



Paper Code : CSCHCT 11

M.Sc. I Semester (CBCS) Degree Examination, July 2022

Subject : COMPUTER SCIENCE

Paper : Digital Logic

Paper : HCT – 1.1

Time : 3 Hours

Max. Marks : 80

- Instructions :** i) Section – A is compulsory.
ii) Answer any five questions from Section – B.

SECTION – A

(10×2=20)

1. a) What is digital system ? Provide examples of digital system.
- b) What is Ripple counter ?
- c) What are the rules to convert decimal to binary numbers ?
- d) Explain De-Morgan's Law.
- e) What is the symbol and truth table of NAND gate ?
- f) Explain block diagram for combinational circuits.
- g) What is parallel adder and parallel subtractor ?
- h) What is SR Flip Flop ? Provide its truth table.
- i) What is register ? What are its types ?
- j) What are left and right arithmetic shift ?

SECTION – B

2. a) Explain digital logic gates with diagrams. 6
- b) Simplify the Boolean expression : $F(A, B, C) = (A+B)(A+C)$. 6
3. a) Provide 3-level implementation using NOR gate's for the below expression $F = (AB' + CD')(A' + B)$. 6
- b) What are the major difference between half-adders and full-adders ? 6
4. a) Show the implementation of full adder using half adders. 6
- b) Explain 2 to 4 line decoder with truth table. 6

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5. a) Explain Canonical and standard form. 6
b) Draw OR gate built from three NAND gates and draw an AND gate built from two NAND gates. 6
6. a) What is programmable Logic Array ? Draw its basic block diagram. 6
b) How do you convert a decimal to a floating point ? Explain with an example. 6
7. a) What is multiplexer ? Draw 4×1 multiplexer with truth table. 6
b) Explain state diagram and state table with an example on state reduction. 6
8. a) Explain priority encoder with an example of 4 to 2 priority encoder. 6
b) Explain synchronous up counter and synchronous down counter. 6
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Paper Code : CSCHCT 12

M.Sc. I Semester (CBCS) Degree Examination, July 2022

Subject : COMPUTER SCIENCE

Paper : Object Oriented Programming Using C++

Paper : HCT 1.2

Time : 3 Hours

Max. Marks : 80

Instructions : i) Section – A is compulsory.

ii) Answer any five questions from Section – B.

SECTION – A

(10×2=20)

1. a) Define object-oriented programming.
- b) What are the Data Types in C++ ?
- c) What is expression ? What are the expressions in C++ ?
- d) Define Tokens.
- e) What is Polymorphism ? What are the types of polymorphism ?
- f) What is Function Overloading ?
- g) Differentiate constructor and destructors.
- h) How and where try-catch blocks are used ?
- i) What is template ?
- j) What functions are used for manipulation of file pointers ?

SECTION – B

2. a) Differentiate object-oriented and procedure-oriented programming. 6
- b) Explain the structure of C++ program. 6
3. a) Explain different Access Specifiers in C++. 6
- b) Illustrate the working of constructors and destructors with example. 6
4. a) Explain overloading operators using Friend Function. 6
- b) Explain multilevel inheritance. 6

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5. a) Explain working of insertion and extraction operators in C++ with the help of suitable example. 6
- b) Explain characteristic of constructor. 6
6. a) Explain defining and assigning string object in C++. 6
- b) Explain type casting with an example. 6
7. a) Explain use of friend function with the help of suitable example. 6
- b) Explain concept of virtual base class. 6
8. Write a notes on **any two** of the following. (2×6=12)
- a) Advantages of OOP
- b) Command-line arguments in C++
- c) Exception handling mechanism
- d) Assignment operators.
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Paper Code : CSCHCT 13

M.Sc. I Semester (CBCS) Degree Examination July 2022

Subject : COMPUTER SCIENCE

Paper : Programming in VB.NET

Paper : HCT 1.3

Time : 3 Hours

Max. Marks : 80

Instructions : i) *Section – A is compulsory.*
ii) *Answer any five questions from Section – B.*

SECTION – A

1. Answer the following : **(10×2=20)**
- a) What is data validation in VB.Net ?
 - b) Explain any two built in data function.
 - c) Define the role of solution explorer in visual studio IDE.
 - d) Write the purpose of IsNumeric () and IsError() functions.
 - e) Mention the use of Rich Text Box.
 - f) Enlist various Validation Server Control.
 - g) Write the use of Execute Scalar and Execute Non Query methods.
 - h) Enlist properties of Timer Control.
 - i) What is the use of data grid ?
 - j) Name any two data providers.

SECTION – B

2. a) Explain the architecture of VB.NET framework along with diagram. **6**
- b) Discuss detailed description of CLR. **6**
- ③. a) Explain all different components of visual studio IDE in detail with neat diagram. **6**
- b) Write properties, methods and events of the following controls: Text Box, Picture Box and Check Box. **6**
- ④. a) Explain color dialog, font dialog and print dialog. Also write their user. **6**
- b) Write short note on MDI and SDI. **6**

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Paper Code : CSCHCT 13



5. a) Differentiate between list box and combo box. Write any five properties of each. 6
- b) Write a program to illustrate the use of data bound control. 6
6. a) Explain Array of VB.Net. How many types of arrays are used in VB.Net ? 6
- b) Explain in brief any three events that can be performed on a form. 6
7. a) Define exception. Explain structural exception. 6
- b) Explain Tree Node in detail. 6
8. Write a notes on **any two** of the following : (2x6=12)
- (a) Control Flow statements.
- (b) GUI programming with Windows.
- c) Methods and Events.
- d) ADO.NET.



