Total No. of Questions : 6]

SEAT No. :

P2920

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[5801]-311

S.Y. B.Com.

236 - (F) : BUSINESS STATISTICS - I

(CBCS) (2019 Pattern) (Semester - III)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Q.1 and Q.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 statistical tables and calculator is allowed.***

Q1) Choose the correct alternative in each of the following (any 10)**[10 × 1 = 10]**

a) The ratio of births to the total deaths in a year is called _____.

i) Vital index ii) Population death rate

iii) Total fertility rate iv) survival rate

b) In vital statistics if N.R.R. per women is 0.3394 the it means.

i) Population is increasing ii) Population is decreasing

iii) Population is constant iv) cannot say

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

i) five years ii) five to ten years

iii) one year iv) ten years

d) The multiple correlation coefficient lies between.

i) –1 to +1 ii) 0 to 1

iii) $-\infty$ to $+\infty$ iv) 0 to ∞

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

i) simple correlation ii) partial correlation

iii) multiple correlation iv) multiple regression

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f) With two attributes the total number of ultimate class frequency is _____.

i) four ii) two

iii) six iv) three

g) The survival factor πi in vital statistics lies between

i) –1 to + 1 ii) –1 to 0

iii) 0 to 1 iv) 0 to 100

h) Total Fertility Rate (TFR) is given for per:

i) 1000 women

ii) 1000 reproductive age women

iii) 10000 women

iv) 10000 reproductive age women

i) Life tables are prepared for

i) Animals ii) Humans

iii) Both i) and ii) iv) None of above

j) The partial correlation coefficient lies between

i) –1 to +1 ii) 0 to 1

iii) –1 to 0 iv) $-\infty$ to $+\infty$

k) Given A=150, (B) = 180, (Aβ) = 50, (AB) = 100 N = 270 then class frequency (αβ) is equal to

i) 80 ii) 90

iii) 40 iv) 120

l) Given $T_{68} = 48$, $l_{68} = 39$ then expectation of life at age 68 [$e°_{68}$] is equal to

i) 1.23076 ii) 0.8125

iii) 12.3076 iv) 9

Q2) Attempt each of the following. **[5 Each]**

a) Calculate coefficient of association between A and B. Given N = 100, (A) = 47 (B) = 62, (AB) = 32.

b) Test whether the attributes A and B are independent, given that (AB) = 10, (Aβ) = 30, (αβ) = 120, (αβ) = 40.

c) Distinguish between a variable and an attribute.

Q3) Attempt each of the following. **[5 Each]**

a) Given $r_{12} = 0.8$, $r_{23} = -0.56$, $r_{13} = -0.4$ find $r_{12.3}$ and $R_{1.23}$.

b) In trivariate data the total correlation coefficients are $r_{12} = 0.7$, $r_{23} = 0.9$, $r_{13} = -0.8$. Are these values consistent?

c) Explain the concept of multiple correlations in case of trivariate data. Also state the expression for multiple correlation coefficient $R_{1.23}$ in terms of total correlation coefficient r_{12}, r_{23} and r_{13}.

Q4) Attempt each of the following. **[5 Each]**

a) Compute the CDR and STDR for two populations A and B taking populations A as standard population.

Age group	A		B	
	populations	Deaths	Population	Deaths
Under 10	5000	160	6000	150
10 -20	7000	140	9000	180
20-40	9000	180	8000	160
40 and above	8000	150	6000	80

b) Compute

i) crude birth rate (CBR)

ii) Gross fertility rate (GFR)

iii) Age specific fertility rate (ASFR) for the following data:

Age group	Number of women	Number of births
15-19	24000	800
20-24	20000	2400
25-29	15000	2000
30-34	12000	600
35-39	6000	120
40-44	4000	10

c) Distinguish between G.R.R. and N.R.R.

Q5) Attempt each of the following. **[5 Each]**

a) Complete the life tables given below.

Age (in years)	1_x	d_x	p_x	q_x	L_x	T_x	e_x^0
4	95,000	500	?	?	?	4850,300	?
5	?	400	?	?	?	?	?

b) Given the following table for 1_x, the number of rabbits living at age x,

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

X, Y, Z are the three rabbits 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) Describe life table in detail.

Q6) Write a short note on following (any 3) of the following. **[5 Each]**

a) Census method of collecting vital statistics

b) Order of class

c) Application of multiple correlation coefficient

d) Expectation of life

e) Crude death rate (CDR).

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