21/11/2025

Printing Pages: 2
Paper Code: MCA-101 C (SVSU:2025-26/R)

Enrollment No.													

COURSE NAME: MCA
I YEAR EXAMINATION
Subject Name: Computer Fundamental and Emerging Technologies
Subject Code: MCA-101

[Time: 3:00 Hours] **[Max. Marks: 70]**

Section A: Objectives Question: Answer All Questions. **[1x15=15]**

1. **Main advantage of quantum computing:**
   A) Parallel computation B) Cheap hardware
   C) Slower processing D) Energy saving
2. **Brain–Computer Interface helps in:**
   A) Brain surgery B) Direct communication between brain and computer
   C) Database management D) Memory expansion
3. **An example of VR device is:**
   A) Oculus Rift B) Raspberry Pi C) Arduino D) Router
4. **Google Cloud Platform provides:**
   A) Entertainment B) Cloud infrastructure
   C) Hardware sales D) Only browsers
5. **Azure is owned by:**
   A) IBM B) Microsoft C) Oracle D) Intel
6. **Which of these is a benefit of cloud computing?**
   A) Cost efficiency B) Inflexibility
   C) Hardware dependency D) Manual updates
7. **Sensors are used in IoT to:**
   A) Store data B) Sense and collect data
   C) Transfer data D) Control users
8. **Which of the following is an IoT application?**
   A) Smart City B) Typewriter
   C) Calculator D) Floppy Drive
9. **Industrial IoT is mainly used in:**
   A) Manufacturing B) Tourism
   C) Fashion D) Entertainment
10. **Which network covers the largest geographical area?**
    A) LAN B) MAN C) WAN D) PAN
11. **In data communication, data is transmitted through:**
    A) Protocols B) CPU C) Mouse D) RAM
12. **Example of command-based OS:**
    A) Windows 11 B) macOS C) DOS D) Android

13. **Assembler converts:**
    A) High-level to machine code B) Machine code to assembly
    C) Assembly to machine code D) Binary to decimal
14. **A good algorithm must be:**
    A) Infinite B) Ambiguous
    C) Finite and precise D) Complex
15. **In pseudo-code, looping is represented by:**
    A) WHILE, FOR, DO-WHILE B) IF, ELSE
    C) PRINT, INPUT D) None of these

Section B: Long Questions: Attempt any three **|10×3=30|**

a. Explain about compiler, interpreter, and assembler.
b. Explain cloud computing and its advantages.
c. Explain functions of operating systems with example.
d. What is the Internet of Things (IoT)? Explain its working and applications.
e. Explain Network topologies with diagrams

Section C : Short Questions: Attempt any five **|5x5=25|**

a. What are the main service of an operating system?
b. Discuss about component of cloud computing?
c. Explain the concept and importance of Green Computing.
d. Explain characteristics of IOT.
e. What are the two types of software? Explain.
f. What is blockchain technology? Explain its features and limitations.
g. Discuss the major Internet services- Web browser and HTTP.

26/11/2025

Printing Pages: 2

Paper Code: MCA-103 **A** **(SVSU:2025-26/R)**

Enrollment No.														

MCA/

I YEAR/I SEMESTER EXAMINATION

Subject Name- Database Management Systems (DBMS)

Subject Code- MCA–103

[Time : 3:00 Hours] **[Max. Marks : 70]**

I. Objective Question: Answer All Question **[1x15= 15]**

1. Which of the following is not a type of database model?
   a) Hierarchical b) Relational c) Network d) Sequential
2. The ER model was introduced by:
   a) Codd b) Chen c) Boyce d) Date
3. Which key uniquely identifies each record in a table?
   a) Foreign Key b) Candidate Key c) Primary Key d) Super Key
4. Which of the following represents the structure of a database?
   a) Instance b) Schema c) Record d) Attribute
5. SQL stands for:
   a) Structured Query Language b) Simple Query Language
   c) Sequential Query Language d) None
6. In relational algebra, the symbol "σ" denotes:
   a) Projection b) Selection c) Join d) Cartesian Product
7. What is the default isolation level in most databases?
   a) Serializable b) Read Committed
   c) Read Uncommitted d) Repeatable Read
8. Which command is used to remove a table from the database?
   a) DELETE b) DROP c) ERASE d) REMOVE
9. BCNF stands for:
   a) Boyce–Codd Normal Form b) Basic Codd Normal Form
   c) Binary Code Normal Form d) None
10. A transaction must be atomic, consistent, isolated, and durable. This is called:
    a) BASE Property b) ACID Property c) RAID Property d) None

