B.Com(ISM) DEGREE EXAMINATION,NOVEMBER 2019
II Year IV Semester
Business Mathematics and Statistics - II

Time : 3 Hours **Max.marks :75**

Section A $(10 \times 2 = 20)$ Marks

Answer any **TEN** questions

1. Calculate the weighted aggregate method the index number from the following data:

Commodity	Base Year Price per unit	Current year price per unit	weight
Rice	300	400	10
Wheat	200	300	5

2. How do you find the inverse of a 3 by 3 matrix?
3. A coin tossed twice. Find the probability of getting at least one head.
4. Write the formula of Fisher's Price Index Number.
5. Find Laspeyre's Price Index number, if summation of p_1q_0 is 1,900 and summation of p_0q_0 is 1360.
6. Give the formula for simple average of price relatives is obtained using arithmetic mean.
7. Define time series.
8. Write the formula for Chi-Square test.
9. Explain the term testing of hypothesis?
10. What do you mean by analysis of variance?
11. Draw a trend line by the semi-average method using data given below:

Year	1980	1981	1982	1983	1984	1985
Sales	78	85	82	90	87	92

12. Calculate the cost of living index from the following data.

Items	Base year price	current year price	weights
Food	30	47	4
Clothes	14	18	3

Section B $(5 \times 5 = 25)$ Marks

Answer any **FIVE** questions

13. Find the adjoint of the matrix A

$$\begin{matrix} 0 & 1 & 2 \\ 1 & 2 & 3 \\ 3 & 1 & 1 \end{matrix}$$

14. From the following 4 yearly information determine the moving average and trend value.

Year	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967
Value	5	36.5	43	44.5	38.9	38.1	32.6	41.7	44.1	33.8

15. Calculate fishers ideal index from the following data prove that it satisfies both time reversal and factor reversal tests.

Commodities	2002		2003	
	Price	qty	Price	qty
A	08	16	10	16
B	10	20	12	24
C	06	12	08	14

16. Calculate by Simple Aggregate method number for the year 1981.

Commodity	Unit	1981	1982
		(price in Rs.)	
Rice	Quintal	250	300
Wheat	Quintal	100	125
Pulses	Quintal	200	300
Oil	Litre	150	200
Milk	Litre	250	350

17. Discuss the assumptions on analysis of variance?

18. Find the area under the standard normal curve with lie
(Z= 2.7 is 0.4965, Z= 1.73 is 0.4582)
i. To the right of Z =2.70
ii. To the left of Z = 1.73

19. Three samples below have been obtained from normal populations with equal variances. Test the hypothesis at 5% level that the population means are equal.

8	7	12
10	5	9
7	10	13
14	9	12
11	9	14

The table value of F at 5%level for v1 =7 and v2 = 17 is 3.88

Section C $(2 \times 15 = 30)$ Marks

Answer any **TWO** questions

20. Solve by using matrix inversion method:
    3x-2y+3z = 8,
    2x+y-z = 1,
    4x-3y+2z = 4

21. Using the following data, construct Fisher's ideal Index and show how it satisfies Factor Reversal Test and Time Reversal Test?

Commodity	Price in rupees per unit		Number of units	
	Base Year	Current year	Base year	Current year
A	6	10	50	56
B	2	2	100	120
C	4	6	60	60
D	10	12	50	24
E	8	12	40	36

22. Make an analysis of variance for the given data to access the significance of possible variations in the performance of test between schools of the city.

Schools			
A	B	C	D
8	12	18	13
10	11	12	9
12	9	16	12
8	14	6	16
7	4	8	15

23. Fit a straight line trend by the method of least squares for the following data. Assuming that the same rate of change continues, what would be the predicted earnings for the year 1995?

Year	1987	1988	1989	1990	1991	1992	1993	1994
Earnings	38	40	65	72	69	60	87	95