

Seat No. : _____

AI-114

April-2016

M.Sc., Sem.-II

Advanced 'C' Programming

Time : 3 Hours]

[Max. Marks : 100

1. Answer the following : (Any **four** out of **five**) **20**
 - (a) What do you understand by Call by Value ? Explain it with an example.
 - (b) Explain any two categories of functions by giving appropriate examples.
 - (c) Explain the scope and visibility of the following variables in C :
 - (i) Automatic variables
 - (ii) External variables
 - (iii) Static variables
 - (d) What is recursion ? Write a program to calculate the factorial of a given number using recursion.
 - (e) Define a function. What are the advantages of using functions ?

2. Answer the following : (Any **four** out of **five**) **20**
 - (a) Write a note on structures. How do the structure variables communicate with the members of structure ?
 - (b) Distinguish between : Structure and Union.
 - (c) Write a note on Bit fields.
 - (d) Explain Enumeration as a data type
 - (e) Write a program to demonstrate nested structures. Make a structure "DOB" that has members like day, month and year. Make another structure "student" that has members like rollno, name and fees. Read values for one student from the user and display them on the screen.

3. Answer the following : **20**
 - (a) What does it mean by Dynamic memory allocation ? Explain the advantages of using a linked list.
 - (b) Explain with syntax and usage Calloc() and Malloc() functions of memory management.
 - (c) Explain briefly the following types of Linked List :
 - (i) Circular Linked List
 - (ii) Doubly Linked List
 - (iii) Circular Doubly Linked List
 - (d) Difference between : Array and Linked List.

4. Answer the following : (Any **four** out of **five**) **20**

(1) Which are the various modes of opening a File ? Explain getw() and getc() functions by writing necessary lines of code.

(2) What is a macro ? Explain macros with arguments and nesting of macros with example.

(3) Write a note on : Command Line arguments

(4) Give output of the following snippets of code :

(a) main()

```
{
FILE *fp;
char c;
fp=fopen("abc","w");
while((c=getchar())!=EOF)
putc(c,fp);
printf("No. of characters entered is"%d", ftell(fp));
fclose(fp);
}
```

(b) #define mul(x,y) x*y

```
main( )
{
int num1=5,num2=7,res;
res=mul(num1+2,num2-5);
printf("%d", res);
}
```

(5) Explain Token Pasting Operator and Stringizing operator with example.

5. Answer the following : **20**

(1) Write a program to display sum and average of numbers from m to n using pointers. **5**

(2) What are pointers ? List out any four advantages of using pointers. **5**

(3) Give output of the following snippets of code :

(a) main() **2**

```
{
int arr[ ]={1,2,3,4,5};
int i, *parr=arr;
for(i=0;i<5;i++) {
printf("%d", *arr);
++parr; }
}
```

- (b) `main()` **2**
- ```
{
int a[]={1,2,3,4,5};
int j;
for(j=0;j<5;j++)
{
printf(“%d”, *a);
a++;
}
}
```
- (c) `main( )` **2**
- ```
{
char *str=“\0”;
if(printf(“%s”, str))
printf(“GOOD”);
else
printf(“BAD”);
}
```
- (d) Given the following declarations : **4**
- ```
int a=5.b=5;
int*p=&a, *q=&b;
```
- What will be the output of each of the following expressions ?
- (i) `(*p)++`
  - (ii) `--(*q)`
  - (iii) `*p+(*q)--`
  - (iv) `++(*q)-*p`
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