

F-7480

Sub. Code

7MCI1C2

M.Sc. DEGREE EXAMINATION, APRIL 2022

First Semester

Computer Science and Information Technology

PROGRAMMING IN C

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. What are the rules to be followed for forming an identifier?
2. Give the syntax of the switch-case structure.
3. List out any two string handling functions.
4. What is a dynamic array?
5. Define: Recursion.
6. Differentiate between an array and structure.
7. How is a pointer variable initialized?
8. Define: Pointer.
9. What is a macro and how is it different from a C variable name?
10. What is the use of ftell function?

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Write a C program to find the sum of individual digits of a given number.

Or

- (b) Describe the scanf() and printf() functions.

12. (a) Ten numbers are entered from the keyboard into an array. Write a C program to find out how many of them are positive, how many are negative, how many are even and how many odd.

Or

- (b) Illustrate the arithmetic operations on characters.

13. (a) What are actual and formal arguments? What are the differences between them?

Or

- (b) Write a C program to print the Fibonacci sequence of numbers using recursion.

14. (a) What are the uses of pointer in C? How pointers work in programs?

Or

- (b) Write a C program to reverse the string using pointers.

15. (a) State the various file I/O functions and explain them in detail.

Or

- (b) Write a C program that appends one file at the end of another.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. What are the data types supported by C? Explain with examples.
 17. Write a C program to arrange the given names in an alphabetical order.
 18. What are the categories of functions? Explain.
 19. Write a C program to illustrate a pointer to a function.
 20. Suppose a file contains student's records with each record containing name and age of a student. Write a C program to read these records and display them.
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F-7481

Sub. Code

7MCI1C3

M.Sc. DEGREE EXAMINATION, APRIL 2022

First Semester

Computer Science and Information Technology

DATA STRUCTURE AND ALGORITHMS

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. What do you mean by linear data structure?
2. Define: Traversing.
3. Find the postfix form of the following: A-B-C-D-E.
4. What is a singly linked list?
5. Define the following:
(a) Forest (b) Sibling
6. What is hashing?
7. Distinguish between linear search and binary search.
8. State the Divide and Conquer method.
9. What do you mean by Algorithm?
10. Define: Big 'O' notation.

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain the implementation of list.

Or

- (b) Write the procedure for merging lists and explain it.

12. (a) What are the ways to represent a stack? Describe.

Or

- (b) Explain the representation of queue structure.

13. (a) What are the types of binary tree? Explain.

Or

- (b) Write an algorithm for inorder tree traversal and give an example.

14. (a) Explain about the binary search.

Or

- (b) Write a Quick Sort algorithm and explain it.

15. (a) Write an algorithm for adding “n” natural numbers and find the time and space required by that algorithm.

Or

- (b) What are the basic asymptotic efficiency classes? Describe

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Write the procedures to insert and delete an element in a list.
 17. Define a stack. What are the operations performed on it? Explain.
 18. Explain the Dijkstra's algorithm for finding the shortest path in a given graph.
 19. Write an algorithm for insertion sort and explain it.
 20. Why do we need algorithm analysis? Explain
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F-7482

Sub. Code

7MCI1C4

M.Sc. DEGREE EXAMINATION, APRIL 2022.

First Semester

Computer Science and Information Technology

COMPUTER FUNDAMENTALS AND ARCHITECTURE

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. Find the decimal number for the following binary number: 11011
2. What is the use of one's complement?
3. Simplify: $A + (A.B)$
4. What is the function of encoder?
5. Define: Shift Register.
6. What are inputs and outputs of full adder?
7. Write the polish and reverse polish notation:
 $(A / B) - (C * D)$
8. Define: Stack.
9. Distinguish between Static RAM and Dynamic RAM.
10. Mention the use of priority interrupt

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Write down the rules for binary addition and binary subtraction. Give examples.

Or

- (b) Convert the decimal number 1550 into binary, octal and hexadecimal number.

12. (a) Draw the logic circuit and truth table for 4-to-1 multiplexer and explain it.

Or

- (b) Write any five laws of Boolean algebra and Construct the truth table.

13. (a) What is a flip-flop? Explain about Clocked RS flip-flop

Or

- (b) Discuss in detail about the binary parallel adder.

14. (a) What are the components of instruction format? Describe.

Or

- (b) What are data transfer and data manipulation instructions? Describe.

15. (a) Explain the operations of Magnetic Tape.

