I Semester M.C.A. Examination, February 2019
(CBCS Scheme)
COMPUTER SCIENCE
MCA 101T: Problem Solving Techniques Using C

Time: 3 Hours

Max. Marks: 70

Instructions: Answer any five questions from Section – A and any four questions from Section – B.

SECTION – A

Answer any five questions. Each question carries six marks. (5x6=30)

1. What is a flowchart? Differentiate between algorithm and flowchart.

2. Differentiate among compiler, assembler and interpreter.

3. Explain all storage classes in C with an example.

4. What are loop control structures? Explain for loop, while loop and do-while loop with their syntax.

5. How to initialize 1-D and 2-D array? Explain with example and write its uses.

6. What is data type? Explain the different data types available in C language.

7. What are macros? Explain different types with an example.

8. Explain any three input and output functions of file handling. Explain each with example.

SECTION – B

Answer any four questions. Each question carries ten marks. (4x10=40)

9. a) What is modular programming? Explain its characteristics.

b) Write a C program to demonstrate Binary operators.

P.T.O.
10. a) Explain call by value and call by reference with example.
    b) Write a C program to find the factorial of a given number using recursive
       function.
11. a) Explain any five mathematical functions available in C language.
    b) Write a flowchart to check whether the given number is prime or not.
12. a) Explain structures and unions in C language with an example.
    b) Explain enumerated types in C language with example.
13. a) What are uses of pointers? Explain the array of pointers with example.
    b) How C language implements the concept of random access file?
14. Write a short note on:
    a) Formatted I/O
    b) Preprocessor
    c) Command line arguments
    d) Pseudocode
    e) Bitwise operators.
I Semester M.C.A. Examination, Jan./Feb. 2018
(CBCS)
COMPUTER SCIENCE
MCA – 101 T : Problem Solving Techniques Using C

Time : 3 Hours
Max. Marks : 70

Instruction: Answer any five questions from Section – A and any four questions from Section – B.

SECTION – A

I. Answer any five of the following questions. Each carries 6 marks. (5x6=30)
1) Write an algorithm to find the sum of digits of a given number, use 456 as a case.
2) Explain different control statements.
3) Explain formal and actual parameters. Compare them with suitable examples.
4) Explain different storage classes.
5) Write a C program to find transpose of a matrix. Assume the following matrix

\[
A = \begin{bmatrix}
1 & 2 & 3 \\
4 & 5 & 6 \\
7 & 8 & 9
\end{bmatrix}
\]

6) Differentiate structures and unions.
7) Define function. Explain different types of functions.
8) Write a C program to check whether the given number is prime or not. Use 9, 2 and 15 as examples to evaluate.

SECTION – B

II. Answer any four questions. Each carries 10 marks. (4x10=40)
9a) What are the differences between formatted and unformatted input and output statements ?
9b) What is an array ? How to declare and initialize 2D array ?

10a) What are enumeration variables ? How are they declared ? What is the advantage of using them in a program ?
10b) Write a recursive function to generate Fibonacci numbers. Evaluate your algorithm for n = 10.
11) a) Write a C program to compare two strings using pointers. 
   b) Explain call by value and call by reference.

12) a) What are the two methods of creating structure variable? Explain with an example.
   b) Write a C program to maintain a record of 'n' employee detail using an array of structures with three fields (id, name, salary) and print the details of employees whose salary is above 5000.

13) a) What is a file pointer? Explain the functions used to open and close a file with examples.
   b) What is a macro? Explain the macro definition with examples.

14) Write short notes on:
   a) Dynamic memory allocation.
   b) Command line arguments.
I Semester M.C.A. Examination, January 2017
(CBCS)
MCA – 101 T : COMPUTER SCIENCE
Problem Solving Techniques Using C

Time : 3 Hours
Max. Marks : 70

Instruction : Answer any five questions from Section – A and any four questions from Section – B.

SECTION – A

I. Answer any five of the following questions. Each carries 6 marks. (5x6=30)

1) Define flowchart. Explain the basic symbols used to draw a flowchart. Write a flowchart to find largest of three numbers.

2) Why C is called a structured programming language? Write the structure of a C program.

3) Write a C program to find the sum of the following series
\[ \frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \frac{1}{5} + \ldots + \frac{1}{n}. \]

4) Write a C program to add two matrices of size m×n.

5) Write in brief the storage classes.

6) Given student_no as integer, name as string of 20 characters, marks scored as float. Write a program to accept 100 students details.

7) Explain how error handling is performed during file input/output operation.

8) What is dynamic memory allocation? Write syntax for malloc() and calloc(). Explain the difference between them.
SECTION – B

II. Answer any four full questions. Each carries 10 marks. (4×10=40)

9) a) Explain formatted and unformatted input-output functions in C with examples.
   b) List out at least six format specifiers used in C.

10) a) Explain different datatypes available in C with its types.
    b) What is looping? Give the syntax of all types of looping constructs.

11) a) Define pointer variable. How is it different from normal variable? Explain.
    b) Write a C program to sort 5 names using array of pointers.