11. Which of the following ensures uniqueness of rows?
    a) Primary Key b) Foreign Key c) Alternate Key d) Secondary Key
12. Deadlock can be prevented by:
    a) Using timestamps b) Using logs c) Using recovery d) None
13. The SQL clause used to filter tuples is:
    a) WHERE b) ORDER BY c) GROUP BY d) HAVING
14. Distributed databases are used to:
    a) Centralize storage b) Spread data across sites
    c) Reduce performance d) Delete redundancy
15. Oracle uses which language for stored procedures?
    a) PL/SQL b) T–SQL c) SQL*Plus d) None

II. Long Question: Answer Any Three out of five [10x3=30]

a. Explain the architecture of a Database Management System with a neat diagram.
b. Describe different types of keys used in the relational model.
c. Explain the structure and components of an ER diagram.
d. Write and explain various SQL commands with examples.
e. Explain the concept of data normalization and discuss 1NF, 2NF, 3NF, and BCNF.

III. Short Question: Answer any five out of seven [5x5=25]

a. Define Data Model.
b. What is Data Independence?
c. Define Entity Integrity and Referential Integrity.
d. What are aggregate functions in SQL?
e. Define Transaction and its properties.
f. What is concurrency control?
g. Differentiate between schema and instance.

24/11/2025

Printing Pages: 2
Paper Code: MCA-102 A (SVSU:2025-26/R)

Enrollment No.													

COURSE NAME: MCA
I YEAR/ I SEMESTER EXAMINATION
Subject Name: Problem Solving Using C
Subject Code: MCA-102

[Time: 3:00 Hours] **[Max. Marks: 70]**

Section A: Objectives Question: Answer All Questions. [1x15=15]

Q1. The C programming language was developed by:
a) Bill Gates b) Bjarne Stroustrup c) Dennis Ritchie d) James Gosling

Q2. Which of the following is the first step in problem solving using programming?
a) Writing code b) Testing the program
c) Designing an algorithm d) Debugging

Q3. Which of the following best describes a flowchart?
a) A graphical representation of program structure
b) A list of variables in a program
c) A program's output format
d) A type of compiler

Q4. The main advantage of using structured programming is:
a) Faster execution b) Easier debugging and maintenance
c) No need for variables d) Use of only one function

Q5. Which of the following is not a valid C keyword?
a) int b) main c) float d) printf

Q6. Which of the following statements is used to make decisions in C programs?
a) for b) if c) switch d) go to

Q7. The default keyword in a switch statement is executed when:
a) No case value matches the expression
b) The first case value matches
c) The switch statement ends
d) The break statement is missing

Q8. Which of the following is a valid function declaration in C?
a) function int(); b) int function();
c) declare function(); d) void function;

Q9. The first element of an array arr is accessed by:
a) arr(1) b) arr[1] c) arr[0] d) arr.first

Q10. Which of the following is a valid string initialization in C?
a) char str[] = {'H','e','l','l','o'}; b) char str[] = "Hello";
c) Both a and b d) None of these

Q11. A structure within a structure in C is known as:
a) Nested structure b) Multi-structure
c) Inner structure d) Recursive structure

Q12. Which of the following functions is used to allocate memory dynamically in C?
a) scanf () b) malloc () c) printf () d) fopen ()

Q13. Which function in C is used to open a file?
a) fopen () b) open file () c) create () d) file open ()

Q14. The graphics function used to draw a circle in C is:
a) draw circle () b) make circle() c) circle() d) round()

Q15. Which of the following functions is used to change the size of an already allocated memory block in C?
a) malloc () b) calloc () c) realloc () d) free ()

Section B: Long Questions: Attempt any three [10×3=30]

a. Write a C program to print factorial of a given number using recursion.
b. What is string? Explain any four string manipulation functions with example programs.
c. Explain categories of functions with example?
d. Describe multidimensional array with suitable c-program.
e. What is a structure in C? Write a program to store and display name, ID, and salary of 5 employees.

