

24 Nov/16 (r)

Roll No. 1111111111

Total No. of Pages : 02

Total No. of Questions : 07

BCA (2011 & Onwards)/B.Sc. (IT) (2015 Batch) (Sem.-1)

COMMUNICATION-I

Subject Code : BSIT/BSBC-101

Paper ID : [B1107]

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains SIX questions carrying TEN marks each and students has to attempt any FOUR questions.

SECTION-A

1. Write short notes on the following :

- a. What is posture?
- b. What is E-mail?
- c. Write two uses of studying Communication Skills.
- d. What is a formal letter?
- e. What is business communication?
- f. What is the difference between tone and pitch?
- g. What is grapevine communication?
- h. Write two barriers to effective communication.
- i. What is downward Communication?
- j. Why is feedback important?



SECTION-B

2. a. What is the importance of presentation skills in a business meeting?
b. How to prepare a Power Point Presentation for an Executive Council meeting?
3. Explain the various barriers to listening and remedies to improve listening barriers.
4. Write the format of a 'Report'. Discuss its essential elements briefly.
5. Write a letter to a business firm for selecting you as a trainee in the organization.
6. What is the importance of non-verbal communication for :
i) A student
ii) A manager
iii) A teacher
iv) A leader
7. Write the types, media, process and objectives of business communication.

Roll No.

Total No. of Pages : 02

Total No. of Questions : 07

BCA (2014 to 2018) (Sem.-1)

B.Sc.(IT) (2015 to 2018)

MATHEMATICS - I

Subject Code : BSIT/BSBC-103

M.Code : 10045

Time : 3 Hrs.

Max. Marks : 60

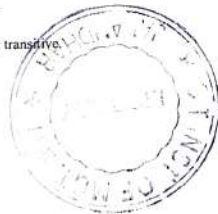
INSTRUCTIONS TO CANDIDATES :

- SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
- SECTION-B contains SIX questions carrying TEN marks each and students have to attempt any FOUR questions.

SECTION-A

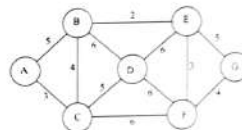
I. Write briefly:

- If $A = \{1, 2, a, b\}$, determine the following sets (i) $A - \phi$ (ii) $A - \{1, 2\}$.
- Given an example of a relation which is reflexive and symmetric but not transitive.
- Find relation R if matrix representation of R is $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 1 \\ 1 & 1 & 0 \end{bmatrix}$.
- Prove that $p \wedge (q \vee r) = (p \wedge q) \vee (p \wedge r)$.
- Use quantifiers to show that $\sqrt{5}$ is not a rational number.
- Define Planer and Complete Graph.
- List two difference between Tree and Graph.
- Find order of the recurrence Relation $T(K) = 2T(K-1) - KT(K-3)$.
- Define recurrence relation with examples.
- Prove that the maximum number of edges of simple graph is $\frac{n(n-1)}{2}$.



SECTION-B

- State and prove De Morgan's law for sets.
 - Let m be a given fixed positive integer. Let $R = \{(a, b) : a, b \in \mathbb{Z} \text{ and } a - b \text{ is divisible by } m\}$, show that R is an equivalence relation on $\mathbb{Z}$.
- Prove validity of argument :
If man is bachelor, he is happy.
Therefore Bachelor dies young.
 - By the principle of mathematical induction, prove the following for each $n \in \mathbb{N} : 1, 3, 5, 7, \dots, (2n-1) (2n+1) = \frac{n(4n^2 + 6n - 1)}{3}$
- Find minimal spanning tree of weighted graph



- State and prove five colour theorem.
- Solve recurrence relation $S(K+2) - 4S(K) = K^2 - K - 1$.
- Prove that simple graph with k -components and n vertices can have at the most of $\frac{(n-k)(n-k+1)}{2}$ edges.
 - Obtain recurrence relation of $S(K) = 2 \cdot 4^k - 5 \cdot (-3)^k$ of second order
- If $R = \{(a, b) : |a - b| = 1\}$ and $S = \{(a, b) : a - b \text{ is even}\}$ are two relation on $A = \{1, 2, 3, 4\}$. Then draw digraph of R and S. And show that $R^2 = S$.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

W/er

Roll No.

