D 92926 (Pages : 2) Name.....

Reg. No.....

THIRD SEMESTER (CBCSS—UG) DEGREE EXAMINATION
NOVEMBER 2020

Computer Science

BCS 3C 03—PROBLEM SOLVING USING C

Time : Two Hours Maximum : 60 Marks

Section A

Answer at least **eight** *questions.*
Each question carries 3 *marks.*
All questions can be attended.
Overall Ceiling 24.

1. What are formal parameters ?
2. Write the syntax of "switch" statement.
3. Explain a nested for loop.
4. Name the various storage class specifiers.
5. What is a header file ?
6. Which are the different integer types in C ?
7. Differentiate 'a' and 'a+' modes for appending.
8. Explain conditional operator in C.
9. What is extern in C ?
10. What do you mean by local variables ?
11. How will you initialize one dimensional and two dimensional arrays in C ?
12. What is the purpose of strlen() and strcmp() ?

(8 × 3 = 24 marks)

Section B

Answer at least **five** *questions.*
Each question carries 5 *marks.*
All questions can be attended.
Overall Ceiling 25.

13. Write a C program to find whether a given number is odd or even. If even, print its square root.
14. Explain function prototype with an example program and its use.
15. What is a union ? How can it be declared ?
16. Explain with syntax and examples, the use of fprintf().
17. Differentiate the use of break and continue statements with examples.
18. Explain *if* and *if-else* in C with syntax and example.
19. Explain relational operators in C.

(5 × 5 = 25 marks)

Section C

Answer any **one** *question.*
The question carries 11 *marks.*

20. Write a C program to multiply two matrices.
21. Explain the dynamic memory allocation functions malloc() and realloc() with example.

(1 × 11 = 11 marks)

D 92925 (Pages : 2) Name.....

Reg. No.....

THIRD SEMESTER (CBCSS—UG) DEGREE EXAMINATION NOVEMBER 2020

Computer Science

BCS 3B 04—DATA STRUCTURES USING C

Time : Two Hours Maximum : 60 Marks

Section A (Short Answer Type Questions)

Answer at least **eight** *questions.*
Each question carries 3 *marks.*
All questions can be attended.
Overall Ceiling 24.

1. What are non-linear data structures ? Example.
2. What is "substring" operator in string manipulation ?
3. What are arrays ? Layout its memory allocation strategy.
4. What is the basic structure of a linked list ?
5. Explain the features of a circular linked list.
6. Write the algorithm for PUSH operation in a stack.
7. Explain the terms : Queue full and queue empty.
8. Explain the procedure to delete a node from a linear queue.
9. What is depth of a tree ? Example.
10. Explain post order tree traversal method.
11. What is weighted graph ?
12. What is linear hashing ?

(8 × 3 = 24 marks)

Section B (Short Essay Type Questions)

Answer at least **five** *questions.*
Each question carries 5 *marks.*
All questions can be attended.
Overall Ceiling 25.

13. What are the various string storage structures ? Explain.
14. What are three dimensional arrays ? Explain its memory representation.

Turn over

15. What are the limitations of an array ? Explain the advantages of linked list with example.

16. What are linked stacks ? Explain.

17. Explain various applications of a queue with suitable example.

18. Develop the procedure to insert a node in a binary tree.

19. What are search procedures ? Explain the binary search procedure.

(5 × 5 = 25 marks)

Section C (Essay Type Questions)

Answer any **one** *question.*
The question carries 11 *marks.*

20. What are circular queues ? Explain the implementation of circular queues with appropriate algorithms.

21. What is sorting ? Explain the exchange sort procedure with example.

(1 × 11 = 11 marks)

D 91731 (Pages : 2) Name.....

Reg. No.....

THIRD SEMESTER (CUCBCSS—UG) DEGREE EXAMINATION NOVEMBER 2020

Computer Science

BCS 3C 03—PROBLEM SOLVING USING C PROGRAMMING

(2017 Admissions)

Time : Three Hours Maximum : 64 Marks

Part A

Answer **all** *questions.*

Each question carries 1 *mark.*

1. Library functions are stored in different files known as ———.
2. What are identifiers ?
3. Which of the following is not a storage class in C ?

   (a) Auto. (b) Struct.

   (c) Extern. (d) Static.
4. Elements of the array are accessed by ———.
5. What is the result of the following declaration ?

   intarray[ ] = {1, 2, 3, 4, 5} ;

   printf("%d", &array[4] - &array[0]);
6. The types of actual and formal arguments must be same. (TRUE/FALSE)
7. Pointer variables are declared using the address operator. (TRUE/FALSE)
8. The process of allocating memory at run time is called ———.
9. Write the general format for opening a file.

(9 × 1 = 9 marks)

Part B

Answer **all** *questions.*

Each question carries 2 marks.

10. Describe the three classes of data types that ANSI C supports.
11. Which are the decision making statements with **if** ?