Section C: Short Questions: Attempt any five [5x5=25]

a. What is a token? What are different types of tokens available in C language? Explain.
b. Explain Preprocessor commands in C.
c. Write a short-note on Creating and running Programs.
d. State the arithmetic operations that can be performed on pointers?
e. Explain the command line arguments in detail.
f. State the file I/O functions.
g. Define file. Differentiate text file and binary file.
h. Differentiate entry-controlled-loop and exit-controlled-loop with example.

22/12/2025

Printing Pages: 2
Paper Code: MCA-101 A (SVSU:2025-26/R)

Enrollment No.													

COURSE NAME: MCA
I YEAR EXAMINATION
Subject Name: Computer Fundamental and Emerging Technologies
Subject Code: MCA-101

[Time: 3:00 Hours] **[Max. Marks: 70]**

Section A: Objectives Question: Answer All Questions. [1x15=15]

1. **Which of the following is an input device?**
   A) Printer B) Monitor C) Keyboard D) Speaker
2. **The brain of the computer is:**
   A) Memory B) CPU C) Hard Disk D) Keyboard
3. **RAM is a type of:**
   A) Secondary Memory B) Primary Memory
   C) Input Device D) Output Device
4. **An operating system is:**
   A) Hardware B) Software C) Firmware D) None of these
5. **Which one is not a function of an operating system?**
   A) Process management B) File management
   C) Compiling code D) Memory management
6. **Example of GUI based OS:**
   A) DOS B) Windows C) UNIX D) CP/M
7. **The Internet is based on:**
   A) Client-server model B) Peer-to-peer model
   C) Both A and B D) None
8. **WWW stands for:**
   A) World Wide Wave B) World Wide Web
   C) Wide World Web D) Web World Wide
9. **Which protocol is used to transfer files?**
   A) HTTP B) FTP C) SMTP D) POP
10. **Blockchain is a type of:**
    A) Centralized database B) Distributed ledger
    C) File system D) Private storage
11. **Main feature of blockchain:**
    A) Centralized control B) Transparency and immutability
    C) High energy efficiency D) Reversible transactions

12. **Which is NOT a limitation of blockchain?**
    A) High scalability B) High energy use
    C) Slow processing D) Large storage requirement
13. **AR stands for:**
    A) Advanced Reality B) Augmented Reality
    C) Artificial Range D) Augment Resource
14. **VR provides:**
    A) Real-world overlay B) Fully immersive digital environment
    C) Printed images D) None
15. **Grid computing means:**
    A) Sharing distributed computing resources B) Gaming graphics
    C) File transfer D) Data storage only

Section B: Long Questions: Attempt any three **[10×3=30]**

a. Explain the basic components of a computer system with a neat diagram.
b. Describe different types and classifications of operating systems.
c. Discuss the concept of data communication and its components.
d. Explain the architecture and functioning of the Internet.
e. What is Big Data Analytics? Describe its importance and applications.

Section C : Short Questions: Attempt any five **[5x5=25]**

a. Explain about cloud computing.
b. What is IoT (Internet of Things)? Explain characteristics of IOT.
c. Discuss about operating system.
d. State about algorithm. What are the characteristics of algorithm.
e. Differentiate between system software and application software.
f. What is blockchain technology? Explain its features and limitations.
g. Discuss the major Internet services- WWW, E-mail.

22/12/2025

Printing Pages: 2
Paper Code: MCA-102 B (SVSU:2025-26/R)

Enrollment No.														

