

Q.3 From a pack of 52 cards three are drawn at random. Find the chance that they are a king, and queen and a knave.

OR

The following results were obtained, when 80 batches of 10 seeds were allowed to germinate on a wet paper: $\beta_1 = \frac{2}{3}$ and

$\beta_2 = \frac{8}{3}$. Find the binomial distribution.

Q.4 Two lines of regression are given by $x+2y-5=0$ and $2x+3y-8=0$ and $\sigma_n^2=12$. Calculate the mean values of x and y , variance of y and coefficient of correlation between x and y .

OR

Find the both regression line for the following data :

$x :$	65	66	67	67	68	69	71	73
$y :$	67	68	64	68	72	70	69	70

Q.5 Two horses A and B were tested according to the time to run a particular track with the following results:

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

Test whether you can discriminate between two horses, You can use the fact that 5 percent value of t for 11 degrees of freedom is 2.20.

OR

Find the least value of r in a sample of 18 pairs from a bivariate normal population significant at 5% level.

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Supplementary Online Examination, September - 2022

BCA Part - III

(BCA 301)

Paper - I

STATISTICAL ANALYSIS

Max.Marks : 50

Time : 3 Hrs.

Min.Marks : 20

Note : Section 'A', containing 10 very short-answer-type questions, is compulsory. Section 'B' consists of short answer type questions and Section 'C' consists of long answer type questions. Section 'A' has to be solved first.

Section - 'A'

Answer the following very short-answer-type questions in one or two sentences : (1 × 10 = 10)

- Q.1 Write definition of combinations.
- Q.2 Write expansion of $(a+2b)^3$
- Q.3 Write formula of median in continuous series.
- Q.4 Write formula of mean deviation (M.D.)
- Q.5 Find the probability of throwing on even number of dice.
- Q.6 Write definition of Random variables.
- Q.7 Write formula of Karl Pearson's coefficient of correlation.
- Q.8 Write formula of regression line of y on x .
- Q.9 Write definition of student - t .
- Q.10 Write formula of chi-square (χ^2).

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Section - 'B'

Answer the following short-answer-type questions with word limit 150-200 : (3 × 5 = 15)

Q.1 Find n if $2^n \times p_2 + 50 = 2np_2$.

OR

Find the general term in the expansion of : $\left(x^3 + \frac{1}{x}\right)^{12}$

Q.2 Compute the mean of the following by short-cut method :

Class :	20-30	30-40	40-50	50-60	60-70
Frequency :	8	26	30	20	16

OR

Compute the mode of the following distribution :

Class :	0-7	7-14	14-21	21-28	28-35	35-42	42-49
Frequency :	19	25	36	72	51	43	28

Q.3 What is the chance that a leap year selected at random, will contain 53 Wednesdays.

OR

For Poisson's distribution, Prove that : $\sqrt{\beta_1} (\beta_2 - 3) m \sigma = 1$
Where symbols have their usual meaning.

Q.4 Find the coefficient of correlation between the value of x and y .

$x :$	1	3	5	7	8	10
$y :$	8	12	15	17	18	20

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OR

Fit a straight line to the following data regarding x as the independent variable :

$x :$	0	1	2	3	4
$y :$	1	1.8	3.3	4.5	6.3

Q.5 The nine items of a sample had the following values: 45, 47, 50, 52, 48, 47, 49, 53, 51 calculate the student- t , when mean (M) is 47.5.

OR

Find the student's- t for following variable values in a sample of eight: -4, -2, -2, 0, 2, 2, 3, 3 taking mean (M) is Zero.

Section - 'C'

Answer the following long-answer-type questions with word limit 300-350 : (5 × 5 = 25)

Q.1 In how many ways can a committee of 5 persons be formed from 6 men and 4 women so as to include at least 2 women?

OR

Which regular polygon has the same number of diagonals as sides?

Q.2 Find the relation between standard deviation and root mean square deviation.

OR

Calculate the standard deviation for following table :

Class :	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Frequency :	5	10	20	40	30	20	10	5

P.T.O.