Or

- (b) Describe the sequence of operations of CPU-IOP communication.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Convert the following hexadecimal numbers to binary numbers:

(a) D5 (b) B4E (c) 7AC6

17. Simplify the Boolean function using Karnaugh Map.

$$F(w, x, y, z) = \sum (0, 1, 2, 4, 5, 6, 8, 9, 12, 13, 14)$$

18. Explain the various implementations of a half-adder.

19. Describe the stack organization.

20. Explain in detail the different mappings used for cache memory.

F-7483

Sub. Code

7MCI1E2

M.Sc. DEGREE EXAMINATION, APRIL 2022

First Semester

Computer Science and Information Technology

Elective : OPERATING SYSTEM

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. What is multiprogramming?
2. What is page? How is it different from segment?
3. Distinguish between process and processor.
4. What are the criteria for process scheduling policy?
5. What is the aim of multiprocessing systems?
6. What are the three categories of system peripheral devices?
7. Differentiate between contiguous and noncontiguous storage file allocation.
8. Define the term "Data Compression".
9. What are the three types of files in Unix?
10. What is redirection in Unix?

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) What are page replacement policies? Explain with examples.

Or

- (b) What is virtual memory? What are the advantages and disadvantages of virtual memory?

12. (a) What is interrupt? Describe.

Or

- (b) What is the PCB? What are its contents? Explain.

13. (a) Write the features of CD and DVD technology.

Or

- (b) Compare: Sequential access and Direct access storage devices.

14. (a) What are the responsibilities of file manager? Describe.

Or

- (b) Explain the different levels in a file management system.

15. (a) Describe the uses of any five user commands in Unix system.

Or

- (b) Write down the design goals of Unix system.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. What are the types of operating systems? Explain.
17. Discuss any two preemptive process scheduling algorithms.
18. Explain briefly about the producers and consumers problem.
19. What are the three methods of file storage allocations? Explain.
20. Discuss the processor management in Unix system.

F-7484

Sub. Code

7MCI2C1

M.Sc. DEGREE EXAMINATION, APRIL 2022

Second Semester

Computer Science and Information Technology

DATABASE TECHNOLOGY

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. What is a major purpose of a database system?
2. Compare tuple relational calculus and domain relational calculus.
3. What is meant by cost-based query optimization?
4. Write the general form of the create table command in SQL.
5. Why Concurrency Control is needed? -
6. Differentiate between single-user and multi-user system.
7. What are spatial data types and models? Explain.
8. What are the different types of multimedia sources?
9. What is the goal of security of the database?
10. Define: Data marts.

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) What are the major components of ER-Diagram? Explain with examples.

Or

- (b) Explain the various components of a database system.
12. (a) What are the different SQL data types? Explain with examples.

Or

- (b) What is meant by the term heuristic optimization? Discuss the main heuristics that are applied during query optimization.
13. (a) What are the two approaches to deadlock prevention? Describe.

Or

- (b) List the ACID properties. Explain the usefulness of each.
14. (a) Describe the benefits and drawbacks of pipelined parallelism.

Or

- (b) Explain the advantages of distributed databases.
15. (a) Discuss the issues of database security.

Or

- (b) Describe the steps of building a warehouse.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. What is a data model? Discuss the different categories of data models.
 17. Explain the different categories of SQL Commands.
 18. Discuss about the two-phase locking protocol.
 19. What is a web? Explain the different search techniques in web databases.
 20. Describe the GRANT function and explain, how it relates to security. What types of privileges may be granted? How are they revoked?
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F-7485

Sub. Code

7MCI2C2

M.Sc. DEGREE EXAMINATION, APRIL 2022

Second Semester

Computer Science and Information Technology

JAVA PROGRAMMING

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. Why is java known as platform independent language?
2. How are constants and variables important in developing programs?
3. List out any four mathematical functions in Java.
4. What are the advantages of shorthand assignment operator?
5. What are the applications of wrapper classes?
6. Write down the rules for naming classes.
7. List out any four HTML Tags.
8. Differentiate between local applet and remote applet.
9. Write down any two advantages of Enterprise bean.
10. What is the goal of JDBC?

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) What are the Java support systems? Explain.

Or

- (b) What are command line arguments? How are they useful?

12. (a) What are the different types of if statements available in Java? Illustrate with an example.

Or

- (b) Write a java program to find the sum of the digits of a given integer.

13. (a) Discuss the different levels of access protection available in Java.

Or

- (b) Describe the various forms of implementing interfaces. Give examples.

14. (a) Explain the different stages in the life cycle of an applet.

Or

- (b) Write a short note on Applet Tag.

15. (a) What is JSP? Explain about the JSP tags.

