B.Com(ISM) DEGREE EXAMINATION,APRIL 2020
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 Matrix.
2. If A $= \begin{pmatrix} 3 & 5 & 8 \\ -1 & -6 & 4 \end{pmatrix}$ and B $= \begin{pmatrix} 7 & -2 & -9 \\ 5 & 7 & 8 \end{pmatrix}$
3. What do you mean by Permutations?
4. There are 5 trains form Chennai to Delhi and back to Chennai. In how many ways can a person go from Chennai to Delhi and return in a different train?
5. Define Index Number.
6. If $\sum p_1 q_0 = 478.5$ and $\sum p_0 q_0 = 380$. Find the Index number using Laspeyre's method.
7. Find the Index number using Paasche's method when $\sum p_1 q_1 = 324$
8. What do you mean by Chi-square test?
9. Draw a trend line by the method of semi-average

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

10. Find the Chi-square if the observed frequencies is 17 and the expected frequencies is 10.
11. What do you mean by Analysis of variance?
12. Find the Standard Error, when size of sample = 5000, Probability of success in each trial $= \frac{1}{2}$ and Probability of failure $= \frac{1}{2}$.

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

Answer any **FIVE** questions

13. If A $= \begin{pmatrix} 2 & -1 & 0 & 5 \\ 3 & 2 & 6 & -4 \end{pmatrix}$ and B$= \begin{pmatrix} 4 & 7 & 1 & 8 \\ -2 & 3 & 6 & 5 \end{pmatrix}$

    Find 2A + 3B and 3A - 2B.
14. 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. A) In how many ways can this be done? B) In how many arrangements will a particular Indian be included?

15. If 16C $_r = 16C_{r+2}$ Find rC_3

16. Construct an index number for 2006 taking 2005 as base for the following information.

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

17. Calculate three yearly moving average of the following data:

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
No.of students	15	18	17	20	23	25	29	33	36	40

18. 4 coins were tossed 160 times and the following results were obtained:

No. of heads	0	1	2	3	4
Observed frequencies	17	52	54	31	6

Under the assumption that coins are balanced, find the expected frequencies of getting 0,1,2,3 or 4 heads and test the goodness of fit.

19. In 600 throws of a six faced dice, odd points appeared 360 times. Would you say that the dice is fair at 5% level of significance?

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

Answer any **TWO** questions

20. Write the products AB and BA of two matrices A and B. Prove that AB $\neq$ BA

A $= \begin{pmatrix} 1 & 2 & 3 & 4 \end{pmatrix}$ and B $= \begin{pmatrix} 1 \\ 2 \\ 3 \\ 4 \end{pmatrix}$

21. The following are the group index numbers and the group weights of an average working class family's budget construct the cost of living index number.

Group	Index No.	Weight
Food	330	50
Clothing	208	10
Fuel and lighting	200	12
House rent	162	12
Miscellaneous	180	16

22. Assuming a four-yearly cycle calculate the trend by the method of moving averages from the following data relating to the production of tea in India.

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Production (Rs.)	464	515	518	467	502	540	557	571	586	612

23. Perform two - way ANOVA for the data given below:

Plots of Land	Treatment			
	A	B	C	D
I	38	40	41	39
II	45	42	49	36
III	40	38	42	42

Use coding method, subtracting 40 from the given numbers.