Prabodhan Education Society's
Vidya Prabodhini College of Commerce, Education, Computer and Management,
Parvari Goa.

S.Y.B.Com (Semester – IV) Semester End Assessment, June 2022 (Regular)
Subject: Business Statistics - II

Semester: IV **Time: 02 Hours** **Max. Marks: 80**

INSTRUCTIONS: 1. All the questions are compulsory however internal choice is available.
2. Use of calculator is allowed.
3. Figures to the right indicate marks allotted.
4. There are 5 main questions each carrying 16 marks.
5. You may answer randomly but every main question attempted should be answered serially.

Q 1) Attempt the following:

a) State different types of Correlation. Explain them. **(3)**

b) A random sample of 6 school students is selected and their marks in two subjects are found. Find Spearman's Rank Correlation Coefficient. **(6)**

Marks in Eng	85	90	40	60	73	82
Marks in Geog	93	90	50	75	65	77

c) Calculate coefficient of correlation for the following data. **(7)**

X	5	7	3	1	9	12	8
Y	8	9	5	4	9	13	7

OR

Q I) Attempt the following:

p) State the different methods of studying the correlation. **(3)**

q) Draw a Scatter diagram to represent the following data. **(6)**

X	5	7	3	6	4	9	12
Y	3	7	6	2	8	11	6

r) Calculate rank correlation coefficient from the following data. **(7)**

X	52	34	47	65	52	34	52
Y	65	59	65	68	60	68	57

Q 2) Attempt the following:

a) A player tosses a coin twice. He earns ₹4 if two heads appears, wins ₹1 if one head appear and losses ₹5 if no heads appear. Find his expected earnings. **(3)**

b) For a bivariate data: mean value of x = 27.9, mean value of y = 53.2, regression coefficient of y on x = - 0.2, regression coefficient of x on y = - 1.5.
Find: (i) the most probable value of x when y = 60
(ii) the coefficient of correlation. **(6)**

c) Estimate the value of y when x = 13 using regression equations. **(7)**

X	2	4	6	8	10	12	14
Y	4	2	5	6	4	11	15

OR

Q II) Attempt the following:

p) A coin is tossed 4 times. What is the probability of getting 2 or more heads? **(3)**

q) Estimate the value of x when y = 20 for the following data. **(6)**

x	25	24	29	33	46	39
y	13	14	18	19	27	26

r) Given: means of x and y are 65 and 67, their variances are 6.25 and 12.25 respectively, and coefficient of correlation between them is 0.8.

(i) Write down the regression equation x on y.

(ii) Obtaun the best estimate of x when y = 70 . **(7)**

Q 3) Attempt the following:

a) A binomial distribution has mean as 4 and std. dev. as 2. Calculate n, p and q. **(3)**

b) A variate follows a Poisson distribution with mean 5, find the following:

(i) P(x = 0) (ii) P(x = 1) (iii) P(x ≥ 1)

(Given that: $e^5 = 148.41$, $e^{-5} = 0.0067$) **(6)**

c) The income distribution of a group of 1,00,000 persons was found to be normally distributed with mean ₹ 750 and standard deviation ₹ 50.

(i) What percentage of the group has income exceeding ₹ 668

(ii) What number of persons has income more than ₹ 832.

(Given: area between t = 0 and t = 1.64 is 0.4382) **(7)**

OR

Q III) Attempt the following:

p) The probability of tossing a head is 0.2. find standard deviation, mean and mode of the distribution if 100 coins are tossed. **(3)**

q) The probability of the birth of a girl is 0.49. find the probability that out of 10children born on a certain day in a town there are 8 or more girls born. **(6)**

r) The weight of 4000 NCC cadets are found to be normally distributed with mean 50 kg and standard deviation 5 kg. find the number of students with weight:

(i) less than 45 kg (ii) between 45 and 60 kg.

(Given: area between t = 0 and t = 1 is 0.3413, area between t = 0 and t = 1 is 0.4772) **(7)**

Q 4) Attempt the following:

a) Write the meaning of Random Experiment, Sample Space and complementary Event. **(3)**

b) Two cards are drawn from a well shuffled pack of cards. Find the probability that (i) both are aces (ii) both are hearts (iii) both belong to the same suit. **(6)**

c) A manufacturing unit manufactures scooters. It has been observed that there are on average 2 defectives pieces per unit of product inspected. Using Poisson distribution, calculate the probability of finding (i) no defective (ii) at least one defective scooter.
(Given that: $e^{-2} = 0.1353$, $e^{-0.2} = 0.8187$) (7)

OR

Q IV) Attempt the following:

p) State the properties of normal curve. (3)
q) It is observed that 10% of the students in a college are smokers. Ifa random sample of 5 students is taken, what is the probability that there are exactly two smokers in a group? (6)
r) For a Poisson distribution with $P(x = 0) = e^{-2.25}$, find mean, mode and standard deviation. (7)

Q 5) Attempt the following:

a) Explain census enumeration. (3)
b) In a random sample of 400 persons from a city, 120 are females. Can it be said that the females and males are in the ratio 3 : 5 in the population? (6)
c) An educator claims that the average IQ of students is at most 105 with standard deviation of 7.2 and that in a study made to test this claim 150 students selected at random, had an average IQ of 111.2. test the claim at 5% L.O.S. (7)

OR

QV) Attempt the following:

p) Explain Stratified Random Sampling. (3)
q) A random sample of 100 families found that the average monthly income per family was ₹ 6,000 with a standard deviation of ₹ 2000. Test the claim that the average monthly income of population is ₹ 7500. (6)
r) A random sample of 50 bulbs from a large consignment showed a mean life of 52 hours with a standard deviation of 4 hours. Find the limits within which the mean lives of the bulbs lie almost certainly. (7)

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