

Faculty of Science & Technology

Third Semester B.Tech. (Information Technology) (C.B.C.S.) Examination

PROGRAMMING LOGIC AND DESIGN USING 'C'

Time : Three Hours]

[Maximum Marks : 70

INSTRUCTIONS TO CANDIDATES

- (1) All questions carry marks as indicated.
- (2) Solve Question 1 **OR** Question No. 2.
- (3) Solve Question 3 **OR** Question No. 4.
- (4) Solve Question 5 **OR** Question No. 6.
- (5) Solve Question 7 **OR** Question No. 8.
- (6) Solve Question 9 **OR** Question No. 10.
- (7) Assume suitable data whenever necessary.
- (8) Illustrate your answers whenever necessary with the help of neat sketches.

1. (a) Explain Decision making concept using example. 8
- (b) What is algorithm ? Write the various properties of algorithm. 6

**OR**

2. (a) Explain storage classes in 'C' with suitable example. 6
- (b) Write difference between while & do-while statement. 4
- (c) Write a program in C to reverse a given number of 6 digits. 4
3. (a) Write a C program for multiplication of  $4 \times 4$  matrix. 7
- (b) Explain linear search with suitable example. 7

**OR**

4. (a) Explain string function in 'C' and its purpose with example. 8
- (b) Write a program to sort an array of 10 numbers using selection sorting technique. 6
5. (a) State the difference between structure & union with suitable example. 7
- (b) What is recursion ? Write a C program to calculate factorial of number using recursion. 7

**OR**

6. (a) Write short notes on :
- (i) Pointer to structure.
  - (ii) Array of structure.
  - (iii) Union of structure.
  - (iv) Malloc ( ) and Calloc ( ). 8
- (b) Explain difference between call by value and call by reference using example. 6
7. (a) Write a program to merge two files and get the contents into a new file. 7
- (b) What are the different types of files ? Also explain different opening modes of file. 7

**OR**

8. (a) Explain the following with example :
- (i) Bitwise operators
  - (ii) Enumerated data types
  - (iii) Type casting
  - (iv) Dynamic memory allocation. 8
- (b) What is difference between text file & binary file ? 6
9. (a) Explain following graphics functions :
- (i) Initgraph ( )
  - (ii) Outtext xy ( )
  - (iii) Ploygon ( )
  - (iv) Imagessize ( ) 8
- (b) Write a program using C graphics to print 5 concentric circles from the center of the screen. Fill the circles with two alternate colors. 6

**OR**

10. (a) Write a program using graphics. The program should be menu driver program and have the following options :
- (i) Draw line
  - (ii) Draw circle
  - (iii) Draw arc
  - (iv) Draw rectangle. 10
- (b) What is the difference between Malloc ( ) and Calloc ? Explain with example. 4

B.Tech. (Information Technology) Third Semester (C.B.C.S.)  
**Programming Logic & Design Using C**

P. Pages : 2

Time : Three Hours



**PSM/KW/23/2582**

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  5. Solve Question 7 OR Questions No. 8.
  6. Solve Question 9 OR Questions No. 10.
  7. Due credit will be given to neatness and adequate dimensions.
  8. Assume suitable data whenever necessary.
  9. Illustrate your answers whenever necessary with the help of neat sketches.

1. a) What is algorithm? Explain the properties of algorithm with suitable example. 6
- b) Explain different data types available in 'C' language. 4
- c) Write a 'C' program to print the following output:- 4
- ```
*   *   *   *   *  
*   *   *   *  
*   *   *  
*   *  
*
```

**OR**

2. a) Write a menu driven program in 'C' which has following option:- 8
- |              |                  |
|--------------|------------------|
| 1) Factorial | 2) Primer or Not |
| 3) Odd/Even  | 4) Exit          |
- b) What is an operator? Explain arithmetic, Relational and logical operators with suitable example. 6
3. a) What do you mean by array? Why are array used? How are array elements accessed? 6
- b) Write a program for the multiplication of two (3 \* 3) matrices. 8

**OR**

4. a) Write a program to search a given elements in an array of dimension 10 using binary search. 7
- b) Write a program to check whether the string is palindrome or not using user defined function. 7

**PSM/KW/23/2582**

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5. a) Giving an example for each, discuss the call by value and call by reference method of parameter passing. 7
- b) Define a structure called cricket game that stores the following information:- Player\_name, team\_name, batting\_average, player\_age. Using cricketgame declare an array player with 100 elements and write a program to read information about all the 100 players and display team-wise list containing names of players with their batting average and age. 7

**OR**

6. a) State the difference between structure and union with suitable example. 7
- b) A 5 digit number is entered through the keyboard. Write a recursive function to calculate the sum of the 5 digit. 7
7. a) Write a program to copy the contents of one file to another using low level file I/O. 6
- b) What is difference between text file and binary file. 4
- c) Explain fread ( ) and fwrite ( ). 4

