

IT 11- Programming Methodology

Time: 3 Hrs.

Max. Marks: 75

Note: Attempt 5 questions in all. Q1 is compulsory.

Q1.

(10+3+2)

1. Provide the description of following declarations?
 - a. `void (*fp[4])(int *, void *, char *);`
 - b. `char (*(*f()) [])();`
 - c. `void (*ptr)(int, void (*)());`
 - d. `int ** (*ptr)(int **, int ** (*) (int **, int **));`
 - e. `void (*ptr)(void (*) (int, void **) , int (*) (void **, int *));`
2. What is a programming paradigm? Give examples. Mention the name of programming paradigm used by C programming language?
3. What are lvalue and rvalue? Give examples.

Q2.

(3+3+2+3+2+2)

1. What are the differences between declaration and definition? Identify which of following are declarations and which are definitions?
 - a. `extern int x;`
 - b. `float z;`
 - c. `double pow (double , double);`
 - d. `float square (float x) { return x*x; }`
2. Name different storage classes in C language. Give brief description of each storage class.
3. Write the differences between const and volatile type qualifiers?
4. What are the different scopes of variables defined in standard C language?
5. What are logical operators in C language? Give example of logical operators and their action.

6. Whether sizeof is an operator or function? Provide the output of following printf statement.

```
printf (" %d %d", sizeof (NULL), sizeof ("") );
```

Q3.

(2+3+3+4+3)

1. Mention the name of data types supported with switch statement? Does enumerations are allowed with switch statement?
2. Name the different Jump statements supported in standard C language? Give examples of each.
3. What are recursive functions? Write the differences between recursion and iteration?
4. Provide the output of following statements?
 - a. printf ("%10s", "seeta");
 - b. printf ("a=%3d", 78);
 - c. printf ("19\\Sep\\2020");
 - d. printf ("float=%7.2f", 5.9);
5. What is Enumerations? Why enumerations are used? Provide the output of following program.

```
#include<stdio.h>
enum day{sun=1,mon,tue,wed};
int main(void)
{
    enum day d1;
    printf("%d\t",mon);
    d1 = mon+2;
    printf("%d\n",d1);
    return 0;
}
```

Q4.

(2+3+5+5)

1. What is difference between following two pointer declarations?
 - a. const int * ptr;
 - b. int * const cptr;

①

2. What are Command line arguments? Explain using C program?

3. What are Arrays? Write the use of arrays in programming? Write a small program to show passing any 1-D array of integers to some function? Passing an array to function is call by value or call by reference?

4. What are Strings? How strings are supported in C language? Provide the output of following program.

```
#include<stdio.h>
#include<string.h>
int main(void)
{   char arr[50]="BEST WISHES";
    printf("size=%d | len=%d\n",sizeof(arr),strlen(arr));
    return 0;
}
```

Q5.

(5+5+3+2)

1. Give answers of following:

- What is Dynamic memory management in C language?
- Name the various functions used for dynamic memory management.
- Fill up the behaviour of realloc function for following two cases mentioned below:

First Parameter	Second Parameter	Behaviour of realloc function
Null	N/A	?
Not Null	0	?

2. Give answers of following:

- What are self referential structures?
- Write the differences between structure and unions?
- What are bit fields?
- What is Garbage collection? Does C supports automatic garbage collection?

3. What is the use of typedef keyword in C language? Give example. Check whether following program statement is correct or not?
`typedef extern int marks;`

4. What are Memory leaks? Give one example.

Q6.

(10+5)

1. Give answers of following:

- a. Explain any 5 different modes used to open a file?
- b. Why buffers are used in file handling?
- c. Complete following table:

File Pointer	Buffering Type
stdin	?
stdout	?
stderr	?

d. What is significance of EOF in file handling? From standard input which key combination is used as an End of File in UNIX operating system?

e. Name the C library functions used for following file I/O:

- Character I/O.
- String I/O.
- Formatted I/O.
- Block or Record I/O.

2. Give answers of following:

a. Write the differences between Macros and functions?

b. What are Variadic functions?

c. Name two Variadic functions defined in standard C I/O library (stdio.h)?

d. Check whether following is correct declaration of Variadic function?
void fn(...);

e. Provide the output of following program?

```
#include<stdio.h>
#define SQUARE(x) ((x)*(x))
int main(void)
{
    int k=5,s;
    s=SQUARE(k);
    printf("s=%d, k=%d\n",s,k);
    return 0;
}
```