*7=35)**

11. a) In a partially destroyed laboratory record of an analysis of correlation data, the following results only are legible:

Variance of  $X=9$ .

Regression equations:  $8X-10Y+66=0$ ,  $40X-18Y=214$ . What were

(i) the mean values of  $X$  and  $Y$       (ii) the correlation coefficient between  $X$  and  $Y$ .

**(OR)**

b) Find the most likely price in Bombay corresponding to the price of Rs. 70 at Calcutta from the following:

	Calcutta	Bombay
Average price	65	67
Standard deviation	2.5	3.5

Correlation coefficient between the orices of commodities in the two cities is 0.8.

12. a) First four moments about mean of a distribution are 0, 2.5, 0.7 and 18.75. Find coefficient of skewness and kurtosis.

**(OR)**

b) Calculate the first four moments of the following distribution about the mean and hence find  $\beta_1$  and  $\beta_2$ .

x:	0	1	2	3	4	5	6	7
f:	1	8	28	56	70	56	28	8

13. a) A bag contains 3 red, 6 white and 7 blue balls. What is the probability that two balls drawn are white and blue?

**(OR)**

b) A card is drawn from a well-shuffled pack of playing cards. What is the probability that it is either a space or an ace?

14. a) In two large populations, there are 30% and 25% respectively of fair haired people. Is this difference likely to be hidden in samples of 1200 and 900 respectively from the two populations?

**(OR)**

b) In a sample 300 units of a manufactured product, 65 units were found to be defective and in another sample of 200 units, there were 35 defectives. Is there significant difference in the proportion of defectives in the samples at 5% level of significance.

15. a) The means of two random samples of sizes 9 and 7 are respectively 196.42 and 192.82. The sum of squares of the deviations from the means are 26.94 and 18.73 respectively, can the samples be considered to have been drawn from the same normal population?

**(OR)**

b) Two random samples of sizes 8 and 11, drawn from the normal populations, are characterized as follows:

	Sample Size	Sum of observations	Sum of squares of observations
Sample I	8	9.6	61.52
Sample II	11	16.5	73.26

You are to decide if the two populations can be taken to have the same variance.

PART - C

ANSWER ANY THREE QUESTIONS

(3\*10=30)

16. Find the equation of the regression line.

X	1	2	3	4	5
y	-3	-1	0	1	2

17. From a moderately skewed distribution of retail prices for men's shoes, it is found that the mean price is Rs. 20 and the median price Rs. 17. If the coefficient of variation is 20%, find the Pearsonian coefficient of skewness of the distribution.

18. An urn contains 4 tickets numbered 1,2,3,4 and another contains 6 tickets numbered 2,4,6,7,8,9. If one of the two urns is chosen at random and a tickets is drawn from the chosen urn, find the probabilities that the ticket drawn bears the number

(i) 2 or 4, (ii)3, (iii)1 or 9.

19. Two samples of sizes 1000 and 800 gave the following results.

	Mean	S.D.
Sample I	17.5	2.5
Sample II	18	2.7

20. The theory predicts the population of beans in the four groups A,B,C and D should be 9:3:3:1. In an experiment among 1600 beans, the numbers in the four groups were 882,313,287 and 118. Does the experimental result support the theory?