Total No. of Pages : 03

Total No. of Questions : 16

BCA (2014 to 2018) / B.Sc. (IT) (2015 to 2018) (Sem.-1)

MATHEMATICS-I

Subject Code : BSIT/BSBC-103

M.Code : 10045

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains SIX questions carrying TEN marks each and students have to attempt any FOUR questions.

SECTION-A

Write briefly :

- Q1. If A, B, C are any sets, prove that $A - (B \cup C) = (A - B) \cap (A - C)$.
- Q2. Define partition of sets.
- Q3. Let $X = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$. The family $\{\{1, 4, 8\}, \{3, 5, 9\}, \{2, 7\}, \{6, 10\}\}$ is a partition of X. Determine the equivalence relation corresponding to the above partition.
- Q4. Let $X = \{1, 2, 3, 4\}$ and $R = \{(x, y) : x > y\}$. Draw the diagram and matrix of R.
- Q5. Using truth table, prove that $\neg(p \rightarrow q) = p \wedge \neg q$.
- Q6. Given the proposition over the natural numbers $p: n < 4, q: 2n > 17$ and $r: n$ is a divisor of 18. What are the truth sets of $p \wedge q$ and $q \rightarrow r$.
- Q7. Prove that the number of edges in a complete graph with n vertices is $\frac{n(n-1)}{2}$.
- Q8. Draw a simple planar graph with 6 nodes and 11 edges.
- Q9. Define recurrence relation with example.
- Q10. Solve the recurrence relation $S(K) - S(K-1) = S(K-2) = 0$.

SECTION-B

- Q11. a) State and prove De Morgan's Laws for sets.
b) The relation R is defined by $(a, b) \in R$ if and only if 5 divides $b - a$. Show that R is an equivalence relation.
- Q12. a) Let $R = \{(a, b) : |a - b| = 1\}$ and $S = \{(a, b) : a - b \text{ is even}\}$ are two relations on $A = \{1, 2, 3, 4\}$. Then
i) Find matrices of R and S.
ii) Draw diagrams of R and S
iii) Using matrices of R and S, find the relation RS.
b) Test the validity of "If my brother stands first in the class, I will give him a watch. Either he stood first or I was out of station. I did not give my brother a watch this time. Therefore I was out of station."
- Q13. a) Over the universe of Books, define the proposition $B(x)$: x has a blue cover, $M(x)$: x is a mathematics book, $U(x)$: x is published in United Estate and $R(x, y)$: The bibliography of x includes y.

Translate into words :

- i) $(\exists x)(M(x) \wedge \neg B(x))$.
- ii) $(\forall x)(M(x) \wedge U(x) \rightarrow B(x))$
- iii) $(\exists x)(\neg B(x))$

Express using quantifiers :

- i) Every book with blue cover is a mathematics book.
 - ii) There are mathematics books that are published outside the United States.
 - iii) Not all books have bibliography.
- b) Use Mathematical Induction to show that $1+2+4+\dots+2^n = 2^{n+1}-1$.



Roll No. _____

Total No. of Pages : 02

Total No. of Questions : 07

B.Sc. (IT)/ Graphics & Web Designing / BCA (Sem-1)

MATHEMATICS

Subject Code : UQCA1901

M.Code : 70001

Date of Examination : 20-12-2023

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is **COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
2. SECTION-B contains **SIX** questions carrying **TEN** marks each and students have to attempt any **FOUR** questions.