COURSE NAME: MCA
I YEAR/ I SEMESTER EXAMINATION
Subject Name: Problem Solving Using C
Subject Code: MCA-102

[Time: 3:00 Hours] **[Max. Marks: 70]**

Section A: Objectives Question: Answer All Questions. [1x15=15]

Q1. The process of converting source code into machine code in C is called:
a) Compiling b) Linking c) Running d) Debugging

Q2. The expression a + b * c in C follows which order of evaluation?
a) Left to right b) Right to left
c) Multiplication before addition d) Addition before multiplication

Q3. In a switch statement, the value of the expression can be of which type?
a) int or char only b) float only c) double d) string

Q4. Which of the following loops executes its body at least once, even if the condition is false?
a) for b) while c) do-while d) infinite loop

Q5. When a function calls itself directly or indirectly, it is known as:
a) Overloading b) Nesting c) Recursion d) Inheritance

Q6. A function prototype in C is used to:
a) Define the function body
b) Allocate memory for the function
c) Declare the function before its use
d) Execute the function automatically

Q7. An array in C is:
a) A single variable storing one value
b) A collection of variables of different data types
c) A collection of variables of the same data type
d) A pointer variable

Q8. Which operator is used to get the address of a variable in C?
a) * b) & c) % d) #

Q9. What will *(p + 2) represent if p is a pointer to an array?
a) Value at the third element of the array
b) Address of the third element of the array
c) Value at the second element of the array
d) None of these

Q10. Which of the following functions is used to copy one string into another in C?
a) strcat() b) strcmp() c) strcpy() d) strlen()

Q11. The operator used to access members of a structure through a variable is:
a) * b) -> c) . d) &

Q12. Which keyword is used to define enumerated data types in C?
a) enum b) enumerate c) enumtype d) typedef

Q13. A variable declared with the static storage class in C:
a) Is destroyed when the function ends
b) Retains its value between function calls
c) Cannot be initialized
d) Is accessible from all programs

Q14. Which of the following file modes in C creates a new file for writing and deletes existing contents if the file already exists?
a) "a" b) "r" c) "w" d) "r+

Q15. Which header file is commonly used for graphics programming in C (especially in Turbo C/C++)?
A. stdio.h B. conio.h C. graphics.h D. stdlib.h

Section B: Long Questions: Attempt any three [10×3=30]

a. Explain the differences among for, while, and do-while loops with suitable programming examples.
b. What is a switch statement in C? Explain its structure, rules, and limitations with a program.
c. What is an array in C? Explain array notation and representation in memory. Write a program to accept n numbers from the user, store them in a one-dimensional array.
d. Describe about Dynamic memory allocation with its functions.
e. Compare structure and union and also write a program on each.

Section C: Short Questions: Attempt any five [5x5=25]

a. Define data types in c with an example.
b. What is flow chart? Draw a simple flowchart to find the sum of any two numbers.
c. Describe Pointer (*) in C-programming language with example.
d. State the file I/O functions.
e. Write a program in C to show the use of any two string functions like strlen ().
f. Explain the command line arguments in detail with example.
g. Define if – else decision-control statement with n example.
h. Differentiate pointers to functions and pointers with functions.

23/11/2025

Printing Pages: 2
Paper Code: MCA-104 B (SVSU:2025-26/R)

Enrollment No.													

Program Name: M.C.A.
I-Semester / I-Year Examination
Subject Code: MCA 104
Subject Name: Discrete Mathematics

[Time : 03:00 Hours] **[Max. Marks: 70]**

Note: 1. Attempt all the questions as per given instructions.

1. Multiple Choice Questions (MCQs) **[01×15=15]**

I A set which contains a definite number of elements is called?
(a) Proper Subset (b) Universal Set (c) Finite Set (d) Unit Set

II Relations may exist between?
(a) objects of the same set (b) between objects of two or more sets.
(c) Both A and B (d) None of the above

III The value of $T(k) - 5T(k-1) = 0$ with $T(0) = 5$
(a) 2.5^k (b) 5.5^k (c) 5.5^{k-1}

IV The set of *I* of all integers is group with respect to :
(a) multiplication (b) addition
(c) both a and b (d) none of these

V A group is said to be abelian if :
(a) Associative (b) Commutative
(c) a and b both (d) none of these

VI Every poset that is a complete semilattice must always be a
(a) Sublattice (b) Complete lattice (c) Free lattice (d) Partial lattice

VII Components of Boolean Algebra
(a) 1,1 (b) 1,2 (c) 2,2 (d) 0,1

VIII Boolean algebra can be used
(a) For designing of the digital computers (b) In building logic symbols
(c) Circuit theory (d) Building algebraic functions