Turn over

12. Explain, how one dimensional array is declared and initialized ?

13. Write a program to find the factorial of a number using recursive function.

14. Explain, how strings are read from terminal ?

(5 × 2 = 10 marks)

Part C

Answer any **five** *questions.*
Each question carries 5 *marks*

15. What are the rules that apply to a **#define** statement to define symbolic constant ?

16. Explain, how goto statement is used for unconditional branching ?

17. Differentiate exit controlled loop and entry controlled loop with example.

18. Write a program to evaluate the roots of a quadratic equation.

19. Explain various elements that are included in function definition.

20. Write a program to evaluate the equation $y = x^n$, where n is a non-negative integer.

21. Differentiate between Structure and Union. How structure variables are declared ?

22. Explain the basic file operations that C supports.

(5 × 5 = 25 marks)

Part D

Answer any **two** *questions.*
Each question carries 10 *marks.*

23. Define an operator. Explain various categories of C operators with suitable examples.

24. Explain various decision making and looping structures available in C with suitable examples.

25. Explain various categories of functions with examples.

(2 × 10 = 20 marks)

D 91730 (Pages : 3) Name.....

Reg. No.....

THIRD SEMESTER (CUCBCSS—UG) DEGREE EXAMINATION NOVEMBER 2020

Computer Science

BCS 3C 03—FUNDAMENTALS OF SYSTEM SOFTWARE, NETWORK AND DBMS

(2014 Admissions)

Time : Three Hours Maximum : 80 Marks

Part A

Answer **all** *questions.*
Each question carries 1 *mark.*

1. A ———— is a software program that transforms high-level source code low-level object code in machine language line by line.

   a) Assembler. b) Interpreter.

   c) Compiler. d) Machine language.

2. A ———— is an operating system over a collection of independent, networked, communicating, and physically separate computational nodes which can handle jobs which are serviced by multiple CPUs.

   a) Batch processing. b) Time sharing.

   c) Real time. d) Distributed operating system.

3. Which one is not a model in DBMS ?

   a) Network. b) Relational.

   c) Peer-to-peer. d) Hierarchical.

4. ———— is the command used to modify an existing column in a database.

   a) Alter. b) Modify.

   c) Drop. d) Delete.

5. LAN stands for ————.

   a) Local Area Network. b) Low-level Area Network.

   c) Large Area Network. d) Lossy Area Network.

6. The keyword ———— stands for sorting records in an SQL in descending order.

   a) Asc. b) Desc.

   c) Sort. d) Order by.

7. Which one is not an empty tag ?

a) <html>. b) <hr>.

c) <img>. d)
.

8. ———— is the command used to remove the structure and contents of a table.

a) DELETE. b) DROP.

c) ALTER. d) REMOVE.

9. Which one does not comes under 5 layers of Internet layers ?

a) Application layer. b) Physical layer.

c) Data Link layer. d) Session layer.

10. The attribute for setting the background image is ————.

a) bgcolor. b) text.

c) img. d) background.

(10 × 1 = 10 marks)

Part B

Answer **all** *questions.*
Each question carries 2 *marks.*

11. What do you mean by system software ? Give two examples.

12. What is batch processing ?

13. What is the purpose of INSERT statement ? Give an example.

14. What do you mean by binary relationship and total participation ?

15. What is DROP command ? Give the syntax.

(5 × 2 = 10 marks)

Part C

Answer any **five** *questions.*
Each question carries 4 *marks.*

16. Explain paragraph tags and its attributes with an example.

17. Explain various heading tags with example.

18. What is an operating system ? Explain its functions.

19. Write short notes on microwave transmission.

20. Explain MAN with its features.

21. What are the advantages of using DBMS ?

22. Explain hierarchical database model in DBMS.

23. Differentiate machine language and assembly language.

(5 × 4 = 20 marks)

Part D

Answer any **five** *questions.*
Each question carries 8 *marks.*

24. Explain the following guided media :

    a) Twisted pair cable.
    b) Coaxial cable.
    c) Optic fiber.

25. Explain unordered lists, ordered lists and definition lists with examples.

26. Explain the characteristics of LAN.

27. Explain the responsibilities of application layer and transport layer.

28. Write an HTML script to create a table with two columns Register Number and Marks with values for two rows for the table.

29. Explain the following topologies used in computer networks :

    a) Bus topology.
    b) Star topology.
    c) Ring topology.
    d) Mesh topology.

30. Explain formatting tags used in HTML with examples.

31. Explain the concept of network model of DBMS.

(5 × 8 = 40 marks)

D 91686 (Pages : 2) Name.....

Reg. No.....

THIRD SEMESTER (CUCBCSS—UG) DEGREE EXAMINATION NOVEMBER 2020

Computer Science

BCS 3B 04—DATA STRUCTURES USING C

(2017 Admissions)

Time : Three Hours Maximum : 80 Marks

Part A

Answer **all** *questions.*
Each question carries 1 mark

1. Define Data structure.
2. What are substrings and pattern matching ?
3. Define linear array.
4. What are linked list ?
5. What are polish and Reverse polish notations ?
6. How a queue is represented in a computer ?
7. Define a complete Binary tree.
8. What are binary search tree ?
9. Define DFS and BPS traversal of graph.
10. Name two sorting algorithms.

(10 × 1 = 10 marks)

Part B

Answer **all** *questions.*
Each question carries 3 *marks.*

11. Briefly explain the data structure operations.
12. Write the linear search algorithm.
13. Write an algorithm to insert a node at the beginning of a linked list.

