Name: Enrolment No:	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2022

Course : B.Tech- CSE **Semester : 1**
Program : Principles of Programming Languages **Time : 03 hrs.**
Course Code : CSEG 1010 **Max. Marks: 100**

Instructions: Attempt all the questions.

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	Provide the one-line definition for the following: a) Computer architecture b) Number system c) Preprocessor d) Syntax and semantic of a programming language	**4**	**CO1**
Q 2	Let an array '***int marks[10][15]***' has been declared by the programmer in some of his C program. Find the address of the element, ***marks[4][10]*** by assuming that the elements are arranged in row-major order with the base address 1000. [Assume 4 Bytes are required for an integer variable by the concerned system.]	**4**	**CO2**
Q 3	Differentiate between break and continue with suitable examples.	**4**	**CO2**
Q 4	State the benefits of using command-line arguments in a C program with the help of an example.	**4**	**CO3**
Q 5	Discuss the benefits exception handling.	**4**	**CO4**

SECTION B
(4Qx10M= 40 Marks)

Q 6	Present the flowchart and the algorithm to determine whether a three digit number entered by the user is an Armstrong number or not.	**10**	**CO1**
Q 7	Distinguish between the ***call by pointer*** and ***call by reference*** using suitable code snippets. (5 + 5 = 10 Marks)	**10**	**CO3**
Q 8	Write a C program that computes and prints the Eucledian distance between two points in 3-D Cartesian coordinate system through a user defined function. The function should accept the input points implemented as structures and must return the result explicitly to the calling function.	**10**	**CO3**
Q 9	Differentiate between the derived and user-defined data types. Explain the use of enumeration data type using suitable example. (4+6=10 Marks)	**10**	**CO2**

	OR Write a C program that first computes the length of a string entered by the user and then produces its reverse without using any built-in string function.		
	SECTION-C **(2Qx20M=40 Marks)**		
Q 10	Predict the outcomes for the following code snippets if you find them error free. In case you observe any error, report your observation explicitly and the way to rectify the error. Assume all the header files are already included. (4 x 5 = 20 Marks) a) ``` void main( ) { int i=-3, j=2, k=0, m; m = ++j && ++i || ++k; printf("\n %d %d %d %d", i, j, k, m); } ``` b) ``` void fun(struct emp); struct emp { char name[20]; int age; }; void main( ) { struct emp a={"UPES", 20}; fun(a); } void fun(struct emp b) { printf("\n %s %d", b.name, b.age)l } ``` c) ``` int main( ) { int i=4; switch(i) { default: printf("\n I study in UPES\n"); case 1: printf("\n I shall perform better and better always\n"); break; ```		**CO2**

```
            case 4:
                printf("\n I would have read the program carefully\n");
                break;
              }
            return 0;
          }
```

d)
```
int main()
 {
    int a=10, b=20, c=30;
    int d;
    b <<=2;
    printf("%d\n", b);
    printf("%d\n",c>>=3);
    printf("%d\n", b>20?b:c);
    printf("%d\t%d\t%d\t%d\n",b&c,b|c,b^c,!(b^c));
    return 0;
 }
```

e)
```
int main( )
{
    char str1[10]="SubramaniyamSwami";
    char str2[5]="Tirunavkarsu";
    char *str3;
    str3=strcat(str1, str2);
    printf("\n %s\t%s\t%s", str1, str2, str3);
    return 0;
}
```

Q 11	Explain the following terms by providing separate examples: a) Classes and Objects b) Inline and Friend Functions c) Constructors and Destructors d) Generic Methods e) Threads (4 x 5 = 20 Marks) **OR** Distinguish between the following concepts by providing supporting code snippets: a) Function Overloading vs. Function Overriding b) Parameterized Constructors vs. Default Constructors c) Multilevel Inheritance vs. Hierarchical Inheritance d) Static Polymorphism vs. Dynamic Polymorphism (5 x 4 = 20 Marks)		**CO4**