Or

- (b) What are the types of enterprise beans? Explain.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. List the basic data types used in java. Explain with suitable example.
 17. Discuss the three loop constructs in Java with examples.
 18. Write a Java program which will read a text and count all occurrences of a particular word.
 19. Write an applet that displays the date and time.
 20. Explain about the Servlet life cycle.
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F-7486

Sub. Code

7MCI2C3

M.Sc. DEGREE EXAMINATION, APRIL 2022

Second Semester

Computer Science and Information Technology

COMPUTER NETWORKS

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. What are the goals of computer network?
2. Define the term "Protocol".
3. Distinguish between analog and digital signals.
4. List out any two unguided transmission media.
5. What is the purpose of Hamming code?
6. What is flow control?
7. What are the duties of the Transport layer?
8. Compare: Adaptive and Non-Adaptive Routing
9. What is the purpose of FTP?
10. Define: Cryptography.

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) What are the categories of networks? Explain briefly.

Or

- (b) What are the topologies for a point-to-point subnet? Describe.

12. (a) Compare Circuit switching and Packet switching.

Or

- (b) Write a short note on terminal handling.

13. (a) Compare Pure ALOHA and Slotted ALOHA.

Or

- (b) Explain the simplex protocol for a noisy channel.

14. (a) Describe the principles of congestion control.

Or

- (b) Differentiate between Datagram Approach and Virtual Circuit Approach.

15. (a) Write a short note on virtual terminals.

Or

- (b) Explain in detail about data compression techniques.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. What are the seven layers of ISO OSI reference model? Discuss.
17. What are the Guided media? Explain two of them.
18. Describe the design issues of Data Link Layer.
19. What is routing? Explain any two algorithms with example.
20. Describe the architecture and services of Electronic Mail.

F-7487

Sub. Code

7MCI2E5

M.Sc. DEGREE EXAMINATION, APRIL 2022

Second Semester

Computer Science and Information Technology

**Elective – FUNDAMENTALS OF GRID AND CLOUD
COMPUTING**

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. What are the four basic principles of basic automatic computing systems?
2. What is Grid computing?
3. Differentiate between authorization and authentication.
4. What are the CMM-defined relationship types?
5. Who should not be using Cloud Computing?
6. What is distributed computing?
7. What is a web service?
8. Write down any two features of IBM.
9. List out any two problems related to cloud computing.
10. Write down any two web services provided by Amazon.

Part B

(5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Describe the characteristics and capabilities of a business on-demand.

Or

- (b) Explain about the core information projected in web-service architecture.

12. (a) Explain about the security standards for Grid Computing.

Or

- (b) What are the basic services of OGSA? Explain.

13. (a) What are the six key properties of cloud computing from Google's Perspective? Explain.

Or

- (b) Explain the short history of cloud computing.

14. (a) Describe the Amazon web service components.

Or

- (b) What are the advantages and disadvantages of cloud development? Explain.

15. (a) Explain the future directions of Cloud computing.

Or

- (b) Write a short note on SaaS.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Discuss about the component layers of grid protocol architecture.
 17. Write a brief note on technical details of OGSI specification.
 18. How cloud computing works? Explain.
 19. Discuss the types of cloud service development.
 20. What are the five core services of Windows Live? Explain.
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F-7488

Sub. Code

7MCI2E6

M.Sc. DEGREE EXAMINATION, APRIL 2022

Second Semester

Computer Science and Information Technology

Elective – COMPUTER GRAPHICS

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. What is the primary goal of standardized graphics software?
2. Define Circle. Write down the properties of circle.
3. What is the need of homogeneous coordinates?
4. What are composite transformation?
5. What do you mean by View port?
6. What is Grid?
7. Differentiate between two-dimensional and three-dimensional package.
8. Write the matrix representation of scaling transformation in three-dimensional.
9. What do you mean by Perspective projection?
10. Define: Axonometric orthographic projection.

Part B

(5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Explain how computer graphics is used in the field of art and image processing.

Or

- (b) Discuss DDA line drawing algorithm in detail

12. (a) Describe shearing transformation with suitable example.

Or

- (b) Write a short note on bundled attributes.

13. (a) Explain the three dimensional reflection transformations.

Or

- (b) Describe the graphical input functions.

14. (a) Explain about the rotation transformation in three-dimensional.

Or

- (b) Describe any two three-dimensional display methods.

15. (a) Describe the implementation of viewing operations.

Or

- (b) Explain about the scan line method of removing the hidden surfaces.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Write a Bresenham's approach for line drawing and explain it.
 17. What are the attributes of line? Explain briefly.
 18. What are the logical classifications of Input devices? Explain.
 19. Discuss in detail about the parallel projection and perspective projection.
 20. Write an Z-buffer algorithm and explain it.
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