Turn over

14. Evaluate the postfix expression P : 5, 6, 2, +, *, 12, 4, /, – using stack.

15. What are directed, undirected and weighted graphs ? (5 x 3=15 marks)

Part C

Answer any **five** *questions.*
Each question carries 5 *marks.*

16. Explain the different types of structures that are used for storing strings.

17. What are linear arrays ? How they are represented in memory of a computer ?

18. Given an integer K, write a procedure which deletes the Kth element from a linked list.

19. Write the procedures to push an item into the stack and pop an item from the stack.

20. What are priority queues ? Explain the array representation of priority queue.

21. Explain the traversing of binary trees with an example.

22. With the help of suitable example explain selection sort and merge sort.

23. Explain hashing and hash functions.

(5 × 5 = 25 marks)

Part D

Answer any **three** *questions.*
Each question carries 10 *marks.*

24. Write notes on a) Complexity of algorithms ; and b) Space -time tradeoff. Explain the complexity of any three algorithms with examples.

25. What are linked lists ? Explain the algorithm to delete node following a given node from a linked list.

26. What are Queues ? Write the algorithm for insertion and deletion in simple queue.

27. Explain the basic operations of searching and inserting with Binary search tree.

28. Define a graph. Explain the various methods of traversing a graph.

(3 × 10 = 30 marks)

D 91685 (Pages : 3) Name.....

Reg. No.....

THIRD SEMESTER (CUCBCSS—UG) DEGREE EXAMINATION NOVEMBER 2020

Computer Science

BCS 3B 05—VISUAL PROGRAMMING USING VB.NET

(2014 Admissions)

Time : Three Hours Maximum : 80 Marks

Part A

Answer **all** *questions.*
Each question carries 1 *mark.*

1. OLE refers to :
   a) Option Linking and Embedded.
   b) Object Linking and Embedding.
   c) Option Linked and Enabled.
   d) Object Linking and Embedded.
2. Controls are ————————.
   a) Objects. b) Part of Menu.
   c) Code. d) Rules.
3. The tick event is found only in ———————— object
4. ———————— is a combination of textbox and listbox.
5. ADO stands for ————————.
6. Textbox is an example of which of the following :
   a) Property. b) Event.
   c) Control. d) Method.
7. The application name always appears in the ————————.
   a) Properties Window. b) Code Window.
   c) Intermediate Window. d) Title Bar.

8. We can use a data adapter's ———— method to fill a data set.

9. ———— loop need a loop index.

a) do. b) for.

c) if. d) None of the Above.

10. Exceptions are just———— errors.

a) Compile time. b) Syntax.

c) Run time. d) None of the above.

(10 × 1 = 10 marks)

Part B

Answer **all** *the questions.*
Each question carries 2 *marks.*

11. List and explain properties of a listbox control.

12. What is a menu editor ? Explain.

13. Write a short note on InputBox function.

14. Write a note on displaying data in the datagrid.

15. How will you handle exceptions in VB.Net ?

(5 × 2 = 10 marks)

Part C

Answer any **five** *questions.*
Each question carries 4 *marks.*

16. Explain different forms of if statements in VB.Net with suitable examples.

17. List and explain important properties of command buttons.

18. Describe built-in functions of VB.Net.

19. How to create constructors in VB.Net ? Explain.

20. What is object-oriented programming. Discuss the creation and usage of classes and objects in VB.Net.

21. How will you create a new data connection ? Explain with an example.

22. Write down code for moving next, previous and first record.

23. Explain how to use optional argument. What is if's use ?

(5 × 4 = 20 marks)

Part D

Answer any **five** *questions.*
Each question carries 8 *marks.*

24. Write a VB.Net application for displaying the real roots of a quadratic equation. Specify the user interface and code used in the application.

25. How will you implement inheritance in VB.Net. Explain with a suitable example.

26. Write a short note on :

    a) Jagged array.

    b) System.String class.

    c) Hash table.

    d) ReDim keyword.

27. What is assembly in VB.Net ? What is the use of assembly ? Explain different types of assembly in VB.Net

28. Design a VB.Net application to find the biggest and smallest among a set of numbers with a suitable user interface and code.

29. What are the benefits of using VB.Net programming language ? Compare VB and VB.Net.

30. Design a message box that gives a message whenever the user tries to Quit from the particular form. Give the steps involved in designing the message box.

31. Explain the concept of event driven programming in VB.Net. How do you build a project in VB.Net. Explain in detail.

(5 × 8 = 40 marks)

D 91684 (Pages : 2) Name.....

Reg. No.....

THIRD SEMESTER (CUCBCSS—UG) DEGREE EXAMINATION NOVEMBER 2020

Computer Science

BCS 3B 04—FUNDAMENTALS OF DIGITAL ELECTRONICS

(2014 Admissions)

Time : Three Hours Maximum : 80 Marks

Part A

Answer **all** *questions.*

Each question carries 1 *mark.*

1. The parity of 01110010 is ————.
2. Convert the fractional decimal number 6.75 to binary.
3. Which Law it is ? X • Y + X • Z = (X + Z) • (X + Y)
4. ———— & ———— are the Universal Gate.
5. How many 3-line-to-8-line decoders are required for a l-of-32 decoder ?
6. How many data select lines are required for selecting eight inputs ?
7. On a master-slave flip-flop, when is the master enabled ?
8. The terminal count of a modulus-11 binary counter is ————.
9. What is meant by parallel load of a shift register ?
10. The minimum number of flip-flops needed to construct a BCD decade counter is.

