

Dr. Babasaheb Ambedkar Open University
Term End Examination July – 2026

Course	: BSCCS	Date	: 19/07/2026
Subject Code	: BSCCS-104	Time	: 11:30am to 01:45pm
Subject Name	: Discrete Mathematics	Duration	: 2.15 Hours
		Max. Marks	: 70

Section A

Answer the following (Attempt any three) (30)

1. Write a short note on different types of function.
2. Discuss in details about ring.
3. Illustrate how to solve linear non-homogeneous equations by Cramer's Rule.
4. List and explain all set operations with proper example.
5. Explain in details about conditional and bi-conditional statements.

Section B

Answer the following (Attempt any four) (20)

1. Define combinations and differentiate between combinations and permutation.
2. List and explain different types of matrix with example.
3. State various properties of Relation in a Set.
4. Explain Pigeonhole principle in short.
5. Discuss in short about Integral Domain.
6. What do you mean by contradiction? Explain with example.

Section C

Part – A (Multiple Choice Questions) (10)

- 1 A set which does not contain any elements is called _____.
A Null B Void
C Empty D All of them
- 2 A function $f : A \rightarrow B$ is called _____ function if there exist at least one element in B which is not the image of any element in A.
A Into B Onto
C One-One D Many-One
- 3 If one task can be performed in 4 ways and another in 5 ways, then both tasks together can be performed in _____ ways
A 9 B 10
C 20 D 1
- 4 A relation R in a set is an equivalence relation in A if and only if R is _____.
A Reflexive B Symmetric
C Transitive D All of them
- 5 A matrix having the same number of rows and columns is called _____.
A Rectangular B Square
C Sparse D Unit
- 6 _____ method is used to solve a system of linear equations using determinants.
A Euler's B Newton's
C Cramer's D Simpson's

- 7 The value of a determinant becomes zero if _____.
 A Two rows are identical B All entries are positive
 C The determinant is of order 2 D One element is zero
- 8 _____ formula is used to calculate the number of combinations of n objects taken r at a time.
 A n^r B nPr
 C nCr D Rpn
- 9 A commutative division ring is called _____.
 A Ring with unity B Field
 C Group D Integral domain
- 10 If any two rows of a determinant are interchanged, the value of the determinant _____.
 A Remains unchanged B Becomes zero
 C Becomes double D Changes its sign

Part – B (Do as Directed)

(10)

- 1 Set is a collection of well-defined and distinct object. True / False
- 2 The range R is defined as the set of all second elements of the ordered pair which belongs to R . True / False
- 3 If f is a function from Set A to Set B , then Set A is called the co-domain of function f . True / False
- 4 A permutation is an arrangement in a definite order of a number of objects taken some or all at a time. True / False
- 5 An Abelian group is also called as commutative group. True / False
- 6 A ring with unity is called a division ring if every non-zero element is a unit. True / False
- 7 The inverse of a square matrix exist if and only if it is non-singular. True / False
- 8 A contradiction is a proposition that is always true. True / False
- 9 Cramer's Rule can be applied only when the determinant of the coefficient matrix is non-zero. True / False
- 10 If two rows of a determinant are identical, its value is zero. True / False