IX The set R of all Real number is group with respect to :
(a) multiplication (b) addition
(c) both a and b (d) none of these

X A compound proposition that is always _____ is called a tautology.
(a) true (b) false (c) both a and b (d) none of these

XI A compound proposition that is always _____ is called a contradiction
(a) true (b) false (c) both a and b (d) none of these

XII A compound proposition that is neither a tautology nor a contradiction is called a

(a) Contingency (b) Equivalence (c) Condition (d) Inference

XIII Multiplicative identity is :

(a) 0 (b) 2 (c) 1 (d) *e*

XIV $8 \times_6 3$ is equal to :

(a) 5 (b) 6 (c) 0 (d) 1

XV The product of two odd permutation is :

(a) odd permutation (b) even permutation

(c) disjoint permutation (d) none of these

2. Answer in long (any three) **[10×3=30]**

I Prove that the set $G = (0, 1, 2, 3, 4, 5)$ is a finite Ring with respect to addition modulo 6.and Multiplication modulo 6

II Define Boolean Algebra with example.

III Draw the truth table for Distributive law

IV Construct the truth table for $(p \vee q) \wedge (p \vee r)$

V .Show that the set Z of all integers form a group with respect to operation $*$ defined by $a * b = a+b=1 \forall\ a,b \in I$

3. Answer in short (any five) **[5x5=25]**

I Find the power set of X= {1,2,3,4}

II Discuss different types of sets with one example each.

III Solve the recurrence relation S(K)= 7S(K-1)- 10S(K-2) where S(0)=0 S(1)=17

IV Write the Laws of Boolean Algebra

V Define Integral domain with example

VI State and prove De-Morgan's law.

VII Construct the truth table for $p \wedge \sim p$

VIII Construct the truth table for $\sim(p \wedge \sim q)$.

IX Define Fields with example.

X Explain tautology and contradiction with examples

28/11/2025

Printing Pages: 2
Paper Code: MCA-104 A (SVSU:2025-26/R)

Enrollment No.													

Program Name: M.C.A.
I-Semester / I-Year Examination
Subject Code: MCA 104
Subject Name: Discrete Mathematics

[Time: 03:00 Hours] **[Max. Marks: 70]**

Note: 1. Attempt all the questions as per given instructions.

1. Multiple Choice Questions (MCQs) **[01×15=15]**

I Set theory forms the basis of several other fields of study like?
(a) counting theory, (b) relations
(c) finite state machines (d) All of the above

II A set is an _____ collection of different elements.
(a) unordered (b) ordered
(c) unordered and ordered (d) None of the above

III What Z+ represents?
(a) the set of all rational numbers (b) the set of all positive integers
(c) the set of all whole numbers (d) the set of all real numbers

IV A Poset in which every pair of elements has both a least upper bound and a greatest lower bound is termed as
(a) Sublattice (b) lattice (c) trail (d) walk

V A group is said to be abelian if :
(a) Associative (b) Commutative
(c) a and b both (d) none of these

VI If every two elements of a poset are comparable then the poset is called
(a) Sub ordered poset (b) Totally ordered poset
(c) Sublattice (d) Semigroup

VII The set of I of all intgegers is group with respect to :
(a) multiplication (b) addition
(c) both a and b (d) none of these

VIII A _____ value is represented by a Boolean expression.
(a) Positive (b) Recursive (c) Negative (d) Boolean

IX The set C_0 of all non-zero complex number is group with respect to :
(a) multiplication (b) addition
(c) both a and b (d) none of these

X Multiplicative identity is :
(a) 0 (b) 2 (c) 1 (d) e

XI If a is the inverse of b then :
(a) $ab = 0$ (b) $ab = e$ (c) $ab = 2$ (d) $ab = 1$

XII If e is identity in group G then :
(a) $e^{-1} = 1$ (b) $e^{-1} = e$ (c) $e^{-1} = 0$ (d) none of these

XIII f is preserves the composition in G to G' if :
(a) $f(ab) = f(a)f(b)$ (b) $f(ab) \neq f(a)f(b)$
(c) $f(ab) = f(a) + f(b)$ (d) none of these

XIV Additive identity is :
(a) 1 (b) 2 (c) 0 (d) e

XV $15 +_6 7$ is equal to :
(a) 3 (b) 4 (c) 2 (d) 1

2. Answer in long (any three) **[10×3=30]**

I Show that the set $G = (a + b\sqrt{2}) : a, b \in Q)$ is a group with respect to addition.