(10 × 1 = 10 marks)

Part B

Answer **all** *questions.*

Each question carries 2 *marks.*

11. What is the essential characteristic of Hexadecimal over Binary number system ?
12. What is the use of Boolean algebra ?
13. What is difference between a multiplexer and encoder ?

14. What do you mean by modulus of counter ?

15. What function does a DAC perform ?

(5 × 2 = 10 marks)

Part C

Answer any **five** *questions.*
Each question carries 4 *marks.*

16. Explain Hamming Code using proper example.

17. Explain three variable Karnaugh map using example.

18. Explain the steps to implement or design combinational logic circuit.

19. Draw a logic diagram of 8 × 1 lines multiplexer with its truth table.

20. What is the difference between encoder and decoder ? Explain with example.

21. Explain the working of RS Flip Flop with logic diagram and truth table.

22. Differentiate between UP, DOWN and UP/DOWN counter.

23. Describe offset error and its effect on a DAC output.

(5 × 4 = 20 marks)

Part D

Answer any **five** *questions.*
Each question carries 8 *marks.*

24. Write a short note on ASCII.

25. Obtain the simplified expressions in sum-of-products :

    a) $F(x, y, z) = \Sigma(2,3,6,7)$

    b) $F(A, B, C, D) = \Sigma(7,13,14,15)$

26. Explain parallel counters. Give the circuit representation of 4-bit synchronous counter-and explain its working.

27. Draw the logic diagram and explain the l-to-16 Demultiplexer circuit.

28. Name the four basic types of shift register, and draw a block diagram for each.

29. Explain the Master-Slave Flip-Flop. How it overcome the race condition of J-K flip-flop. Use proper logic diagram.

30. Explain Dual-slope A/D conversion.

31. Explain R-2R D/A Converter.

(5 × 8 = 40 marks)

D 73756 (Pages : 2) Name.....

Reg. No.....

THIRD SEMESTER (CUCBCSS—UG) SPECIAL DEGREE EXAMINATION NOVEMBER 2019

Computer Science

BCS 3B 04—DATA STRUCTURES USING C

Time : Three Hours Maximum : 80 Marks

Part A

Answer **all** *questions.*
Each question carries 1 *mark.*

1. What is a data structure ?
2. Define a tree.
3. Define stack.
4. What are linked list ?
5. Define a string.
6. Define linear array.
7. What is meant by sorting ?
8. Define Hashing.
9. What is a priority queue ?
10. Define binary tree traversal.

(10 × 1 = 10 marks)

Part B

Answer **all** *questions.*
Each question carries 3 *marks.*

11. Differentiate linear and nonlinear data structures.
12. How a singly linked list can be represented ?
13. Explain the array representation of stacks.
14. Evaluate the postfix expression P : 3, 8, 4, +, *, 10, 2, /, – using stack.
15. Explain Hash functions.

(5 × 3 = 15 marks)

Turn over

Part C

Answer any **five** *questions.*
Each question carries 5 *marks.*

16. Explain complexity of algorithms, time space trade off and Big-O notation.
17. What are arrays ? How two dimensional arrays are represented in memory of a computer ?
18. Briefly explain different types of structures used for storing strings.
19. Write the procedures for inserting an element into an array.
20. Explain with suitable example, the various traversing of Binary trees.
21. Explain the traversing of linked list.
22. Explain directed graph, undirected graph and weighted graph.
23. Explain linear searching and binary searching.

(5 × 5 = 25 marks)

Part D

Answer any **three** *questions.*
Each question carries 10 *marks.*

24. What is meant by pattern matching ? Explain first pattern Matching Algorithm.
25. Explain the steps involved in insertion and deletion into a singly and doubly linked list.
26. Explain insertion sort algorithm with the help of a suitable example What is the complexity of the algorithm ?
27. Explain expression trees. How they are implemented using pointers ?
28. What are graphs ? Explain different methods of traversing a graph.

(3 × 10 = 30 marks)

D 12006 (Pages : 2) Name.....

Reg. No.....

THIRD SEMESTER (CBCSS—UG) DEGREE EXAMINATION NOVEMBER 2021

Computer Science

BCS 3C 03—PROBLEM SOLVING USING C

(2019—2020 Admissions)

Time : Two Hours Maximum : 60 Marks

Section A (Short Answer Type Questions)

Answer at least **eight** *questions.*
Each question carries 3 *marks.*
All questions can be attended.
Overall Ceiling 24.

1. What is the purpose of getchar() and putchar() functions ?
2. Explain ternary operator.
3. What is a null pointer ?
4. What is the purpose of *continue* statement ?
5. What do you mean by call by reference ?
6. Explain strcmp() function in C.
7. What are integer literals ?
8. What do you mean by reserved keywords ? Give examples.
9. What is the use of goto statement ?
10. What do you mean by return type in a function ?
11. What do you mean by an identifier ?
12. What are enumerated data types ?

(8 × 3 = 24 marks)

Turn over

Section B (Short Essay Type Questions)

Answer at least **five** *questions.*
Each question carries 5 *marks.*
All questions can be attended.
Overall Ceiling 25.

