Goa Vidyaprasarak Mandal's
GOPAL GOVIND POY RAITURCAR COLLEGE OF COMMERCE AND ECONOMICS
PONDA - GOA
B.Com. CBCS (SEMESTER –IV) EXAMINATION APRIL/MAY 2023
BUSINESS STATISTICS

Duration: 2 hours   **Marks: 80**

INSTRUCTIONS :i) Attempt all questions
ii) Figures to the right indicate full marks.
iii) Use of non- programmable calculator is allowed

Q 1. Answer the following:

A. Explain Scatter diagram method of measuring correlation. (3)

B. A hits 20 out of 30 targets. In a series of 5 games, what is the probability that A will hit
i) exactly3 targets?ii) at least one target?   (6)

C. The probability that a person will buy Frootiis 0.3 and that of his buying Maaza is 0.6.
If the probability that he buys both is 0.1,find the probability that he buys i) at least one
of the drinks ii) none of the drinks.   (7)

OR

Q 1. Answer the following:

P. Write a note on Simple and Multiple correlation.   (3)

Q.60% of students in a class passed in Statistics. If a sample of 8 students drawn at random
from the class what is the probability that i) exactly 5 students passed ii) at least 6 students passed?
(6)

R. A box contains 8 tickets bearing numbers 1, 2, 3, 4, 5, 6, 8, 10. One ticket is drawn
and kept aside. Then a second ticket is drawn. What is the probability that both tickets
show even numbers?   (7)

Q 2. Answer the following:

A. A card is drawn at random from a well shuffled pack of cards. Find the probability that it
is a spade or a jack.   (3)

B. Calculate the coefficient of correlation by Karl Pearson's method from the following data

x	2	5	8	1	6	3	1
y	4	6	7	8	5	4	3

(6)

C. In a certain factory producing blades, there is a small chance of $\frac{1}{500}$ for any one blade to be defective. The blades are supplied in packets of 10. Use Poisson distribution to calculate the approximate number of packets containing i) exactly one defective blade ii) at least one defective blade in a consignment of 10,000 packets.
(Given $e^{-0.02} = 0.9802$) (7)

OR

Q 2. Answer the following:

P. The monthly demand for radios is known to have the following probability distribution

Deman	1	2	3	4	5	6
Probab	0	0	0	0	0	0

Determine the expected demand for radios. (3)

Q. Calculate the coefficient of correlation by Karl Pearson's method from the following data

X	3	7	9	1	1
Y	5	6	1	8	1

(6)

R. In a town, 10 accidents took place in a span of 50 days. Assuming that the accidents per day follow the Poisson Distribution, find the probability that there will be three or more accidents in a day.
Take $e^{-0.2} = 0.8187$ (7)

Q 3. Answer the following:

A. From a sample of 500 pairs of shoes manufactured by a shoe company, 2% are found to be of substandard quality. Estimate 95% confidence interval. (3)

B. Compute Spearman's coefficient of rank correlation from the following data

Ra	4	4	1	3	4	2
Ra	4	1	6	5	1	3

(6)

C. A pharmaceutical firm maintains that the mean time for a drug to take effect is 24minutes. In a sample of 400 trials, the mean time is 26 minutes with standard deviation of 4 minutes. Test the hypothesis that the mean time is 24 minutes against the alternative hypothesis that it is not 24 minutes. Use 1% level of significance. (7)

OR

Q 3. Answer the following:

P. The mean height obtained from a sample of size 100 taken from a population is 164 cm. If the standard deviation is 3 cm, find 99% confidence interval for the mean height of the population. (3)

Q. From the marks obtained by candidates in English and Economics, compute Spearman's coefficient of rank correlation.

Marks in English	6	6	6	6	6	7	7
Marks in Econor	6	6	6	7	6	7	7

(6)

R. A wholesaler of oranges claims that only 4% of the oranges supplied by him are bad. A random sample of 600 oranges contained 36 bad oranges. Test the claim of the wholesaler at 5% L.O.S. (7)

Q 4. Answer the following:

A. Explain what is meant by systematic sampling. (3)

B. Find the production corresponding to rainfall of 40 inches from the following data

	Rainfall	Production
Average	30 inches	500 kg
Standard deviation	5 inches	100 kg

Coefficient of correlation is 0.8 (6)

C.The population of a city in a census taken once in 10 years is given below. Estimate the population in the year 1955.

Year	1951	1961	1971	1981
Population (in lakhs)	35	42	58	84

(7)

OR

Q 4. Answer the following:

P. Explain briefly the method of multistage sampling. (3)

Q. Find the regression equation of y on x from the following data

x	4	6	8	9	10
y	10	11	13	17	20

(6)

R. Find f(2.8) from the following table

X	0	1	2	3
f(x)	1	2	11	34

(7)

Q 5.Answer the following:

A. For a bivariate data, means of x and y are 65 and 67, standard deviation of x and y are 2.5 and 3.5 respectively. The coefficient of correlation is 0.6. Write the regression equation of x on y. (3)

B. The average test marks in a particular class are 79. Standard deviation is 5. If the marks are normally distributed, how many students in a class of 200 will get marks
i) between75 and 82? ii) more than 75?
(Area under the standard normal curve between i) t = 0 and t = 0.6 is 0.2257
ii) t = 0 and t = 0.8 is 0.2881)   (6)

C. Estimate the production for the year 2010 and 2012 from the following data

Year	2	2	2	2	2	2
Production (in ton						

(7)

OR

Q 5. Answer the following:

P. If the coefficient of correlation r = 0.5 and b_{yx} = 1.5, find b_{xy} (3)

Q. The weekly wages of 1000 workers are normally distributed with mean ₹900 and standard deviation ₹50. Estimate the number of workers whose weekly wages will be
i) between ₹900 and ₹1000 ii) more than ₹850.
(Area under the standard normal curve between i) t = 0 and t = 1 is 0.3413
ii) t = 0 and t = 2 is 0.4772)   (6)

R. Use Lagrange's formula and estimate from the following data the number of workers getting an income of ₹ 26 per day.

Income (in ₹)	15	25	30	35
Number of workers	36	40	45	48

(7)

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