B.Com(ISM) DEGREE EXAMINATION, EVEN SEMESTER 2021
II Year IV Semester
Business Mathematics and Statistics – II

Max.marks :25

Answer any **FIVE** questions $(5 \times 5 = 25)$ Marks

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

2. A) A family of 4 brothers and 3 sisters are to be arranged for a photograph in one now.In how many ways can they seated if all the sisters sit together?

   B) If $16C_r = 16C_{r+2}$, Find rc_3.

3. Calculate index number using a) Laspeyre's Method b) Paasche's Method c) Bowley's Method from the following data:

Items	Base Year		current Year	
	Kilo	Rate(₹)	Kilo	Rate(₹)
Bread	10	3	8	3.25
Meat	20	15	15	20
Tea	2	25	3	23

4. Calculate trend value 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, (₹)	70	74	80	86	90

5. For a random sample of size 10 from a normal population, the mean is 12.1 and the standard deviation is 3.2. Is it reasonable to suppose that the population mean is 14.5? Test at 5% significance level. (Given t_0 .025 at 9 d.f = 2.262; t_0 .05 at 9 d.f. = 1.833). State whether the hypothesis is accepted or rejected.

6. Compute index number, using Fishers Ideal formula and show that it satisfies time-reversal test.

Items	Quantity	Base Year Price	Quantity	Current Year Price
A	12	10	15	12
B	15	7	20	5
C	24	5	20	9
D	5	16	5	14

7. 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. (Given df = 4; Chi Square table value of 0.05=9.488)