13. Explain the syntax of a function in C with an example.
14. Write a C program to find the largest and smallest number from an array.
15. Explain recursion in C with an example.
16. Explain *nested if* with syntax and example.
17. Explain logical operators in C.
18. Explain the concept of global variables with an example.
19. Write a C program to add 2 matrices.

(5 × 5 = 25 marks)

Section C (Essay Type Questions)

Answer any **one** *question.*
The question carries 11 *marks.*

20. Discuss the methods of opening a data file.
21. Write a C program that reads several different names, addresses, age, qualification and rearranges the names into alphabetic order and then write out the list in the alphabetic order using structure within the program.

(1 × 11 = 11 marks)

D 12005 (Pages : 2) Name.....

Reg. No.....

THIRD SEMESTER (CBCSS–UG) DEGREE EXAMINATION NOVEMBER 2021

Computer Science

BCS 3B 04—DATA STRUCTURES USING C

(2019—2020 Admissions)

Time : Two Hours Maximum : 60 Marks

Section A

Answer atleast **eight** *questions.*
Each question carries 3 *marks.*
All questions can be attended.
Overall ceiling 24.

1. What are data structures ? Examples.
2. Explain the string operation, "Concatenation".
3. How to represent a one dimensional array in memory ?
4. What are the advantages of dynamic memory allocation ?
5. Specify one of the applications of a linked list.
6. What is the significance of the term "top of the stack" ?
7. Explain the procedure to add a new element in to a linear queue.
8. What are priority queues ?
9. Define a binary tree data structure with example.
10. Explain in-order tree traversal procedure.
11. What is directed graph ?
12. What is the basic concept of a linear search ?

(8 × 3 = 24 marks)

Section B

Answer atleast **five** *questions.*
Each question carries 5 *marks.*
All questions can be attended.
Overall ceiling 25.

13. What are the features of a good algorithm ? Discuss the complexity measures.
14. What are sparse matrices ? Explain its memory representation and operations.

Turn over

15. Develop the algorithm to insert a node in a singly linked list.
16. What is recursion ? Explain the requirement of a stack in recursion process.
17. What is circular queue ? Explain the procedure to add a new element in to a circular queue.
18. Explain the binary tree representation in memory using arrays and linked list.
19. Explain the selection sort procedure with example.

(5 × 5 = 25 marks)

Section C

Answer any **one** *question.*
Each question carries 11 *marks.*

20. What is linked list representation of queue in memory ? Develop the implementation algorithms.
21. What are binary search trees ? Develop the algorithm to create a binary search tree in memory.

(1 × 11 = 11 marks)

D 11826 (Pages : 3) Name.....

Reg. No.....

THIRD SEMESTER (CUCBCSS–UG) DEGREE EXAMINATION NOVEMBER 2021

Computer Science

BCS 3C 03—PROBLEM SOLVING USING C PROGRAMMING

(2017—2018 Admissions)

Time : Three Hours Maximum : 64 Marks

Part A

Answer **all** *questions.*

Each question carries 1 *mark.*

1. Which of the following are tokens in C ?

   (a) Keywords. (b) Variables.

   (c) Constants. (d) All of the above.

2. Which of the following is a ternary operator ?

   (a) ?: (b) ^.

   (c) sizeof(). (d) *.

3. What is the ouput of the following C program segment ?

```
int main ()
{
   int a = 25 ;
   while (a < = 27)
     {
       print f ("%d ",a) ;
       a++ ;
     }
   return 0 ;
}
```

25 25 25

   (a) 25 26 27. (b) 27 27 27.

   (c) None of the above.

4. Which keyboard is used to come out of a loop only for that iteration ?

   (a) Break. (b) Continue.

   (c) Return. (d) None of the above.

5. Which character is used to indicate the end of the string ?

   (a) Any alphabet. (b) Null.

   (c) A. (d) None of the above.

6. In C, if you pass an array as an argument to a function, what actually gets passed ?

   (a) Value of elements in array. (b) First element of the array.

   (c) Base address of the array. (d) Address of the last element of array.

7. A structure data type in C means ————————.

   (a) Can be read as a single entity.

   (b) Cannot be read as a single entity.

   (c) Can be displayed as a single entity.

   (d) Has member variables that cannot be read individually.

8. Which of the following true about FILE **fp* ?

   (a) FILE is a keyword in C for representing files and fp is a variable of FILE type.

   (b) FILE is a stream.

   (c) FILE is a buffered stream.

   (d) FILE is a structure and fp is a pointer to the structure of FILE type.

9. If a variable is a pointer to a structure, then which of the following operator is used to access data memebers of the structure through the pointer variable ?