**OR**

8. a) Write a program to count the number of character, space, tab and newline in a file. 6
- b) Write short notes on:- 4
- i) Enumerated data types ii) Type casting
- c) Write different file opening modes. 4
9. a) Explain in detail malloc ( ) and Calloc ( ) functions. 5
- b) Write a program using graphics. The program should be a menu-driven program and have following options:- 9
- 1) Draw line
- 2) Draw Rectangle
- 3) Draw Circle
- 4) Draw Ellipse
- 5) Draw arc
- 6) Exit

**OR**

10. a) Write a program to draw 5 concentric circles with different colors. Fill the innermost circle with RED color. 5
- b) Explain in detail initgraph ( ). What are graphics drivers and modes? 4
- c) Explain the working of setlinestyle ( ) and settextstyle ( ) with syntax. 5

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**Programming Logic and Design Using C**

P. Pages : 2

Time : Three Hours



**MSP/KS/23/2542**

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  4. Solve Question 5 OR Questions No. 6.
  5. Solve Question 7 OR Questions No. 8.
  6. Solve Question 9 OR Questions No. 10.
  7. Due credit will be given to neatness and adequate dimensions.
  8. Assume suitable data whenever necessary.
  9. Illustrate your answers whenever necessary with the help of neat sketches.

1. a) Define algorithm? Explain characteristics of algorithm. 7
- b) Explain storage classes in detail. 7

**OR**

2. a) Write a program in C to check entered number is prime or not. 7
- b) Explain type of loops with an example. 7
3. a) Sort the given set of element using selection sort. Write stepwise process of sorting. 7  
Data – 44, 55, 7, 8, 99, 56, 63, 21, 74
- b) Write program to search the element in array using binary search method. 7

**OR**

4. a) Explain linear search with an example. Also write its advantages & disadvantages. 7
- b) Explain insertion sort techniques along with an example. 7
5. a) State the difference between structure and union with a suitable example. 7
- b) Write a program using structure. Create a structure called **student**. The structure contains information about student (Roll-No., name, branch, age). Ask the user for information of 10 different students and display the same information. 7

**OR**

6. a) What is the difference between recursion and iteration? Write a 'C' program to generate Fibonacci series using recursion. 7
- b) Explain call by value and call by reference with example. 7



7. a) Write a short note on following functions. 8  
i) fseek ()  
ii) fopen ()  
iii) ftell()  
iv) fread ()

- b) Write a program to copy the contents of one file into another file using command- line argument. 6

**OR**

8. a) How files are handled in C programming? Explain various file handling operations. 5

- b) Explain the following: 9  
i) Enumerated data type.  
ii) Typedef  
iii) Type casting

9. a) Write a program to draw five concentric circle with different color, fill the innermost circle with red color. 8

- b) Distinguish between static memory allocation and dynamic memory allocation. 6

**OR**

10. a) Write a program using graphics. The program should be a menu driven program and have following options: 8

- i) Draw line  
ii) Draw rectangle  
iii) Draw circle  
iv) Draw ellipse

- b) Explain the purpose of the following functions: 6  
i) Calloc ()  
ii) Malloc ()  
iii) Realloc ()

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**SPM/KW/22/2542**

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  6. Solve Question 9 OR Questions No. 10.
  7. Assume suitable data whenever necessary.
  8. Illustrate your answers whenever necessary with the help of neat sketches.

1. a) Explain Decision making concept using example. 8  
b) Write a program to print out all Armstrong numbers between 1 and 500. 6

**OR**

2. a) Explain storage class in 'C' with suitable example. 6  
b) Write difference between while & do-while statement. 4  
c) Give the significance of "break" and "continue" statement with example. 4
3. a) Write a program to find transpose of a given matrix. 7  
b) Explain linear search with suitable example. 7

**OR**

4. a) Explain following function and its purpose with example. 8  
i) strcmp( )  
ii) strcpy( )  
iii) strlen( )  
iv) strcat( )  
b) Write a program to sort an array of 10 numbers using insertion sorting technique. 6
5. a) Explain difference between call by value and call by reference using example. 7  
b) What is recursion? Write a C program to calculate factorial of number using recursion. 7

**OR**

6. a) Write short notes on **any two**. 8  
i) Pointer to structure ii) Array of structure  
iii) Union of structure iv) malloc( ) and calloc( )

- b) State the difference between structure & union with suitable example. **6**
7. a) What are the different types of files? Also explain different opening modes of file. **7**
- b) Write a program to merge two files and get the contents into a new file. **7**

**OR**

8. a) Explain the following with example **any three**. **9**
- i) Bitwise operators.
- ii) Enumerated data type.
- iii) Type casting.
- iv) Dynamic memory allocation.
- b) Explain the concept of text file and binary file. **5**
9. a) Explain following graphics functions: - **8**
- i) `initgraph ( )` ii) `polygon ( )`
- iii) `putimage ( )` iv) `putpixel ( )`
- b) Write a program using C graphics to print 5 concentric circles from the center of the screen. Fill the circles with two alternate colors. **6**

**OR**

10. a) Write a program using graphics. The program should be menu driven program & have following options- **10**
- i) Draw line ii) Draw circle
- iii) Draw arc iv) Draw rectangle
- b) Differentiate between graphics mode and text mode. **4**

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