Goa Vidyaprasarak Mandal's
GOPAL GOVIND POY RAITURCAR COLLEGE OF COMMERCE AND ECONOMICS
PONDA - GOA
B.COM. CHOICE BASED CREDIT SYSTEM (SEMESTER – IV) EXAMINATION
APRIL 2019

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. Draw scatter diagram for the following
i) Perfect Positive Correlation
ii) Strong Negative Correlation
iii) Weak Positive Correlation   (3)

B. Ten coins are tossed simultaneously. Find the probability of getting at least 8 heads.   (6)

C. Two dice are rolled. Find the probability that the sum of numbers on the uppermost face is
i) greater than 8 ii) a perfect square.   (7)

OR

Q 1. Answer the following

X. Explain with examples the difference between positive and negative correlation.   (3)

Y. The probability that an evening college student will graduate is 0.4. Find the probability that
out of 5 students i) none will graduate ii) at least one will graduate.   (6)

Z. Out of the numbers 1 to 120, one number is selected at random. What is the probability that
it is divisible by 8 or 11?   (7)

Q 2. Answer the following

A. Define with the help of examples
i) Sample space ii) Mutually exclusive events.   (3)

B. The following data gives the heights and weights of 6 children. Calculate the coefficient of
correlation by Karl Pearson's method.

Height(in cm)	120	125	127	130	134	144
Weight (in kg)	42	47	48	46	50	49

(6)

C. Between the hours 2 p.m. and 4 p.m. the average number of phone calls per minute coming
into the switchboard of a company is 2.35. Find the probability that during one particular
minute there will be i) only 2 phone calls ii) at most 2 phone calls.
(Given $e^{-2.35} = 0.09537$)   (7)

OR

Q 2. Answer the following

X. State addition theorem and multiplication theorem of probability (3)

Y. Calculate the coefficient of correlation by Karl Pearson's method for the following data

x	2	3	7	12	15
y	18	16	10	13	11

(6)

Z. If x is a random variable following Poisson distribution with relation $4P(x = 0) = P(x = 1)$,
obtain $P(x = 3)$
(Given $e^{-4} = 0.0183$) (7)

Q 3. Answer the following

A. A random sample of 700 units from a large consignment showed that 200 were damaged. Find 99% confidence limits for the proportion of damaged units in the consignment. (3)

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

x	75	88	95	70	60	80	81	50
y	120	134	150	115	110	140	142	100

(6)

C. A pharmaceutical firm maintains that the mean time for a drug to take effect is 24 minutes. 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

X. A sample of 50 bulbs from a large consignment showed a mean life of 52 hours with standard deviation of 4 hours. Find the confidence limits within which the mean life of the bulbs lie almost certainly. (3)

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

x	42	40	52	57	36	42
y	102	100	105	103	110	105

(6)

Z. A sales clerk in a departmental store claims that 60% of the shoppers entering the store leave without making a purchase. A random sample of 50 shoppers showed that 35 of them left without buying anything. Are these sample results consistent with the claim of the sales clerk? Use 5% level of significance. (7)

Q 4. Answer the following

A. Four cards are drawn from a well shuffled pack of cards. Find the probability that all are black. (3)

B. The following data relates the age of husband and wife. Estimate the age of the wife when husband is aged 23.

	Husband	Wife
Mean age	27 years	23 years
Standard deviation	3 years	2 years

(6)

C. From the following data, obtain an estimate of f(18)

x	5	10	15	20
f(x)	9.6	12.9	17.1	23.2

(7)

OR

Q 4. Answer the following

X. A committee of 3 is to be formed from a group of 6 boys and 4 girls. Find the probability that the committee consists of 2 boys and 1 girl. (3)

Y. Find the missing value from the following data

x	4	6	8	9	10	12
y	10	11	13	17	20	?

(6)

Z. Estimate f(3.17) from the following data

x	3.1	3.2	3.3	3.4	3.5
f(x)	0	0.6	1.0	1.2	1.3

(7)

Q 5. Answer the following

A. Explain Null hypothesis and Alternative hypothesis (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 between 75 and 82?
(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. The following table gives the profit of a firm for the period from 1975 to 1979. Extrapolate the profit for 1980.

Year	1975	1976	1977	1978	1979
Profit (in '000)	16	17	20	25	30

(7)

OR

Q 5. Answer the following

  X. What is stratified sampling? When is it useful? (3)

  Y. A large consignment of tennis balls is assumed to have 20% substandard balls. A sample of 400 balls is selected from it. Find the probability that % of substandard balls in the sample is between 18% and 22%.
(Area under the standard normal curve between $t = 0$ and $t = 1$ is 0.3413) (6)

  Z. For the data given below, use Lagrange's interpolation formula to find $f(4)$.

x	0	2	3	5	6
f(x)	5	7	8	10	12

(7)

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX