



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. (5×6=30)

- 1) Define flowchart. Explain the basic symbols used to draw a flowchart. Write 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
$$1 + \frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \frac{1}{5} + \dots + \frac{1}{n}$$
- 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. 7
b) List out atleast six format specifiers used in C. 3
- 10) a) Explain different datatypes available in C with its types. 6
b) What is looping ? Give the syntax of all types of looping constructs. 4
- 11) a) Define pointer variable. How is it different from normal variable ? Explain. 4
b) Write a C program to sort 5 names using array of pointers. 6
- 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. 10
- 13) a) Define function. Explain types of function. 5
b) Write a C program using recursive function to find factorial of a number. 5
- 14) Write short notes on : **(2½×4=10)**
- 1) Command line arguments.
 - 2) Type conversion.
 - 3) Bitwise operators.
 - 4) Enumerated datatypes.
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MCA 101T : Problem Solving Techniques Using C

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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 :

```
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 ($N \leq 100$), 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



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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. (5×6=30)

1. a) What is an Algorithm ? State its characteristics. 2
b) Write an algorithm for counting the number of digits in a given number. 4
2. Compare Flowcharts and Algorithms. Write an algorithm and draw a flowchart for displaying even numbers in the range of 1 to 100. 6
3. Trace the following code snippets and write the output : (2×3)
 - 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. 6
5. a) Explain the difference between actual and formal parameter with an example. 3
b) Explain with example the different memory allocation functions in C. 3
6. a) What is an array ? How is it defined and initialized ? Illustrate. 2
b) Write a C program to convert the upper case alphabets in an input string into lower case. 4

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 : 6
- i) Call by value
 - 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