12) Write a C program to read data from a file and write it in another file. Also count the no. of characters in the file.

13) a) Define function. Explain types of function.
    b) Write a C program using recursive function to find factorial of a number.

14) Write short notes on:
    1) Command line arguments.
    2) Type conversion.
    3) Bitwise operators.
    4) Enumerated datatypes.
I Semester M.C.A. Examination, January 2016
(CBCS)
COMPUTER SCIENCE
MCA 101T : Problem Solving Techniques Using C

Time : 3 Hours  Max. Marks : 70

Instruction : Answer any five questions from Section – A and any four from Section – B.

SECTION – A

Answer any five questions. Each question carries six marks : 

(5×6=30)

1. Write a flowchart for finding biggest among N-numbers.

2. Write an explanatory note on fundamental data types in C.

3. Write the output of the following:

   ```c
   main ()
   {
     int x = 5, m, k = 1, n;
     float y = 2.5;
     m = x * 1000 + y * 10;
     k = m / 1000 + x;
     n = (x == y) ? k : m;
     printf("%d \n %d \n %d", m, k, n);
   }
   ```

4. Write program to convert the given decimal integer number into binary number.

5. What do you mean by random access of file ? Explain ftell() and fseek().

6. Explain the different storage clauses available in C?

7. Write a program to demonstrate symbolic constants and declaring a variable as constant.

8. Write a program to display the numbers in increasing and decreasing order using infinite loop.

P.T.O.
SECTION - B

Answer any four questions. Each question carries ten marks: (10×4=40)

9. a) Write a program in C to read N integers (N ≤ 100), find the average of these numbers. 5
   b) What is goto statement? Explain the difference between break and continue statement. 5

10. a) With suitable examples illustrate "call by value" and "call by reference" techniques of passing parameters in C. 5
   b) What do you mean by dynamic memory allocation? Explain different dynamic memory allocation function available in C. 5

11. a) Explain the difference between structure and union with examples. 5
   b) Explain with syntax any three library function which deals with strings. 5

12. Explain the different forms of if statements. What are the advantages of switch statements over nested if statement. Exemplify all the forms of if statements. 10

13. a) Explain different types of macro substitutions. 5
   b) Write a program to find the memory size of pointer variables of all data types using size of () operator. 5

14. a) What is chain of pointers? Write a program to demonstrate it. 5
   b) Write a C program to find the sum of its individual digits repeatedly till the result in a single digit. 5
I Semester M.C.A. Examination, January 2015
(CBCS)
COMPUTER SCIENCE
MCA101T : Problem Solving Techniques Using C

Time : 3 Hours
Max. Marks : 70

Instruction: Answer any 5 questions from Section - A and any 4 from Section - B.

SECTION - A

Answer any 5 questions. Each question carries 6 marks. (5x6=30)

1. a) What is an Algorithm? State its characteristics.
   b) Write an algorithm for counting the number of digits in a given number.

2. Compare Flowcharts and Algorithms. Write an algorithm and draw a flowchart
   for displaying even numbers in the range of 1 to 100.

3. Trace the following code snippets and write the output:
   a) for (i = 5; i <= 15; i += 2)
      for (j = 0; j <= 1; j++)
      printf("%d %d", i, j);
   b) char a = 5; b = 5;
      printf("%d %d", a | b, a ^ b);

4. Discuss the different loop structures in C.

5. a) Explain the difference between actual and formal parameter with an example.
   b) Explain with example the different memory allocation functions in C.

6. a) What is an array? How is it defined and initialized? Illustrate.
   b) Write a C program to convert the upper case alphabets in an input string into
      lower case.

   P.T.O.
7. Explain the different storage classes. 6
8. Write a C program to create an employee file with the fields like Eno., Name, department and salary. 6

SECTION – B

Answer any 4 questions. Each question carries 10 marks. (4x10=40)

9. a) Briefly describe the different Format Specifiers that can be used with the printf and scanf functions. 5
   b) Write a C Function for performing Binary search and trace it on the following array : 8, 2, 7, 1, 9, 3, 5. Assume search value is 3. 5

10. a) Explain the following with example :
    i) Call by value 6
    ii) Call by reference
    iii) Recursive function.
    b) Write a recursive function in C to find sum of first 10 natural numbers (1..10). 4

11. a) Explain the different bit wise operators. Give examples. 4
    b) Write an algorithm to convert a given binary number into decimal. Trace the algorithm for an input of the binary number 10011. 6

12. a) What are pointers? How are the pointers declared and initialized? Explain with examples. 5
    b) Write a program to copy a given string using pointers. 5

13. a) Differentiate between structures and unions. Give examples of each. 4
    b) Write a C program to generate the marks card for a class of 40 students. Define a structure to hold the student details like Rno., Name and marks in 5 subjects (marks are out of 100). In order to pass a student has to score above 40 in all the 5 subjects. He gets a result of “First” if his percentage is greater than or equal to 70. Otherwise he gets the “Second” class. 6

14. a) What are pre-processor directives? Give examples. 4
    b) Write a C program that accepts several names from the user and displays them in dictionary order. 6