Total No. of Questions : 6]

SEAT No. :

P-1755

[Total No. of Pages : 4

[6032]-311

S.Y. B.Com.

236(F) : BUSINESS STATISTICS - I

(2019 Pattern) (Semester - III)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Question No. 1 and Question No. 6 are compulsory.***
2) ***Solve any three questions from the remaining questions nos. 2, 3, 4 and 5.***
3) ***Figures to the right side indicate full marks.***
4) ***Use of calculator and statistical table is allowed.***

Q1) Choose the correct alternative from each of the following (any ten) :**[1 each]**

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

i) literacy ii) intelligence

iii) Honesty iv) No. of childrens in the family

b) The classes which possess the given attribute are called as _____

i) Positive class ii) Negative class

iii) Symmetric class iv) Order of class

c) With the three attributes A, B and C the number of first order classes is _____.

i) 3 ii) 6

iii) 9 iv) 12

d) The multiple correlation coefficient lies between _____.

i) –1 to 1 ii) –1 to 0

iii) 0 to 1 iv) 0 to ∞

e) The partial correlation coefficient lies between _____.

i) –1 to 1 ii) –1 to 0

iii) 0 to 1 iv) 0 to ∞

P.T.O.

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

i) Simple correlation ii) Partial correlation

iii) Multiple correlation iv) Uncorrelation

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

i) marriages ii) births

iii) deaths iv) all the above i, ii, & iii

h) Population growth mainly depends on _____.

i) no. of male births ii) no. of female births

iii) total no. of births iv) none of the above

i) If N.R.R. = 1, then there is _____.

i) increase in population ii) decrease in population

iii) constant in population iv) can't say about population

j) Given $d_1 = 52$, $l_1 = 131$ then l_2 = _____.

i) 79 ii) 52

iii) 131 iv) 183

k) Give $l_7 = 372$, $l_8 = 75$ and $T_7 = 267$, then the expectation of life for age 7, e_7 = _____.

i) 372/267 ii) 372/75

iii) 267/372 iv) 75/372

l) Given $d_{80} = 2018$, $i_{80} = 13987$, then i_{81} = _____.

i) 11969 ii) 15005

iii) 2018 iv) 13987

Q2) Attempt each of the following :

a) Define : dichotomy, positive attribute, negative attribute. **[3]**

b) Show that coefficient of association Q_{AB} lies between –1 and 1. **[4]**

c) i) From the following ultimate class - frequencies compute the remaining class frequencies. **[4]**

$(AB) = 20$, $(A\beta) = 10$, $(\alpha B) = 15$, $(\alpha\beta) = 55$.

ii) If $(A) = (B) = 4$, $N = 8$ then obtain the coefficient of association for $(AB) = 0$. **[4]**

Q3) Attempt each of the following :

a) Define : **[3]**

Multiple Regression,

Multiple Correlation,

Partial Correlation,

b) In a trivariate data if $r_{12} = 0.7$, $r_{13} = r_{23} = 0.5$, then obtain $R_{1.23}$ & $r_{12.3}$, **[4]**

c) i) For a trivariate data on (x_1, x_2, x_3) 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 obtain the equation of least square regression plane of x_1 on x_2 and x_3. **[4]**

ii) If $x_1 = y_1 + y_2$, $x_2 = y_2 + y_3$ and $x_3 = y_3 + y_1$, where y_1, y_2, y_3 are mutually uncorrelated variables with mean 0 and unit standard deviation. Find $R_{1.23}$. **[4]**

Q4) Attempt each of the following :

a) Define : Vital event, C.D.R., age-specific death rate. **[3]**

b) Compute C.B.R. and G.F.R. for the following data : **[4]**

Age-group	15-19	20-24	25-29	30-34	35-39	40-44
No. of Women	24000	20000	15000	12000	6000	4000
No. of births	800	2400	2000	600	120	10

The total population is 186300.

c) Compute G.R.R. and N.R.R. of the following data : **[8]**

Age-group	15-19	20-24	25-29	30-34	35-39	40-44
Female population	9000	9200	8900	8600	8400	8300
No. of births	180	1012	1068	774	420	170
Survival factor	0.92	0.91	0.90	0.89	0.89	0.86

Consider proportion of female births = 0.48 Interpret N.R.R.

Q5) Attempt each of the following :

a) Define expectation of life. **[3]**

b) Given the following table for l_x, the number of rabbits living at age x. **[4]**

x	0	1	2	3	4	5	6
l_x	100	90	80	75	60	30	0

x, y, z are the three rabits of age 1, 2 and 3 years respectively. Find the probability that at least one of them will be alive for one year more.

c) Complete the following life table : **[8]**

Age (in years)	l_x	d_x	p_x	q_x	L_x	T_x	e_x^o
4	95000	500	-	-	-	4850300	-
5	-	400	-	-	-	-	-

Q6) Write short note on the following (any 3) : **[3 × 5 = 15]**

a) Distinguish between 'associations' and 'correlation'.

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

c) State any four practical situations where multiple regression can be used.

d) Explain how S.T.D.R. is superior to C.D.R.

e) Describe life table in detail.

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