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NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

MCA

SEM: I- THEORY EXAMINATION (2022-2023)

Subject: Fundamentals of Computer and Programming in C

Time: 3Hours

Max. Marks:100

General Instructions:

IMP: Verify that you have received question paper with correct course, code, branch etc.

1. This Question paper comprises of three Sections -A, B, & C. It consists of Multiple Choice Questions (MCQ's) & Subjective type questions.
2. Maximum marks for each question are indicated on right hand side of each question.
3. Illustrate your answers with neat sketches wherever necessary.
4. Assume suitable data if necessary.
5. Preferably, write the answers in sequential order.
6. No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

SECTION – A

20

1. Attempt all parts: -

- | | | |
|------|--|---|
| 1-a. | Which of the following is true for variable names in C?(CO1) | 1 |
| | (a) They can contain alphanumeric characters as well as special characters | |
| | (b) It is not an error to declare a variable to be one of the keywords (like goto, static) | |
| | (c) Variable names cannot start with a digit | |
| | (d) Variable can be of any length | |
| 1-b. | What is meant by 'a' in the following C operation?(CO5) | 1 |
| | fp = fopen("Random.txt", "a") | |
| | (a) Attach | |
| | (b) Append | |
| | (c) Apprehend | |
| | (d) Add | |
| 1-c. | How long the following loop runs? (CO2) | 1 |
| | for(x=0; x=3;x++) | |
| | (a) Three times | |
| | (b) Four times | |
| | (c) Forever | |
| | (d) Never | |
| 1-d. | The CONTINUE statement cannot be used with (CO2) | 1 |
| | (a) for | |
| | (b) switch | |

- (c) do
(d) while
- 1-e. One of the uses for function pointers in C is _____(CO3) 1
(a) Nothing
(b) There are no function pointers in c
(c) To invoke a function
(d) To call a function defined at run-time
- 1-f. What will be the output of the following C code?(CO1) 1
- ```
#include <stdio.h>
void f(int);
void (*foo)(float) = f;
int main()
{
 foo(10);
}
void f(int i)
{
 printf("%d\n", i);
}
```
- (a) Compile time error  
(b) 10  
(c) 10.000000  
(d) Undefined behaviour
- 1-g. Which of the following is the variable type defined in header string. h?(CO4) 1  
(a) Siset  
(b) Size  
(c) size\_t  
(d) size-t
- 1-h. The\_\_\_\_\_function returns a pointer to the first character of a token.(CO3) 1  
(a) strstr()  
(b) strcpy()  
(c) strspn()  
(d) strtok()
- 1-i. Choose the statement which is incorrect with respect to dynamic memory allocation.(CO5) 1  
(a) Memory is allocated in a less structured area of memory, known as heap  
(b) Used for unpredictable memory requirements  
(c) Execution of the program is faster than that of static memory allocation  
(d) Allocated memory can be changed during the run time of the program based on the requirement of the program
- 1-j. In the function malloc(), each byte of allocated space is initialized to zero.(CO3) 1  
(a) True  
(b) False
2. Attempt all parts:-

|      |                                                                             |   |
|------|-----------------------------------------------------------------------------|---|
| 2.a. | What are the advantages of high level languages over machine language?(CO1) | 2 |
| 2.b. | What is an assignment operator? Define it.(CO2)                             | 2 |
| 2.c. | List any one advantage and disadvantage of the pointer.(CO3)                | 2 |
| 2.d. | Give any 2 two differences between Structures & Union.(CO4)                 | 2 |
| 2.e. | What is the difference between the function malloc() and calloc()?(CO5)     | 2 |

#### SECTION – B

|      |                                                                                                                               |    |
|------|-------------------------------------------------------------------------------------------------------------------------------|----|
| 3.   | Answer any <u>five</u> of the following-                                                                                      | 30 |
| 3-a. | Draw flowchart and write a program to find factorial of a given number.(CO1)                                                  | 6  |
| 3-b. | Explain types of programming languages. Differentiate between compiler and interpreter.(CO1)                                  | 6  |
| 3-c. | Write a program and draw the flowchart for a program to print the following (CO1)                                             | 6  |
|      | 4 3 2 1                                                                                                                       |    |
|      | 3 2 1                                                                                                                         |    |
|      | 2 1                                                                                                                           |    |
|      | 1                                                                                                                             |    |
| 3-d. | State the different types of If statement and explain any one with proper example.(CO2)                                       | 6  |
| 3-e. | Write a program in C to find the sum and mean of all elements in an array using pointers.(CO2)                                | 6  |
| 3-f. | What is array? Explain declaration and initialization of one dimensional, two dimensional and multi-dimensional arrays. (CO2) | 6  |
| 3-g. | List and explain File Management Functions of C. (CO3)                                                                        | 6  |

#### SECTION – C

|      |                                                                                                                                                                               |    |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| 4.   | Answer any <u>one</u> of the following-                                                                                                                                       | 50 |
| 4-a. | Write an algorithm and develop a C program to reverse given number.(CO1)                                                                                                      | 10 |
| 4-b. | Draw the flowchart and write a C program to compute simple interest.(CO1)                                                                                                     | 10 |
| 5.   | Answer any <u>one</u> of the following-                                                                                                                                       |    |
| 5-a. | What is an operator? Explain the arithmetic, relational, logical, and assignment operators in C language.(CO2)                                                                | 10 |
| 5-b. | What is the purpose of switch statement? Explain its syntax with an example of menu driven c program. (CO2)                                                                   | 10 |
| 6.   | Answer any <u>one</u> of the following-                                                                                                                                       |    |
| 6-a. | What is function? Explain different classification of user defined functions based on parameter passing and return type with examples(CO3)                                    | 10 |
| 6-b. | What is recursion? Explain. Write a c-program to sum of natural numbers using Recursion (CO3)                                                                                 | 10 |
| 7.   | Answer any <u>one</u> of the following-                                                                                                                                       |    |
| 7-a. | Explain string manipulation library functions with their syntaxes. Write a program to check whether a string is palindrome or not.(CO4)                                       | 10 |
| 7-b. | Write a C program using structures to read, write, compute average - marks and display the students scoring above and below the average marks for a class of N students.(CO4) | 10 |
| 8.   | Answer any <u>one</u> of the following-                                                                                                                                       |    |

- |      |                                                                                                                                              |    |
|------|----------------------------------------------------------------------------------------------------------------------------------------------|----|
| 8-a. | What is dynamic memory allocation? Mention the limitation of static memory allocation also. Explain malloc ( ) and calloc ( ) function.(CO5) | 10 |
| 8-b. | Explain File operations in C with example. Describe the file opening modes.(CO5)                                                             | 10 |