B.Com(ISM) DEGREE EXAMINATION,APRIL 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. Define Matrices.
2. If A $= \begin{bmatrix} 2 & -1 & 0 & 5 \\ 3 & 2 & 6 & -4 \end{bmatrix}$ B $= \begin{bmatrix} 4 & 7 & 1 & 8 \\ -2 & 3 & 6 & 5 \end{bmatrix}$
   Find 2A + 3B and 3A - 2B.
3. What is Probability?
4. A committee of three is to be chosen out of 5 Englishmen, 4 French men and 3 Indians, the committee to contain one of each nationality. In how many ways can this be done?
5. What is an Index numbers?
6. Calculate Bowley's Price Index Number from the following

Commodity	p_0	q_0	p_1	q_1
A	4	500	10	400
B	3	100	9	200

7. Prove the factor reversal test from thr following
   $\sum p_1q_0 = 2140$; $\sum p_0q_0 = 1560$; $\sum p_1q_1 = 1880$; $\sum p_0q_1 = 1344$.
8. Define Time series.
9. Draw a tend line by the semi-average method using the data given below:

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

10. Mention the various methods used for determining the trend.
11. Write the meaning of ANOVA.
12. 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

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

Answer any **FIVE** questions

13. If A $= \begin{bmatrix} 2 & 3 & 1 \\ 1 & 2 & 3 \\ 3 & 3 & 5 \end{bmatrix}$ and B $= \begin{bmatrix} 4 & 1 & 2 \\ 3 & 2 & 5 \\ 1 & 2 & 0 \end{bmatrix}$ Find A+B.

14. Compute a price index for the following by a (a) Simple aggregate and (b) average of price relative method by using both arithmetic mean and geometric mean.

Commodity	A	B	C	D	E	F
Price in 2005(Rs)	20	30	10	25	40	50
Price in 2006(Rs)	25	30	15	35	45	55

15. Construct an index number for 2006 taking 2005 as base.

Commodity	Price in 2005	Price in 2006
A	90	95
B	40	60
C	90	110
D	30	35

16. The following figures relate to the profits of a commercial concern for 8 years.

Year	2000	2001	2002	2003	2004	2005	2006	2007
Profits (Rs)	15,420	14,470	15,520	21,020	26,120	31,950	35,370	34,670

Find the trend of profits by the method of moving averages.

17. Draw a trend line by the method of semi-averages.

Year	2001	2002	2003	2004	2005	2006	2007
Sales ('000)	110	105	115	112	120	118	130

18. A dice is tossed 120 times with the following results:

No. turned up	1	2	3	4	5	6	Total
Freq.	30	25	18	10	22	25	120

Test the hypothesis that the dice is unbiased.

19. Write the assumptions of ANOVA.

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

Answer any **TWO** questions

20. Find the inverse of $\begin{bmatrix} 2 & 3 & 4 \\ 3 & 2 & 1 \\ 1 & 1 & 2 \end{bmatrix}$

21. Calculate Index number from the following data:

Items	Base year		Current year	
	Kilo	Rate(Rs.)	Kilo	Rate(Rs.)
Bread	10	3	8	3.25
Meat	20	15	15	20
Tea	2	25	3	23

22. Calculate trend values by the method of least square from the data given below and estimate the sales for 2010.

Year	2003	2004	2005	2006	2007
Sales of Co.,A (Rs.)	70	74	80	86	90

23. A person throws 10 dice 500 times and obtains 2560 times 4, 5 or 6. Can this be attributed to fluctuations of sampling?