

DCT'S S.S.DEMPO COLLEGE OF COMMERCE AND ECONOMICS

CUTIKA, ST.CRUZ GOA,

Semester IV End Examination, April 2017.

Sub: Statistical Techniques, Duration: 2Hrs, Marks: 80

Instructions :

1. Attempt all the questions.
 2. Figures to the RIGHT indicate FULL marks.
 3. Graph paper will be provided on request.
 2. Use of calculators is allowed.
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Q.No.1. Answer the following (16)

- a. State any three properties of coefficient of correlation. (3)
- b. A bag contains 6 white and 5 red balls. One ball is drawn at random without replacement and the ball of different colour is put in the bag, then the ball is drawn from the bag, what is the probability it is red. (7)
- c. The age at which the student passes his graduation is 20 years on an average with standard deviation of 5 years. Find 99% confidence interval for the mean age of 100 students who pass their graduation. (6)

OR

Q.No.I. Answer the following (16)

- x. What is the scatter diagram? (4)
- y. A hits 20 out of 30 targets. In a series of 5 games, what is the probability that A will hit 3 targets? (6)
- z. In a sample of 1000 TV viewers, 340 watch a particular program. Find 99% confidence limits of all viewers who watch the program. (6)

Q.No.2. Answer the following (16)

- a. State any three advantages of Statistical Quality Control. (3)
- b. Calculate Karl Pearson's coefficient of correlation for the data. (7)

X	15	18	17	25	28	19
Y	12	15	14	16	25	24

- c. The weekly wages of 1000 workers are normally distributed with mean ₹600 and standard deviation ₹100. (6)

i) How many workers earn wages less than Rs. 400?

ii) What percentage of workers earn between Rs.500 and Rs.600?

(Given area between $t=0$ and $t=1$ is 0.3413, area between $t=0$ and $t=2$ is 0.4771)

OR

Q.No.II. Answer the following (16)

- x. what is a control chart and explain any one in detail. (3)
- y. Find Spearman's Rank correlation for the data given below: (7)

X	18	16	15	16	15	15
Y	25	24	20	23	27	25

- z. A large population has mean height of 180 cms and standard deviation of 2 cms.

Find the probability that the mean height of 100 people is at most 180.2 cms.

(Given area between $t=0$ and $t=1$ is 0.3413, area between $t=0$ and $t=2$ is 0.4771) (6)

Q.No.3. Answer the following (16)

- a. Distinguish between the lines of regression. (3)
- b. A Coin is tossed 5 times find the probability of getting at least one head. (6)
- c. A coin is tossed 500 times, and the head appears 345 times. Test the hypothesis that the coin is unbiased. (7)

OR

Q.No.III. Answer the following (16)

- x. what is scatter diagram on P chart. (3)
- y. It observed that 10% of the students in college come from Marcel. If a random sample of 5 students is taken what the probability that two are from Marcel. (6)
- z. A typist claims that she can type at an average speed of not less than 45 words per minute. A sample of 36 minutes showed average of 42 words per minute with a standard deviation of 6 words per minute. Test the claim at 1% level of significance (7)

Q.No.4. Answer the following (16)

- a. what you understand by stratified sampling. (3)
- b. For the data given below, draw the X chart and comment. (7)

Sample no.	1	2	3	4	5	6
X	43	46	47	51	37	45
R	4	6	6	8	4	7

(Given $A_2 = 0.58$, $D_3 = 0$, $D_4 = 0.048$)

- c. A class consists of 10 boys and 20 girls of which half the girls and half the boys have blue eyes. Find the probability that a student chosen at random is a boy or has blue eyes. (6)

OR

Q.No.IV. Answer the following (16)

- x. State advantages of census survey over sample survey? (3)

- y. Represent the data by using c chart and comment. (7)

Sample No.	1	2	3	4	5	6
No.of defective bolts	15	16	19	14	11	10

- z. Two dice are thrown simultaneously. Find the probability that the sum on the uppermost face is square of an integer. (6)

Q.No.5. Answer the following (16)

- a. State and prove addition theorem on probability. (3)

- b.. If the two regression lines are $5y=3x-5$ and $3y=5x+2$, find \bar{x} , \bar{y} , r , b_{xy} and b_{yx} (7)

- c. If for Poisson distribution probability of four successes is equal to probability of five successes . Find the probability of six successes (6)

OR

Q.No. V. Answer the following (16)

- x. Explain Sample space, mutually exclusive event, and exhaustive event. (3)

- y. The locks produced by a certain company include only one defective in every 500 locks. 5 packets of 25 locks each are considered. Find the probability that in 5 packets, there is i) No defective, ii) at least one defective lock (6)

(Given $e^{-0.25} = 0.7788$, $e^{-0.4} = 0.6703$, $e^{-2.5} = 0.0821$)

- z.. Find the missing value if the relation between X and Y is linear. (7)

X	10	12	15	?	16
Y	8	10	14	15	19