II Define a Ring with example

III Define equivalence relation with example

IV Construct the truth table for (p∨q)∧(p∨r) ∧(q∨r)

V Solve the recurrence relation S(K)= 7S(K-1)- 10S(K-2)
where S(0)=0 S(1)=17

3. Answer in short (any five) **[5x5=25]**

I Find the power set of X = {1,2,3}

II State and prove De-morgan's law by Venn diagram

III Define null set ,disjoint set ,and power set with example

IV If A = {1, 2, 3} let R=(1.1) ,(1,2) (2,3) ,(2,4),(3,4) (4,1),(4,2) and S =(3.1) ,(4,4) (2,3) ,(2,4),(1,1) (1,4) find RoS and SoR.

V Define permutation Group with example.

VI Solve the recurrence relation $a_r - 7a_{r-1} + 10a_{r-2} = 0$
Given that a_0=0,a_1=3

VII The truth table for p∨~p is a tautology, prove or disprove.

VIII Construct the truth table for ~(p∨~q)

IX Define equivalence relation with example

X Define Types of function with example

23/12/2025

Printing Pages: 2

Paper Code: MCA-103 B (SVSU:2025-26/R)

Enrollment No.													

MCA

I YEAR/I SEMESTER EXAMINATION

Subject Name-Database Management Systems (DBMS)

Subject Code- MCA-103

[Time : 3:00 Hours] [Max. Marks : 70]

I. Objective Question: Answer All Question [1x15= 15]

1. Which of the following is not a data model?
   a) Object-Oriented b) Network c) Hierarchical d) Spaghetti
2. Which key can have NULL values?
   a) Foreign Key b) Primary Key c) Candidate Key d) None
3. Which SQL command is used to modify records?
   a) SELECT b) INSERT c) UPDATE d) DELETE
4. Which normalization removes transitive dependency?
   a) 1NF b) 2NF c) 3NF d) BCNF
5. Which of the following is used to represent a relationship in ER diagram?
   a) Rectangle b) Diamond c) Oval d) Line
6. The command used to create a database is:
   a) CREATE DATABASE b) NEW DATABASE
   c) MAKE DATABASE d) INIT DB
7. Tuple in relational database refers to:
   a) Row b) Column c) Table d) Schema
8. SQL keyword used to remove duplicate records is:
   a) UNIQUE b) DISTINCT c) DIFFERENT d) CLEAN
9. The process of ensuring data consistency after failure is called:
   a) Locking b) Recovery c) Commit d) Rollback
10. Two-phase locking is a protocol for:
    a) Recovery b) Concurrency control
    c) Query optimization d) Indexing
11. Which join returns all rows from both tables even if there is no match?
    a) Inner Join b) Full Outer Join c) Left Join d) Right Join

12. A database language used to define structure is:
    a) DDL b) DML c) DCL d) TCL
13. A weak entity is identified by:
    a) Its own key b) A foreign key c) Partial key d) Both b & c
14. Checkpoints are used in:
    a) Concurrency b) Recovery c) Normalization d) Indexing
15. Which of the following is an example of RDBMS?
    a) Oracle b) MongoDB c) Neo4j d) Redis

II. Long Question: Answer Any Three out of five [10x3=30]

a. Discuss the difference between file system and database system.
b. Explain the ER model and how to convert it to relational tables.
c. Describe various integrity constraints in relational databases.
d. Write a detailed note on normalization and its importance.
e. Explain transaction states and recovery techniques.

III. Short Question: Answer any five out of seven [5x5=25]

a. What is schema?
b. Define Super Key and Candidate Key.
c. What is Referential Integrity?
d. Define Join and list its types.
e. What is a Trigger in SQL?
f. Define Deadlock.
g. What is the difference between DDL and DML?