



Reg. No. :

Name :

Sixth Semester B.Sc. Degree Examination, April 2018**First Degree Programme under CBCSS****STATISTICS****Core Course – 13****ST 1645 : Practical – III****(2013 Admn.)**

Time : 2 Hours

Max. Marks : 50

Instructions : 1) *Scientific calculators and statistical tables are **permitted**.*2) *Answer **5** questions, **each** question carries **10** marks.**Maximum question to be answered from a section is **3**.***SECTION – A**

1. In the table given below are the yield of 6 varieties in a 4 replicates experiment for which one value is missing. Estimate the missing value and analyse the data.

Blocks	Treatments						
		1	2	3	4	5	6
	1	18.5	15.7	16.2	14.1	13	13.6
	2	11.7	12.9	14.4	16.9	12.5
	3	15.4	16.6	15.5	20.3	18.4	21.5
	4	16.5	18.6	12.7	15.7	16.5	18

P.T.O.



2. Consider the experimental results for the following randomized block design. Make the calculations necessary to set up the analysis of variance table.

Blocks	Treatments			
		A	B	C
	1	15	15	18
	2	14	14	14
	3	10	11	15
	4	13	12	17
	5	16	13	16
	6	13	13	13

3. Use simplex method to solve the LPP :

$$\text{Max } z = 4x_1 + 10x_2$$

$$2x_1 + x_2 \leq 50$$

$$2x_1 + 5x_2 \leq 100$$

$$2x_1 + x_2 \leq 50$$

$$x_1, x_2 \geq 0$$

4. A department head has 4 subordinates and 4 tasks to be performed. The subordinates differ in efficiency and the task differ in their intrinsic difficulty. The estimate of the time each man would take to perform each task is given in the matrix below.

Task \ Man	A	B	C	D
1	18	26	17	11
2	13	28	14	26
3	38	19	18	15
4	19	26	24	10

How should the task to be allotted one to a man so as to minimize the total man hours ?



5. Calculate the cost of living index number for the data given below.

Items	Price		Weight
	Base year	Current year	
Food	30	47	4
Fuel	8	12	1
Clothing	14	18	3
House rent	22	15	2
Miscellaneous	25	30	1

SECTION – B

6. Construct Fisher's ideal index number for the following data and show that it satisfies the time reversal and factor reversal test.

Commodities	Base Year		Current Year	
	Price	Quantity	Price	Quantity
A	5.00	5	6.50	4
B	7.75	6	8.80	10
C	9.63	4	7.75	6
D	12.50	9	12.75	9

7. Fit a straight line trend equation by the method of least squares and estimate the trend values.

Year :	1976	1977	1978	1979	1980	1981	1982	1983
Value :	380	400	650	720	690	600	870	930

8. The data below gives the average quarterly prices of a commodity for five years. Calculate seasonal variation indices by the method of link relatives.

Year Quarter	1979	1980	1981	1982	1983
I	30	35	31	31	34
II	26	28	29	31	36
III	22	22	28	25	26
IV	31	36	32	35	33



9. The following are the figures of defectives in 22 lots each containing 2,000 rubber belts :

425, 430, 216, 341, 225, 322, 280, 306, 337, 305, 356, 402, 216, 264, 126, 409, 193, 326, 280, 389, 451, 420.

Draw control chart for fraction defective and comment on the state of control of the process.

10. Calculate the crude and standardised death rates for the local population from the following data and compare them with crude death rate of the standard population.

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