VCD- 10102013 – QUANTITATIVE METHODS - FYBBI – SEM I – 60 – 2 HRS - 150

NOTE: 1. All questions are compulsory and carry equal marks.
2. Figures to right indicate full marks of each sub-question.
3. Use of simple calculator is allowed.

Q1) a) Explain with suitable examples the difference between positive and negative correlation?

b) find coefficient of correlation for the following data.   (5)
                                                                                                              (5)

X	3	5	4	6	2
Y	12	4	6	3	18

c) Given two regression equations. Find mean values of X and Y. Also find r.   (5)
20Y-9X-120=0 and 25Y-20X+25=0.

OR

Q1) p) What are the properties of regression equations?   (5)
q) Find coefficient of rank correlation for the following data.   (5)

X	101	108	105	107	109
Y	117	98	102	118	110

r) Find two regression lines from the following data.   (5)

	Average	S.D.
X	300	20
Y	100	15

Co-efficient of correlation is 0.78.

Q. 2) a) What are the methods of collecting vital statistics?   (5)
b) Fill in the blanks in the following portion taken from life table.

Age(x)	l_x	d_x	p_x	q_x	L_x	D_x	e_x^0
5	90000	500	?	?	?	4850000	?
6	?	400	?	?	?	?	?

(P10)

c) Calculate crude birth rate, general fertility rate, Total fertility rate from the following data. (5)

Age Group	Female population	Number of live births
15-19	16000	250
20-24	16400	2250
25-29	15800	1894
30-34	15200	1321
35-39	14800	919
40-44	15000	278
45-49	14500	147

OR

Q. 2) p) Write short note on Measurement of population growth and NRR (5)

q) Find the standardized death rate using direct and indirect method for the following data. (5)

Age	Population A		Standard Population	
	Population	ASDR	Population	ASDR
0 - 5	12,000	48	8,000	50
5 - 20	13,000	14	10,000	15
20 - 60	15,000	9	27,000	10
Above 60	10,000	59	5,000	60

r) Calculate the gross Reproduction rate and net Reproduction from the following data. The percentage of women in the population is 49. (5)

Age Group	No.of children born to 1000 women	Mortality rate per 1000
15-19	140	110
20-24	1600	180
25-29	2000	160
30-34	790	210
35-39	550	230
40-44	190	220

Q.3) a) State and prove Baye's theorem on inverse probability. (5)

b) Find mean and variance of x for the given probability distribution. (5)

X	5	6	7	8	9	10
Probability	0.07	0.2	0.3	0.3	0.07	0.6

c) There are 80 counters numbered from 1 to 80. If one of the counter is drawn at random, what is the probability that the number on counter is i) multiple of 7, ii) less than or equal to 20, iii) an odd number. (5)

OR

Q. 3) p) What are the properties of normal curve. (5)

q) Three cards are drawn from full pack of cards. What is the probability that i) all 3 are red, ii) one red and two black (5)

r) A box contains 5 blue, 6 black and 8 green marbles. If 3 marbles are drawn at random what is the probability that i) two are blue and one black, ii) one of each color (5)

Q.4) a) Write basic problems in construction of index number. (5)

b) Find Laspeyre's, Paasche's and Fisher's index numbers for the following data. (5)

Commodity	Price in Rs		Quantity	
	1990	1995	1990	1995
A	3	4	75	80
B	4	5	100	120
C	7	8	125	125
D	8	7	50	60

c) Mr. Aditya Kulkarni had a policy of Rs. 40,000/- . After paying 6 annual premium at the rate of Rs. 15.06 per 1000, he surrendered the policy. The insurance company guaranteed him a surrender value of 35% of the premium paid excluding the first years premium. Find the surrender value that he will receive. (5)

OR

Q. 4) p) Explain briefly policy laps, paid up value and surrender value.. (5)

q) Find Marshall-Edgeworth and Dorbish Bowley index number for the following data. (5)

Commodity	Price in Rs		Quantity	
	2005	2010	2005	2010
A	12	25	15	28
B	10	20	15	25
C	4	15	6	12
D	6	20	9	15
E	8	25	10	20

(P.T.O)

r) Find weighted index number using average relative method and aggregate method.

Commodity	1985 Price in Rs	1988 Price in Rs	Weight
A	20	25	100
B	23	25	60
C	30	32	50
D	35	40	40

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