Total No. of Questions : 6]

SEAT No. :

PD898

[Total No. of Pages : 3

[6439]-11
S.Y. B.Com.
236 - F : BUSINESS STATISTICS - I
(2019 Pattern) (Semester-III)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Q.No. 1 and Q.No. 6 are compulsory.***
2) ***Solve any 3 questions from Q.2 to Q.5.***
3) ***Figures to the right indicate full marks.***
4) ***Use of calculator and statistical table is allowed.***
5) ***Symbols have their usual meanings.***

Q1) A) Choose the correct alternative in each of the following (Any Five) : **[5×1=5]**

a) Which of the following is not an example of attribute?

i) Nationality ii) Beauty

iii) Literacy iv) No. of spelling mistakes

b) The multiple correlation coefficient lies between _____.

i) –1 to 0 ii) –1 to 1

iii) 0 to 1 iv) 0 to ∞

c) Normally a life tables is constructed for an age interval _____ years.

i) One ii) Five

iii) Ten iv) Five to Ten

d) Vital statistics is a branch of biometry which deals with data and laws of _____.

i) Births ii) Deaths

iii) Marriages iv) All the above

e) In trivariate study, the correlation coefficient between any two variables when third variable held as constant is called as _____.

i) Simple Correlation ii) Multiple Correlation

iii) Partial Correlation iv) Multiple Regression

f) Life table also named as _____.

i) Survival table ii) Mortality table

iii) Life expectancy table iv) All the above

P.T.O.

B) State whether following statements are true to false (Any Five) : **[5×1=5]**

a) Number of girls in the family is an example of attribute.

b) The partial correlation coefficient may be negative.

c) N.R.R. an exceeds G.R.R.

d) A life table is a profile of human population.

e) The three regression planes are coinside iff $|R| = 0$.

f) Given $d_1 = 52$, $l_1 = 131$ then $l_2 = 183$.

Q2) Attempt each of the following : **[5 each]**

a) Define the terms : Dichotomy, Positive attribute, Negative attribute.

b) A report regarding examination is given below :

"Total No. of students appeared in examination is 1000, there are 550 boys among 1000 students, 700 students were passed. No. of passed boys is 300. Find the no. of passed girls, no. of failed girls and no. of failed boys."

c) Test whether the attributes A and B are independent, given that :

$(AB) = 10$, $(A\beta) = 30$, $(\alpha B) = 40$, $(\alpha\beta) = 120$.

Q3) Attempt each of the following : **[5 each]**

a) Define the terms : Multiple Correlation, Multiple Regression, Partial Correlation.

b) If $\bar{X}_1 = \bar{X}_2 = \bar{X}_3 = 0$, $\sigma_1 = \sigma_2 = \sigma_3 = 1$ and $r_{12} = r_{13} = r_{23} = k$ then find the equation of least square regression plane of X_1 on X_2 & X_3.

c) If $X_1 = Y_1 + Y_2$, $X_2 = Y_2 + Y_3$, $X_3 = Y_3 + Y_1$, where Y_1, Y_2 and Y_3 are mutually uncorrelated variables with mean 0 and unit standard deviation, then find $R_{1.23}$.

Q4) Attempt each of the following : **[5 each]**

a) Define the terms : Vital event, Rate of Vital event, C.D.R. and C.B.R.

b) Compute C.B.R., G.F.R. for the following data :

Age Group	No. of Women	No. of Births
15-19	24,000	800
20-24	20,000	2,400
25-29	15,000	2,000
30-34	12,000	600
35-39	6,000	120
40-44	4,000	10

Total population is 1,86,300.

c) Compute ASFR and G.R.R. for the following data :

Age Group	No. of Women	Female Births
15-19	16,000	160
20-24	15,000	225
25-29	16,500	330
30-34	14,000	210
35-39	16,000	144
40-44	12,000	90

Q5) Attempt <u>each</u> of the following : **[5 each]**

a) Define life table, construction of life table in detail.

b) Complete the life tables given below :

Age (x) in years	l_x	d_x	P_x	q_x	L_x	T_x	e_x°
4	95,000	500	-	-	-	48,50,300	-
5	-	400	-	-	-	-	-

c) Given the following data :

Age (x) in years	61	62	63	64	65	66
l_x	871	575	366	222	129	71

Find the probability that :

i) A person aged 63 will die in next 3 years,

ii) A person aged 62 will survive in next 2 years.

Q6) Write short notes on the following :(Any three) **[3×5=15]**

a) Order of a class, dot operator to find relation between class frequency (upto order 3) fundamental set of class frequencies.

b) Distinguish between 'association' and 'correlation'.

c) Show that multiple correlation coefficient can not be negative.

d) Explain how STDR is superior to CDR.

e) Any three application of life-table, expectation of life.

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