   (a) . (b) &

   (c) * (d) ->

(9 × 1 = 9 marks)

Part B

Answer **all** *questions.*

Each question carries 2 *marks.*

10. Distinguish between **putchar()** and **getchar()** functions in C.

11. What is **else..if** ladder ? Give its syntax.

12. How will you declare and initialize one dimensioal array in C ?

13. What is recursion ? Give an example.

14. What is a pointer variable ? How can it be initialized.

(5 × 2 = 10 marks)

Part C

Answer any **five** *questions.*
Each question carries 5 *marks.*

15. Explain the fundamental data types in C with illustrations.

16. Illustrate the function of **break** and **continue** statements in C with examples.

17. Write a C program to find the largest among N numbers.

18. What is structure ? Why structure is needed ? Differentiate between structure and array.

19. What are the different types of arrays in C ? Illustrate each one with exampe.

20. Explain any five string handling functions in C.

21. Explain the function of any five file handling functions in C.

22. Write a C program to swap the value of two integer variables using pointers.

(5 × 5 = 25 marks)

Part D

Answer any **two** *questions.*
Each question carries 10 *marks.*

23. Give a detailed account on different types of operators in C.

24. What is a user-defined function in C ? How it differs from library function in C ? Illustrate the way of prototyping, declaring and defining a user-defined function in C.

25. Write a C program to copy the contents of one file to another.

(2 × 10 = 20 marks)

D 11825 (Pages : 3) Name.....

Reg. No.....

THIRD SEMESTER (CUCBCSS–UG) DEGREE EXAMINATION NOVEMBER 2021

Computer Science

BCS 3B 04—DATA STRUCTURES USING C

(2017—2018 Admissions)

Time : Three Hours Maximum : 80 Marks

Part A

Answer **all** *questions.*
Each question carries 1 *mark.*

1. If several elements are competing for the same bucket in the hash table, then it is called as ————————.

   (a) Diffusion. (b) Collision.

   (c) Replication. (d) Duplication.

2. Elements in an array are accessed ————————.

   (a) Randomly. (b) Exponentially.

   (c) Sequentially. (d) Logarithmically.

3. Linked lists are best suited for ————————.

   (a) Relatively permanent collections of data.

   (b) The size of the structure and the data in the structure are constanly changing.

   (c) Both (A) and (B).

   (d) None of the above.

4. Which of the following are applications of linked lists ?

   (a) Implementing file system. (b) Chaining in hash tables.

   (c) Binary tree implementation. (d) All of the above.

5. If the elements "A", "B", "C" and "D" are placed in a queue and are deleted one at a time, in what order will they be removed ?

   (a) ABCD. (b) DCBA.

   (c) DCAB. (d) ABDC.

6. Process of inserting an element in stack is called ————————.

   (a) Insert. (b) Push.

   (c) Pop. (d) None of the above.

Turn over

7. What is a full binary tree ?

   (a) Each node has exactly two children.

   (b) Each node has exactly zero or two children.

   (c) All the leaves are at the same level.

   (d) Each node has exactly one or two children.

8. To represent hierarchical relationship between elements, which data structure is suitable :

   (a) Dequeue. (b) Priority.

   (c) Tree. (d) Graph.

9. Complexity of linear search algorithm is ————————.

   (a) O (n log n). (b) O ($n2$).

   (c) O (log n). (d) O (n).

10. The data structure used in standard implementation of Breadth First Search is ————————.

   (a) Stack. (b) Queue.

   (c) Linked List. (d) Tree.

(10 × 1 = 10 marks)

Part B

Answer **all** *questions.*
Each question carries 3 *marks.*

11. What are the different categories of data structures ? Explain.

12. Explain the memory representation of two-dimensional arrays with an example.

13. What are queues ? Explain the applications of queue.

14. What is a tree ? Explain the representation tree using linked list.

15. What are the different types of graphs ?

(5 × 3 = 15 marks)

Part C

Answer any **five** *questions.*
Each question carries 5 *marks.*

16. What is an algorithm ? Explain time and space complexity of an algorithm with illustration.

17. Explain any one pattern matcing algorithm.

18. Explain the differences between one dimensions, two dimensional and multi-dimensional arrays.

19. Write an algorithm for searching a specific key element in a linked list.

20. Explain the implementation of stack using arrays.

21. Draw a binary tree for the expression : A * B – (C + D) * (P/Q).

22. Differentiate between directed and undirected graph with examples.

23. Explain binary search algorithm. Also analyse the complexity of the algorithm.

(5 × 5 = 25 marks)

Part D

Answer any **three** *questions.*
Each question carries 10 *marks.*

24. What is a string ? Explain how it is represented using C language. Also discuss the different operations on strings.

25. Explain the procedure for adding and deleting a node at the end of two-way linked list.

26. Write an algorithm to convert a given infix expression to postfix expression ? Trace the steps involved in converting the infix expression $((A + B) \wedge C) - ((D * C) / F)$ to postfix expression.

27. Explain BFS and DFS traversal algorithms on graph with illustration.

28. Draw the binary search tree whose elements are inserted in the following order :

42, 72, 65, 35, 54, 78, 96, 12, 15, 69.

(3 × 10 = 30 marks)

D 11824 (Pages : 3) Name.....

Reg. No.....

THIRD SEMESTER (CUCBCSS–UG) DEGREE EXAMINATION NOVEMBER 2021

Computer Science

BCS 3C 03—FUNDAMENTALS OF SYSTEM SOFTWARE, NETWORK AND DBMS

(2014—2016 Admissions)

Time : Three Hours Maximum : 80 Marks

Part A

Answer **all** *questions.*

Each question carries 1 *mark.*

1. The code generated by the compiler after compilation is known as ————.

   (a) Source code. (b) Object code.

