

S. No.: 420

BATCH: 2009-13, 16-18

Reg. No.:

END OF SEMESTER EXAMINATIONS, APRIL / MAY - 2019  
 MATHEMATICAL FOUNDATIONS FOR COMPUTER SCIENCE  
 SUBJECT CODE: 12UBCT01

MAJOR : B. Sc (CT)  
 TIME : 3 HOURS

SEMESTER : I  
 MAX. MARKS: 75

**SECTION - A (5 X 2 = 10)**

**Answer ALL the questions:**

1. Define Skew-Symmetric matrix.
2. Define well defined set.
3. Define isomorphic graphs.
4. Define mode.
5. Define standard deviation.

**SECTION - B (5 X 4 = 20)**

**Answer ALL the questions:**

6. a) Find the inverse of the matrix  $A = \begin{bmatrix} 1 & 3 & 7 \\ 4 & 2 & 3 \\ 1 & 2 & 1 \end{bmatrix}$ .

(OR)

- b) Define i) rank of a matrix  
 ii) inverse of a matrix
7. a) Find  $A - B$ ,  $B - C$  and  $A - C$  for  $A = \{1,2,5,6,7\}$ ,  $B = \{3,5,9,10,2\}$  and  $C = \{3,9,10,7,6\}$ .

(OR)

- b) Define i) universal set ii) null set.

8. a) Explain types of graphs.

(OR)

- b) Define i) path ii) circuit

9. a) Find the median wage of the following distribution:

Wages (in Rupees):	20-30	30-40	40-50	50-60	60-70
No. of Labourers:	3	5	20	10	5

(OR)

- b) Calculate the mean for the following frequency distribution:

Class interval	0-8	8-16	16-24	24-32	32-40	40-48
Frequency	8	7	16	24	15	7

10. a) Calculate the mean and standard deviation for the following table giving the age distribution of 542 members.

Age in years	20-30	30-40	40-50	50-60	60-70	70-80	80-90
No of members	3	61	132	153	140	51	2

(OR)

- b) Explain mean deviation.

**SECTION - C (3 X 15 = 45)**

**Answer any THREE questions:**

11. Find the rank of the matrix  $A = \begin{bmatrix} 1 & 1 & -3 & -1 \\ 4 & -2 & 6 & 8 \\ 15 & -3 & 9 & 21 \end{bmatrix}$

12. Explain basic set operations.

13. Explain Sub graph.

14. The expenditure of 100 families is given below.

Expenditure:	0-10	10-20	20-30	30-40	40-50
No of families:	14	?	27	?	15

Mode for the distribution is 24. Calculate missing frequencies.

15. The first of the two samples has 100 items with mean 15 and standard deviation 3. If the whole group has 250 items with mean 156 and standard deviation  $\sqrt{13.44}$ . Find the standard deviation of the second group.

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