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THE CES COLLEGE OF ARTS AND COMMERCE CUNCOLIM GOA
IV SEMESTER END EXAMINATION
BUSINESS STATISTICS

DATE: 20/04/19

TIME: 10.00 a.m. TO 12.00 noon

DURATION: 2 HRS

MARKS: 80

Instruction: 1) Attempt all questions.

2) Figure to the right indicate full marks.

3) Use of non-programmable calculator is allowed.

4) Log tables and graph papers will be supplied on request.

Q1: Answer the following

a) Explain correlation.

(3M)

b) A coin is tossed 3 times. Find the Probability distribution of number of tails.

(6M)

c) i) A die is thrown. Find the Prob. of getting an odd number.

(3M)

ii) Two cards are drawn from a pack of 52 cards. Find the chance of getting

(4M)

a) 1 king and 1 jack card

b) Both club Cards

OR

Q1: Answer the following

x) What is the purpose of regression analysis?

(3M)

y) Two cards are drawn one by one with replacement from a pack of cards. If getting a total of 9 on their uppermost faces is considered as a success, find the Probability distribution of numbers of successes.

(6M)

z) i) A purse contains 5 ten rupees coin, 6 Five Rs. Coins and 3 two rupees coins. A coin is drawn from this purse. Find the Prob. of getting five rupee coin.

(3M)

ii) A box contains 40 tickets numbered from 1 to 40. A ticket is drawn from this box. What is the chance that it bears a number divisible by 3 or 4?

(4M)

Q2: Answer the following:

a) Define Probability

(3M)

b) Find the Coefficient of correlation for the following data:

(6M)

x: 2 5 8 10 6 3 1

y: 4 6 7 8 5 4 3

c) The Probability that an individual will have a reaction after a particular drug is injected is 0.0001. If 20000 individuals are given the injection, find the Probability that more than 2 have a reaction. (Take $e^{-2} = 0.135$)

(7M)

OR

Q11: Answer the following

x) State and prove addition theorem on Probability.

(3M)

y) Consider the following data:

(6M)

Marks in English : 40 50 20 30 45

Marks in Hindi : 20 45 30 35 47

Find rank coefficient of Correlation.

z) 2000 candidates appeared for a certain examination. The mean marks were 59 & Standard deviation was 5. Assuming the distribution to be normal, find

(7M)

i) Proportion of students securing more than 64 marks.

ii) % of students securing below 49. (Take A (between $z=0$ & $z=1$) and A (between $z=0$ & $z=2$) = 0.4772).

Q.3 Answer the following.

a) Give 99% and 95% confidence limits for population mean.

(3M)

b) Find the equations of regression lines for the following data:

(6M)

x: 2 3 4

y: 3 5 7

c) A sample of 100 children have a mean weight of 50.6 kgs. Can it be regarded as a random sample from a large population with mean weight of 50 kgs and Standard deviation of 5 kgs at 5% l. o. s.? (7M)

OR

Q.III: Answer the following

a) Define critical region

b) For bivariate data with mean and variance as

(3M)

	x	y
Mean	6	4
Variance	0.5	2.5

And Covariance as 1, find equations of regression lines and hence find

- 1) x when y = -1 and 2) y when x = 2.
 z) The mean of random sample of 300 objects is 51.3 and the mean of another sample of 500 objects is 40. Can we conclude at 5% l. o. s. that both the samples are from the same population with Standard deviation 10? (7M)

Q 4: Answer the following:

- a) 3 Coins are tossed. Find the probability of getting at least one tail. (3M)
 b) Find the spearman's Coefficient of correlation for Dancer. (6M)

Dancer	1	2	3	4	5	6
Rank by judge 1	6	4	1	3	4	2
Rank by judge 2	4	1	6	5	1	3

- c) The Population of a town in the decennial Census was as given below: (7M)

Year	: 1971	1981	1991	2001	2011
Population	: 46	66	81	93	104

(in thousands)

Estimate the population of the town for the year 1975.

OR

Q IV: Answer the following

- x) Two dice are rolled. Find the probability of getting a total of 9 on their uppermost faces. (3M)
 y) Find rank coefficient of correlation for (6M)

R ₁	4	4	1	3	4	2
R ₂	4	1	6	5	1	3

- z) Marks obtained by the students in a certain subject are given as below: (7M)

Marks	: 0-20	20-40	40-60	60-80	80-100
No. of students	: 41	62	65	50	17

Estimate the numbers of students who scored less than 75 marks.

OR

Q5: Answer the following

- a) Define 1) Null hypothesis & 2) Alternative hypothesis. (3M)
 b) The incomes of a group of 100000 persons were distributed normally with mean 6000 and S.D 100. Find 1) the number of people having income between 5800 and 6300 and 2) the lowest income of richest 700 people (A(between z=0 & z=2)=0.4772 and A (between z=0 & z=3)= 0.4987). (6M)
 c) By Binomial expansion method, interpolate the missing figure. (7M)

Year	: 1965	1966	1967	1968	1969	1970
Index No	: 320	300	?	280	278	250

OR

QV) Answer the following

- x) Explain i) Type I error & ii) Type II error. (3M)
 y) The weekly wages of 1000 workers are normally distributed with mean Rs. 900 and Standard deviation of Rs. 50. Estimate the number of workers whose weekly wages will be 1) between 900 and 1000 & 2) more than Rs. 850 (Give that A(between z=0 & z=2)=0.4772; A(between z=0 & z=1)=0.3413) (6M)
 z) By using Lagranges formula for interpolation estimate profit for the year 1987 from the following data. (7M)

Year	: 1985	1986	1988
Profit(in lakhs Rs.)	: 8.5	12	10

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