Paper Code : CSCSCT 11

M.Sc. I Semester (CBCS) Degree Examination, July 2022

Subject : COMPUTER SCIENCE

Paper : Operating System Principles

Paper : SCT – 1.1

Time : 3 Hours

Max. Marks : 80

Instructions : i) Section – A is compulsory.

ii) Answer **any five** questions from Section – B.

SECTION – A

1. a) Define operating system. (10×2=20)
b) What is symmetric multi-processing ?
c) Define scheduler.
d) What are pages and frames ?
e) What are the attributes of files ?
f) Give the importance of virtual machine.
g) Define interprocess communication.
h) Differentiate between segmentation and paging.
i) Explain access control.
j) What is swapping ? State the different techniques of swapping.

SECTION – B

2. a) What are the various objectives and functions of operating system ?
b) Discuss micro kernels.
3. a) Discuss basic memory management techniques with their advantages.
b) What is process ? Draw and explain process state diagram.
4. a) Explain any two CPU-Scheduling algorithms with suitable examples.
b) What is semaphore ? How it can be implemented ?

Paper Code : CSCSCT 11



5. a) Discuss how deadlock problem can be solved using bankers algorithm. 6
b) Explain following disk scheduling algorithm : 6
a) FCFS
b) SSTF
c) SCAN.
6. a) Consider the following page reference string 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1 – Assuming demand paging with three frames. How many page fault occurs for the following page replacement algorithms ? 6
a) LRU
b) FIFO.
b) Explain various methods of files. 6
7. a) What is paging ? With neat diagram, explain bushed page table. 6
b) Explain various types of directory structure. 6
8. Write a short note on **any two** of the following : (6×2=12)
a) System threats.
b) Contiguous memory allocations.
c) Time sharing system.
d) External and internal fragmentation.



Paper Code : CSCHCT 21

M.Sc. II Semester Degree Examination, November/December 2022

Subject : COMPUTER SCIENCE

Paper : Data Structures Using C++

Paper : HCT 2.1

Time : 3 Hours

Max. Marks : 80

Instructions : i) Section A is compulsory.

ii) Answer **any five** questions from Section B.

SECTION – A

(10×2=20)

1. a) What is Data structure ?
- b) What is an array ?
- c) Convert the following infix expression into postfix expression
 $A + B - C | D * E + F.$
- d) What are the advantages of linked list over an array ?
- e) What is binary search tree ?
- f) What is the maximum number of nodes in a binary tree of height K ?
- g) List some applications of tree data structure.
- h) Which data structures are used in BFS and DFS algorithms ?
 - i) Define AVL tree.
 - j) List the stack operations.

SECTION – B

2. a) Discuss Linear search and Binary search algorithms with illustrations. 6
- b) Design quick sort algorithm. 6
3. a) Sort the following set using merge sort algorithm. 6
(310, 285, 179, 652, 351, 423, 861, 254, 450, 520)
- b) Formulate an algorithm for creation of singly linked list. 6

P.T.O.



- 4. a) Write a note on circular linked list. 6
b) Formulate doubly linked list algorithm for insertion of a node in the middle of the list. 6
- 5. a) Write algorithms for stack operations. 6
b) Write an algorithm for conversion of infix expression to postfix expression. 6
- 6. a) Define recursion. Write a recursive algorithm to generate Fibonacci series. 6
b) Explain different types of queues. 6
- 7. a) Explain tree traversal techniques with examples. 6
b) Write a note on expression trees. 6
- 8. a) Explain BFS algorithm with an example. 6
b) Write a note on BST. 6



Paper Code : CSCHCT 11

M.Sc. I Semester (CBCS) Degree Examination, July 2022

Subject : COMPUTER SCIENCE

Paper : Digital Logic

Paper : HCT – 1.1

Time : 3 Hours

Max. Marks : 80

- Instructions :** i) Section – A is compulsory.
ii) Answer any five questions from Section – B.

SECTION – A

(10×2=20)

1. a) What is digital system ? Provide examples of digital system.
- b) What is Ripple counter ?
- c) What are the rules to convert decimal to binary numbers ?
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Paper Code : CSCHCT 11



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Paper Code : CSCHCT 12

M.Sc. I Semester (CBCS) Degree Examination, July 2022

Subject : COMPUTER SCIENCE

Paper : Object Oriented Programming Using C++

Paper : HCT 1.2

Time : 3 Hours

Max. Marks : 80

Instructions : i) Section – A is compulsory.

ii) Answer any five questions from Section – B.

SECTION – A

(10×2=20)

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Paper Code : CSCHCT 13

M.Sc. I Semester (CBCS) Degree Examination July 2022

Subject : COMPUTER SCIENCE

Paper : Programming in VB.NET

Paper : HCT 1.3

Time : 3 Hours

Max. Marks : 80

Instructions : i) Section – A is compulsory.
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SECTION – A

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M.Sc. I Semester (CBCS) Degree Examination, July 2022

Subject : COMPUTER SCIENCE

Paper : Operating System Principles

Paper : SCT – 1.1

Time : 3 Hours

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