Total No. of Printed Pages—6

6 SEM TDC STS G 1 PR (S–2)

2014

(May)

STATISTICS

(General)

Course : 601

(Practical)

Full Marks : 80
Pass Marks : 32

Time : 4 hours

The figures in the margin indicate full marks for the questions

1. Calculate first four central moments and coefficient of skewness and kurtosis from the following distribution about the mean : 10

x	:	0	1	2	3	4	5	6	7	8
f	:	2	5	25	56	75	56	25	5	2

2. *(a)* The marks obtained by 10 students in Mathematics (X) and Statistics (Y) are given below :

Roll no. → *Marks in* ↓	1	2	3	4	5	6	7	8	9	10
X	70	32	60	80	50	30	15	40	38	48
Y	85	45	54	91	59	45	35	43	45	44

Find the coefficient of correlation between X and Y. 10

Or

(b) Following table gives the blood pressure of some persons corresponding to different ages :

Age in years (X)	*Blood pressure* (Y)	*Age in years* (X)	*Blood pressure* (Y)
56	147	55	150
42	125	49	145
72	160	38	115
36	118	40	140
63	149	68	152
47	128	60	155

Obtain the regression lines of Y on X and X on Y, and estimate the blood pressure of a person of age 45. 8+2=10

(Continued)

3. *(a)* Fit Poisson distribution to the following data and test the goodness of fit : 15+5=20

No. of mistakes in a book (X)	0	1	2	3	4	5	6
No. of pages (f)	280	67	30	7	5	2	1

Or

(b) A varietal trial was conducted at a research station. The design adopted for the same was five randomised blocks of 6 plots each. The yields in lb per plot obtained from the experiment are as given in the table. Analyse the design and comment on your findings : 20

Blocks	*Varieties*					
	V_1	V_2	V_3	V_4	V_5	V_6
I	30	23	34	25	20	13
II	39	22	28	25	28	32
III	56	43	43	31	49	17
IV	38	45	36	35	32	20
V	44	51	23	58	40	30

4. In a large city *A*, 15% of a random sample of 900 school children had some defects on eyes. In other large city *B*, 10% of a random sample of 1600 children had same problem. Is their any significant difference in the two populations regarding the defects in eyes? Obtain 95% confidence limits for the difference in population proportions. 5

5. *(a)* A sample of 30 students is to be drawn from a population of 300 students belonging to two colleges *A* and *B*. The means and standard deviations of their marks are given below :

	Total no. of students (N_i)	*Mean* ($\bar{Y}_{N_i}$)	*Standard deviation* (σ_i)
College A	200	30	10
College B	100	60	40

How would you draw the sample using proportional allocation technique? Hence obtain the variance of estimate of the population mean and compare its efficiency with simple random sampling without replacement. 8+2=10

Or

(b) *(i)* Calculate the crude and standardised death rates for the local population from the following data : 5

Age-group	*Standard population*	*Deaths*	*Local population*	*Deaths*
0–10	600	18	400	16
10–20	1000	5	1500	6
20–60	3000	24	2400	24
60–100	400	20	700	21

(ii) Compute price index number for the year 2013 with 2008 as base year, using Fisher's method from the following table : 5

Commodity	*Quantity* (Units)		*Expenditure* (₹)	
	2008	*2013*	*2008*	*2013*
A	100	150	500	900
B	80	100	320	500
C	60	72	150	360
D	30	33	360	297

6. *(a)* A machine is set to deliver the packets of a given weight. Ten samples of size five, each were examined and the following results were obtained :

Sample No.	:	1	2	3	4	5	6	7	8	9	10
Mean	:	43	49	37	44	45	37	51	46	43	47
Range	:	4	7	4	7	7	4	8	7	4	5

Calculate the values for the central line and the control limits for mean chart and range chart. Comment on the state of control. 4+4+2=10

Or

(b) Determine the period of the moving average for the following data and calculate moving averages for that period : 3+7=10

Year	:	1	2	3	4	5	6	7	8
Value	:	130	127	124	135	140	132	129	127

Year	:	9	10	11	12	13	14	15	
Value	:	145	158	153	146	145	164	170	

7. Viva voce. 15

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