Goa Vidyaprasarak Mandal's
GOPAL GOVIND POY RAITURCAR COLLEGE OF COMMERCE AND ECONOMICS, PONDA-GOA
B.COM.(SEMESTER-IV)SUPPLEMENTARY EXAMINATION
MAY/JUNE 2016

STATISTICAL TECHNIQUES

Duration: 2 hours **Marks: 80**

INSTRUCTIONS:

1. **All Questions are compulsory.**

Q1. a) Explain the concept and utility of correlation? (3)

b) Calculate Spearman's Rank correlation coefficient for below data.

R1	1	2	3	4	5	6
R2	4	1	2	3	6	5

(6)

c) For the following data, obtain regression equation Y on X and also find Y when X=3.

X	2	4	6	7	8	10	12
Y	16	15	18	19	17	21	20

(7)

OR

Q1 x) Define i) Positive Correlation.
ii) Negative Correlation. (3)

y) If x=50, y=12, x=100, y=4, and r=0.9. Find the two regression equations. (6)

z) Compute Karl Pearsons Coefficient of correlation for the data given below and comment on its value.

Y:	5	10	5	11	12	4
Y:	1	6	2	8	5	4

(7)

Q2 a) How does Spearman's Rank correlation coefficient differ from Karl Pearson's Correlation coefficient. (3)

b) A consignment of 15 pens contains 2 defective pens. 2 pens are selected randomly from the consignment .What is the probability that both are defective? (6)

c) Calculate Spearman's rank correlation coefficient for below data.

Marks in English:	65	66	67	68	67	70	67
Marks in Accounting:	67	68	65	68	72	72	69

(7)

OR

Q2 x) Write the properties of correlation coefficient. (3)

y) One card is randomly drawn from a pack of cards. What is the probability that it is either a King or a Queen? (6)

z) If x=10 , y=8 , x=8, y=2, and r=0.5, find two regression equations, also find X when Y=12. (7)

Q3 a) Define: i) Mutually exclusive event
ii) Exhaustive event. (3)

b) The probability that a student passes an English test in 3/5 and the probability that he passes in Maths test is 4/10 and the probability that he passes in both English and Maths tests is 12/40. Find the probability the he passes in atleast one subject. (6)

c) Ten unbiased coins are tossed simultaneously. Find the probability of obtaining
i) Exactly 6 heads
ii) No head. (7)

OR

Q3 x) Define the terms: i) Mathematical Expectation
ii) Random Variable. (3)

y) If the probability that a man wins a prize of Rs 10 is 3/5 and the probability that he wins nothing is 2/5. Find the mathematical expectation. (6)

z) Articles are produced in a large factory and 3% of them are found to be defective. They are dispatched in batches of 100. What is the probability of getting
i) None defective ii) two defective. (7)
(Given e^{-3}=0.0502).

Q4 a) What are the different methods of sampling? (3)

b) Find the values of n, p and q , if mean of the binomial distribution is 4 and variance is 3. (6)

c) A random sample of 64 students showed the average weight as 50 kg with a standard deviation of 2 kg. Find the limits within which the average weight of the students lies almost certainly. (7)

OR

Q4 x) What are the merits and demerits of simple random sampling? (3)

y) For a Poisson distribution mean is 5. (6)
Find i) P(x=0)
ii) P(x=2)
(Given e^{-5}=0.00674).

z) A Sample of 100 mangoes was taken from a shipment of mangoes. The average weight was found to be 320gms, with a standard deviation of 20gms. Find 95% confidence interval for the average weight of mangoes in the shipment. (7)

Q5. a) Explain the terms: i) Null Hypothesis
ii) Alternative hypothesis. (3)

b) In a random sample of 400 apples from a large consignment, 20 apples are found to be of bad quality. Find 99% confidence interval for the percentage of bad quality in the consignment. (6)

c) From a factory producing metal sheets a sample of sheets is taken every hour and the data is obtained as below. Draw a control chart for Mean. (7)
(Given that A_2=58).

Sample No.	1	2	3	4	5	6	7	8	9	10
Mean Thickness of sheet	0.025	0.032	0.040	0.029	0.026	0.025	0.028	0.022	0.042	0.010
Sample Range	0.025	0.048	0.046	0.032	0.010	0.006	0.019	0.012	0.012	0.010

OR

Q5) x) Define the terms i) Type I error
ii) Type II error (3)

y) In a random sample of 400 persons 80 are smokers Find 95% confidence interval for the percentage of smokers in the sample. (6)

z) The following data refer to the number of defectives in 10 samples of sizes 100. Prepare P chart and comment. (7)

Sample No.	1	2	3	4	5	6	7	8	9	10
No. of defective	4	8	11	3	11	7	7	16	12	6

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