   (c) Algorithm. (d) Pseudo code.

2. The network that covers a wide area which may span across provinces and even a whole country is known as ————.

   (a) MAN. (b) WAN.

   (c) LAN. (d) PAN.

3. The ———— model represents the database as a collection of tables.

   (a) Network. (b) Hierarchical.

   (c) Relational. (d) Spatial.

4. The unique attribute used to identify a record in a relational data base is called--

   (a) Primary key. (b) Candidate key.

   (c) Foreign key. (d) Referential key.

5. Which one is an example for unguided media ?

   (a) Microwave. (b) Coaxial cables.

   (c) Twisted pair. (d) Optic fiber.

6. The number of participating entities in a relationship is 3 is called ———— relationship.

(a) Binary. (b) Secondary.

(c) Primary. (d) Ternary.

7. An example for a Web browser is ————.

(a) Google chrome. (b) Windows.

(c) Linux. (d) Unix.

8. The HTML tag used for drawing a horizontal line in a Web page is ————.

(a) <hr> (b) <hl>

(c) <hz> (d) <hi>

9 ———— layer is responsible for creating the frames that move across the network.

(a) Network. (b) Data link.

(c) Physical. (d) Transport.

10. The language that uses mnemonic and opcode is :

(a) Machine Language. (b) High level language.

(c) Assembly language. (d) Symbolic Language.

(10 × 1 = 10 marks)

Part B

Answer **all** *questions.*
Each question carries 2 marks.

11. What do you mean by a single user operating system ?

12. What is the use of GROUP BY and HAVING clause in SQL ?

13. What do you mean by one to one relationship ?

14. What is the purpose of DELETE statement ? Give example.

15. What are the functions of data link layer ?

(5 × 2 = 10 marks)

Part C

Answer any **five** *questions.*
Each question carries 4 *marks.*

16. Explain the formatting tags used for bold, italics and underlined text with examples.
17. What do you mean by attributes in a database ? Give example.
18. What is the purpose of UPDATE command ? Give example.
19. Explain the features of time sharing operating system.
20. Explain the goals of networking.
21. Explain the purpose of ALTER command with example.
22. Explain nested queries in SQL with example.
23. Explain hypertext and hypermedia.

(5 × 4 = 20 marks)

Part D

Answer any **five** *questions.*
Each question carries 8 *marks.*

24. Explain with a diagram, the OSI model in computer networks.
25. Explain HTML document structure with an example.
26. Explain with example, how to create hyperlinks in HTML ?
27. Explain the characteristics of real time operating system.
28. What is network model in DBMS ? Explain its advantages and disadvantages.
29. Explain with HTML code the creation of ordered and unordered lists.
30. Explain various network topologies.
31. Explain the tags used for tables with an example.

(5 × 8 = 40 marks)

D 11823 (Pages : 3) Name.....

Reg. No.....

THIRD SEMESTER (CUCBCSS–UG) DEGREE EXAMINATION NOVEMBER 2021

Computer Science

BCS 3B 05—VISUAL PROGRAMMING USING VB.NET

(2014—2016 Admissions)

Time : Three Hours Maximum : 80 Marks

Part A

Answer **all** *questions.*
Each question carries 1 *mark.*

1. A ———— variable is one that is declared inside a procedure.
2. ———— converts the expression to Short data type in VB.NET.
3. ———— statement is used for coding single-alternative and dual-alternative selection structures.
4. ————function is used to return a copy of string without leading spaces.
5. ———— property is used to specify a combo box's style in Visual Basic.
6. ———— control is used represent the items in a hierarchical manner.

   (a) Tree view. (b) Grid view.

   (c) Progress bar. (d) None of these.

7. ———— access modifier specifies that a class cannot be used as a base class.
8. ———— is the process of finding and removing errors.

   (a) Checking. (b) Compiling.

   (c) Debugging. (d) Quick watch.

9. Which of the following object is used by the DataAdapter to retrieve the data from database ?

   (a) Command. (b) Connection.

   (c) Data Reader. (d) None of these.

10. Which of the following method of the command object is best suited when you have aggregate functions in a SELECT statement ?

(a) ExecuteScalar. (b) ExecuteReader.

(c) ExecuteNonQuery. (d) None of these.

(10 × 1 = 10 marks)

Part B

Answer **all** *questions.*
Each question carries 2 marks.

11. What is class library in Visual Studio ?

12. Write the purpose of IsNumeric() and IsError() functions with example.

13. Explain any two properties of button control.

14. State different types of Access Modifiers in VB.Net.

15. List the functions of Command object in VB.NET. Also explain its use.

(5 × 2 = 10 marks)

Part C

Answer any **five** *questions.*
Each question carries 4 *marks.*

16. Explain : (i) Garbage collection ; (ii) CLS ; (iii) MSIL ; and (iv) CLR.

17. Write the syntax of select case and give an example.

18. What is MDI form ? How to create ? Explain MDI application with example.

19. Explain different types of error handling. Also explain any one in detail.

20. Explain the connected architecture of ADO.NET in brief.

21. What do you mean by constants and operators ? Explain the different types of operators.

22. What is the difference between collection and array ? Explain any two collections in detail.

23. Why windows applications are beneficial ? Discuss benefits of windows forms.

(5 × 4 = 20 marks)

Part D

Answer any **five** *questions.*
Each question carries 8 *marks.*

24. Explain the architecture of .NET framework along with diagram.

25. Write a console application program that makes mathematical calculations like +, –, *, /, sqrt etc. When the program starts a list of mathematical expressions should be appears on the top of the screen and user should enter the number first to select operation and then input numbers. After that, program should show result and wait for user to press any to terminate program.

