DCU-19BBA303

Seat No. _____

B. B. A. (Sem. III) (CBCS) (W.E.F. 2019) Examination

August - 2022

Business Statistics

Time : $2\frac{1}{2}$ Hours] [Total Marks : **70**

Instructions : (1) Marks are indicated on the right hand side.
(2) Attempt all questions.

1 (a) Explain correlation and types with examples. **10**

(b) From the following table, find out if there is any correlation between age and smokers. **10**

Age	Number of Persons (in thousands)	Smokers
10 – 20	100	50
20 – 30	60	40
30 – 40	40	40
40 – 50	36	40
50 – 60	24	30
60 – 70	11	20
70 – 80	6	10
80 – 90	3	10

OR

1 (a) Explain interpretation of correlation coefficient. **10**

(b) Given the following : **10**

$n = 25, \sum x = 125, \sum y = 100, \sum x^2 = 650, \sum y^2 = 460, \sum xy = 508$

on subsequent verification it was found that two pairs (8, 12) and (6, 8) were wrongly taken as (6, 14) and (8, 6). Find the correct value of correlation coefficient.

2 (a) Explain Regresssion and give the properties of regression coefficients. **10**

(b) From the following given data, obtain the two regression equations. Estimate the value of y when $x = 80$ and x when $y = 100$. Averages of x and y are 50 and 60 respectively. **10**

$\sum (x - 40) = \sum (y - 50) = 160, \sum xy = 48256,$

$\sum (x - 45)^2 = 656, \sum (y - 64)^2 = 1280$

OR

2 (a) Differentiate Linear correlation and Linear Regression. **10**

(b) The regression equations of two variables are $5y = 9x - 22$ and $20x = 9y + 350$. Find r and means of x and y. **10**

3 (a) Explain multiplication theorem of probability. **10**

(b) The probabilities of getting first class, second class and pass class of a student are $\frac{1}{2}, \frac{1}{4}$ and $\frac{1}{8}$ respectively. Find its probability of fail in the examination. **5**

OR

3 (a) Explain addition theorem of probability. **10**

(b) Two families have respectively 3 boys and 2 girls and One boy and 4 girls. One family is selected at random and one child is selected from each family. Find the probability that the child selected is a boy. **5**

4 (a) The probability distribution of random variable x is given below : **10**

X	-2	-1	0	1	2
$P(x)$	0.15	0.30	0.30	0.15	0.10

Find,

(a) $E(x)$ (b) $E(3x+2)$

(c) $E\left(x^2\right)$ (d) $V(x)$

(e) $E(x+1)^2$ (f) $V(3x-1)$

(g) $V(4x)$

(b) Five unbiased coins are tossed together. Find the probability of occurrence of only one head. **5**

OR

4 (a) Five dice are thrown simultaneously for 96 times 1, 2, 3 numbers are regarded as success. Find the expected frequencies of different number of success. **10**

(b) In binomial distribution, $n = 4, P(x=1) = P(x=2)$, find $P(x >= 1)$. **5**