Printed Page:-04 **Subject Code:- ACSE0201**

Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

B.Tech

SEM: II - THEORY EXAMINATION - (2024 -2025)

Subject: Programming for Problem Solving using C

Time: 3 Hours **Max. Marks: 100**

General Instructions:

IMP: *Verify that you have received the question paper with the 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. Identify the result that is produced as the output by a computer in a given scenario. (CO1,K1) 1

(a) Data
(b) Instruction
(c) Information
(d) Excursion

1-b. Which of the following are components of Central Processing Unit (CPU)? (CO1,K1) 1

(a) Arithmetic logic unit, Mouse
(b) Arithmetic logic unit, Control unit
(c) Arithmetic logic unit, Integrated Circuits
(d) Control Unit, Monitor

1-c. Which of the following factors determines the size of the int data type in different systems? (CO2,K1) 1

(a) 4 Bytes
(b) 8 Bytes
(c) Depends on the system/compiler
(d) Cannot be determined

1-d. Which of the following is valid variable? (CO2,K2) 1

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(a) int

(b) float

(c) for

(d) average

1-e. In which of the following scenarios would you typically use the "continue" statement? (CO3,K2) 1

(a) continue to the next line of code

(b) debug a program

(c) stop the current iteration and begin the next iteration from the beginning of the loop

(d) None of the above

1-f. What is an example of iteration in C? (CO3,K1) 1

(a) for

(b) while

(c) do-while

(d) all of the mentioned

1-g. Which keyword is used to exit a recursive function in most programming languages? (CO4,K1) 1

(a) break

(b) return

(c) exit

(d) both break and return

1-h. Which of the following variable will get memory in CPU register. (CO4,K1) 1

(a) register

(b) auto

(c) static

(d) extern

1-i. The first and second arguments of fopen() are (CO5,K2) 1

(a) A character string containing the name of the file & the second argument is the mode

(b) A character string containing the name of the user & the second argument is the mode

(c) A character string containing file pointer & the second argument is the mode

(d) None of the mentioned

1-j. For binary files, a ___ must be appended to the mode string. (CO5,K1) 1

(a) "b"

(b) "*B"

(c) "binary"

(d) "01"

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2. Attempt all parts:-

2.a.	What do you understand by Algorithms? (CO1,K2)	2
2.b.	List various C Tokens. (CO2,K3)	2
2.c.	Explain the components of a for loop syntax. What role do the initialization, condition, and update serve? (CO3,K3)	2
2.d.	Explain how using functions in a program can help in improving code readability and reusability.? (CO4,K2)	2
2.e.	Write various File operations. (CO5,K2)	2

SECTION-B 30

3. Answer any five of the following:-

3-a.	Explain the different areas where computers are used? (CO1,K2)	6
3-b.	Write an algorithm to convert temperature from fahrenheit to Celsius and vice versa. (CO1,K3)	6
3-c.	Explain conditional operator with the help of an example. (CO2,K3)	6
3-d.	Write a program to swap the values of two variables in a programming language of your choice, without using a third variable. (CO2,K3)	6
3.e.	Differentiate between while and do-while loop with help of a program. (CO3,K2)	6
3.f.	Differentiate Local variable vs Global variable. (CO4,K2)	6
3.g.	Explain any four file handling functions. (CO5,K2)	6

SECTION-C 50

4. Answer any one of the following:-

4-a.	Draw a block diagram of a digital computer system and explain how the different components interact during the execution of a program. (CO1,K2)	10
4-b.	Write an algorithm and draw a flowchart to check if a number is positive, negative or equal to zero. (CO1,K3)	10

5. Answer any one of the following:-

5-a.	Write a C program that demonstrates the use of various operators, including arithmetic, relational, logical, and bitwise operators. Explain the output and purpose of each operator used. (CO2,K2)	10
5-b.	What is type conversion? Explain its types with the help of an example. (CO2,K2)	10

6. Answer any one of the following:-

6-a.	Write a C program that uses different conditional statements (if, if-else, and switch) to check the eligibility of a person for voting, driving, and student discount. Explain how each conditional statement works in the program (CO3,K2)	10
6-b.	WAP that accepts marks of five subjects and finds percentage and prints grades according to the following criteria: (CO3,K3) Between 90-100%----------Print 'A'	10

80-90%----------Print ‘B’
60-80%----------Print ‘C’
Below 60%----------Print ‘D’

7. Answer any <u>one</u> of the following:-

7-a.	What is a function in C? Explain its advantages and discuss the classification of functions based on their return type and parameters. Provide examples for each classification. (CO4,K1)	10
7-b.	Write a program to calculate factorial of a number using function. (CO4,K3)	10

8. Answer any <u>one</u> of the following:-

8-a.	Write a program to copy the contents of one file into another file. (CO5,K3)	10
8-b.	Explain advantages of using 8051 microcontroller with embedded system. (CO5,K2)	10

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