26. Explain input box and message box in detail with example.

27. Explain inheritance in VB.NET. Which inheritance is not supported in VB.NET.

28. Write VB.Net program to create patient table having field's pno, pname, address, phone number. Display appropriate message in message box.

29. What do you mean by arrays ? Give difference between static arrays and dynamic arrays. How can they be created ? Give syntax.

30. Describe the methodology to create menu.

31. What is connection string ? Explain its all parameters.

(5 × 8 = 40 marks)

D 11822 (Pages : 4) Name.....

Reg. No.....

THIRD SEMESTER (CUCBCSS–UG) DEGREE EXAMINATION NOVEMBER 2021

Computer Science

BCS 3B 04—FUNDAMENTALS OF DIGITAL ELECTRONICS

(2014—2016 Admissions)

Time : Three Hours Maximum : 80 Marks

Part A

Answer **all** *questions.*
Each question carries 1 *mark.*

1. Hexadecimal numbers are a mixture of ————.

   (a) Octal and decimal numbers. (b) Binary and octal numbers.

   (c) Letters and decimal digits. (d) Binary and decimal numbers.

2. The Gray code for decimal 7 is ————.

   (a) 0111. (b) 1011.

   (c) 0100. (d) 0101.

3. Logic 0 in binary operation represents ———— state of a digital circuit.

   (a) ON. (b) OFF.

   (c) Toggle. (d) None of the above.

4. Exclusive-OR (XOR) logic gates can be constructed from ———— logic gates.

   (a) OR gates only.

   (b) AND gates and NOT gates.

   (c) AND gates, OR gates and NOT gates.

   (d) OR gates and NOT gates only.

5. The logical sum of two or more logical product terms is called ————.

   (a) POS. (b) SOP.

   (c) OR operation. (d) AND operation.

Turn over

6. How many outputs will a decimal to BCD encoder have ?

   (a) 4. (b) 8.

   (c) 12. (d) 16.

7. For 8-bit input encoder, how many combinations are possible ?

   (a) 8. (b) 2^8.

   (c) 4. (d) 2^4.

8. The flip flop is a ———— device.

   (a) Unstable. (b) Bi-stable.

   (c) Both (a) and (b). (d) None of the above.

9. How many possible conversations are there to convert SR flip flop to other flip flops ?

   (a) One. (b) Two.

   (c) Three. (d) Four.

10. What type of register would shift a complete binary number in one bit at a time and shift all the stored bits out one bit at a time ?

    (a) Parallel-in Parallel Out. (PIPO). (b) Serial-in Serial Out (SISO).

    (b) Serial -In Parallel Out (SIPO). (d) Parallel-in Serial Out (PISO).

(10 × 1 = 10 marks)

Part B

Answer **all** *questions.*
Each question carries 2 *marks.*

11. What is Excess-3 code ?

12. State DeMorgan's law.

13. What are decoders ?

14. Distinguish between latch and flip-flop.

15. What is Analog-to-digital convertor ? Give its use.

(5 × 2 = 10 marks)

Part C

Answer any **five** *questions.*
Each question carries 4 *marks.*

16. Convert the following numbers :

    (i) $(53)_{10}$ = (————————)$_{16}$.

    (ii) $(ABC)_{16}$ = (————————)$_{2}$.

    (iii) $(88)_{10}$ = (————————)$_{8}$.

    (iv) $(1234)_{8}$ = (————————)$_{2}$.

17. Construct the BCD and Gray code for decimal number 0 to 9.

18. Explain the standard forms of Boolean expressions.

19. Implement the logic function $f = AB + \dot{A}\dot{B}$ using a suitable multiplexer.

20. What is race around condition in JK flip-flop ? Explain how it is avoided in JK master slave Flip-flop.

21. Compare and contrast Asynchronous and Synchronous counter.

22. What are the four modes of Shift Register ? Which is fastest of them ? Why ?

23. Distinguish between combinational logic circuits and sequential logic circuits.

(5 × 4 = 20 marks)

Part D

Answer any **five** *questions.*
Each question carries 8 *marks.*

24. Express the Boolean expression $f(x, y, z) = x + yz$ in SOP and POS form. Also give its min-term and max-term.

25. What is Karnaugh map ? Give the structure of two, three and four variable K-map. How a quad eliminates two variables.

26. State the postulates and theorem of Boolean Algebra.

27. What are Universal Gates ? Explain the basic logic gates with logic diagram and truth tables.

28. What is Demultiplexer ? Design a 1-to-4 Demultiplexer with truth table.

29. What is a flip-flop ? Show the logic implementation of RS flip-flop having active-High R and S inputs. Draw its truth table and mark the invalid entry.

30. What do you mean by shift register ? Explain the Serial-In-Serial-Out shift register.

31. Give an account on weighted-Register D/A converters.

(5 × 8 = 40 marks)