Graphic Era
HILL UNIVERSITY
Established by an Act of the State Legislature of Uttarakhand (Adhiniyam Sankhya 12 of 2011)
University under section 2(f) of UGC Act, 1956

Term Evaluation (Even) Semester Examination September 2025

Roll no..............................

Name of the Course: Bachelor of Technology
Semester: I
Name of the Paper: Fundamentals of Computers & Introduction to Programming
Paper Code: TCS 101

Time: 1.5 hour   **Maximum Marks: 50**
Note:
- (i)   Answer all the questions by choosing any one of the sub-questions.
- (ii)   Question 5 has five sub-questions. Answer all the questions.
- (iii) Each question carries 10marks

Q.1	(10 marks)	
a)	Draw and explain the Von Neumann architecture. Describe the role of each component: Input, Output, Memory, and Central Processing Unit (ALU and Control Unit).	CO1
	OR	
b)	Define an Operating System? Explain in detail the functions of an operating system. Discuss different types of operating systems with examples.	CO1
Q.2	(10 marks)	
a)	Explain logical, bitwise and ternary operators. Write a C program to find the biggest of three numbers using a ternary operator. Read the three numbers from the keyboard.	CO3
	OR	
b)	Describe following terms with example: 1. Qualifiers 2. Typecasting 3. Keywords 4. Associativity	CO3
Q.3	(10 marks)	
a)	What is flowchart? Explain various symbols used in flowchart with an example. Also draw a flowchart which accept a four-digit positive integer number and find sum of its digits.	CO2

Sample Input	Sample Output
Input a four-digit positive number: 3452	Sum of digit of number: 14

	OR	
b)	Draw a flowchart to check whether a triangle can be formed by inputting any random values for the sides.	CO2

Sample Input	Sample Output
Enter three sides of a triangle: 1 1 3	The triangle cannot be formed.

Q.4	(10 marks)	
a)	Ankit has a watch which shows time only in seconds. Its very difficult for him calculate always and convert it into its equivalent hour/s, min/s and sec/s. Can you help him by writing a 'C' code which will read time in seconds and convert it in hours, minutes and seconds?	CO4

Sample Input	Sample Output
Input time in seconds: 3800	1 Hours 3 minutes 20 seconds

OR

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b)	Develop a 'C' code to accept coordinate XY of point and display a message in which direction it lies based on following criteria: • XY both positive, display NORTH EAST • X zero and Y positive, display NORTH • X negative and Y positive, display NORTH WEST • X negative and Y zero, display WEST • X negative and Y negative, display SOUTH WEST • X zero and Y negative, display SOUTH • X positive and Y negative, SOUTH EAST • X positive and Y zero, display EAST	CO4
Q.5	(10 marks)	
	Predict the output of the following C code and justify your answer. Assume below code snippets are free from syntax errors.	CO3

i)
```c
#include<stdio.h>
int main()
{
    int a=-3;
    a = - a - a + !a;
    printf("%d", a);
    return 0;
}
```

ii)
```c
#include <stdio.h>
int main()
{
    int a = 5, b = 9;
    printf("%d\n", (a & b) | (a ^ b));
    return 0;
}
```

iii)
```c
int main()
{
    int x=13,y=2;
    float z=x/y;
    float f = (float)x/y;
    printf("z = %f",z);
    printf("\nf = %f", f);
    return 0;
}
```

iv)
```c
#include <stdio.h>
int main()
{
    int a = 100, b = 200, c = 300;
    if(a < b < c)
    printf("b lies between a and c");
    else
    printf("b is an outlier");
    return 0;
}
```

v)
```c
#include <stdio.h>
int main()
{
    int n = 0;
    if(n--)
    printf("Inside if");
    else
    printf("Inside else");
    return 0;
}
```