SECTION-A

1. Attempt the following :

- Define Disjoint Set
- If $A = \{1, 2\}$ & $B = \{2, 5\}$, find $A \cup B$
- Define Power set
- Write the negative statement of "Sun rises from east"
- Write the truth table for Conjunction.
- Define Square Matrix
- If $X = \begin{bmatrix} 2 & 3 \\ -1 & 4 \end{bmatrix}$ & $Y = \begin{bmatrix} 1 & 0 \\ -2 & 3 \end{bmatrix}$, then find $X + Y$
- If $A = \begin{bmatrix} -1 & 2 \\ 3 & 4 \end{bmatrix}$, Find the transpose of A
- Find the fourth term in the sequence 4, 9, 14, ..., of AP
- Define Geometric mean

SECTION B

2. If $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$, $X = \{1, 2, 7, 8\}$ & $Y = \{2, 3, 8, 9\}$. Find $X \cup Y$, $X \cap Y$, $Y - X$, $X \setminus Y$.
3. Prove that $(p \wedge (q \vee r)) \rightarrow (p \vee q) \vee (p \wedge r)$.
4. If $X = \begin{bmatrix} 5 & 2 & -3 \\ 1 & 0 & 6 \\ -5 & 1 & 7 \end{bmatrix}$, $Y = \begin{bmatrix} 3 & -2 & 6 \\ 2 & 7 & -1 \\ 5 & 4 & 0 \end{bmatrix}$, then find XY .
5. If $A = \begin{bmatrix} 4 & 2 & 4 \\ 1 & 3 & -6 \\ 5 & 0 & 7 \end{bmatrix}$, $B = \begin{bmatrix} 0 & -2 & -1 \\ 1 & 3 & 0 \\ 5 & 0 & -7 \end{bmatrix}$, then find $4A - 3B$.
6. The 7th term of an A.P. is 20 and its 13th term is 32. Find the A.P.
7. The 3rd and 8th term of a G.P. are 4 and 128 resp. Find the G.P.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student

Roll No.

Total No. of Pages : 02

Total No. of Questions : 07

BCA/ B.Sc.(IT)/(Graphics & Web Designing) (Sem.-1)

MATHEMATICS

Subject Code : UGCA1901

M.Code : S76961

Date of Examination: 18-01-2025

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains SIX questions carrying TEN marks each and students have to attempt any FOUR questions.

SECTION-A

1. Solve the following :

- a) Define Singleton Set.
- b) If $A = \{4, 7\}$ & $B = \{2, 5\}$, find $A \cup B$.
- c) Write the Power set of $A = \{a, b\}$.
- d) Write the negative statement of "Earth revolves around the Sun."
- e) Write the truth table for Disjunction.
- f) Define identity Matrix.
- g) If $X = \begin{bmatrix} 2 & 3 \\ -1 & 4 \end{bmatrix}$ & $Y = \begin{bmatrix} 1 & 0 \\ -2 & 3 \end{bmatrix}$, then find $X - Y$.
- h) If $A = \begin{bmatrix} 0 & 6 \\ 3 & -4 \end{bmatrix}$, Find the transpose of A.
- i) Find the 9th term in the sequence 5, 10, 20, ... of G.P.
- j) Define Arithmetic mean.

SECTION-B

2. If $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$, $X = \{1, 2, 7, 8\}$ & $Y = \{2, 5, 8, 9\}$. Find $X \cup Y$, $X \cap Y$, $Y - X$, Y' .
3. Prove that: $p \vee (q \wedge r) = (p \vee q) \wedge (p \vee r)$.
4. If $X = \begin{bmatrix} 5 & 2 & -3 \\ 1 & 0 & 6 \\ -5 & 1 & 7 \end{bmatrix}$, $Y = \begin{bmatrix} 3 & -2 & 6 \\ 2 & 7 & -1 \\ 5 & 4 & 0 \end{bmatrix}$, then find YX .
5. If $A = \begin{bmatrix} 4 & 2 & -3 \\ 1 & 3 & -6 \\ -5 & 0 & -7 \end{bmatrix}$, $B = \begin{bmatrix} 0 & -2 & -1 \\ 1 & 3 & 0 \\ -5 & 0 & -7 \end{bmatrix}$, then find $2A + 3B$.
6. How many natural numbers are there between 200 and 500 which are divisible by 7.
7. The 3rd and 8th term of a G.P. are 4 and 128 resp. Find the G.P.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.