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Total number of printed pages – 8

B. Tech.
BE 2105/BCSE 3102(N/O)

First Semester Examination – 2010

**PROGRAMMING IN C
(New and Old Course)**

Full Marks – 70

Time : 3 Hours

*(Students are required to give their answer any one Course
according to the Syllabus)*

(NEW COURSE)

*Answer Question No. 1 which is compulsory and any **five** from the rest.*

The figures in the right-hand margin indicate marks.

1. Answer the followings : 2×10

(a) What will be the output of :

```
void main()  
{  
int x=5,y=6;  
printf("%d%d%d",x++,(y=x++),(x=y++));  
}
```

(b) For the following declaration :

```
struct abc  
{  
int x: 6;  
float y:10;  
int z;  
}d;
```

What will be the value of **size of (d)** ?

P.T.O.

(c) for the following declaration :

```
enum{a=5,b,c,d};
```

what will be the output of:

```
void main()  
{  
printf("%d",c++);  
}
```

(d) What is the difference between a macro and a function ?

(e) What will be the output of:

```
void main()  
{  
int i;  
for(i=1;i<=5;i++);  
printf("%d",i);  
printf("%d",i);  
}
```

(f) What will be the output of:

```
int qq(int a,int b)  
{  
return a*b;  
}  
void main()  
{  
int i=5,j=6,c;  
c=qq(qq(i++,++j),qq(++i,j++));  
printf("%d",c);  
}
```

(g) What is the difference between :

```
scanf("%[^\n]",x);
```

and

```
gets(x);
```

- (h) What is the basic difference between malloc() and calloc() ?
- (i) What do you mean by command line arguments ? Which argument stands for program name ?
- (j) What is the difference between while and do while loop ?
2. (a) Write a C program to input n and display the square of first n odd numbers, note that n is a positive whole number. 5
- (b) Write a C program to input a number and test whether it is a prime number or not. 5
3. (a) Write a C program to add two matrices using pointers to the matrices and display the resultant matrix. 5
- (b) Write a C program to input a string and test whether it is a palindrome or not using pointer to the string. 5
4. (a) What are the different dynamic memory management functions in C, explain about each with suitable example. 5
- (b) Differentiate between local, external, static and register variables with suitable examples from each. 5
5. (a) Write a C program to calculate factorial of n using recursive function. 5
- (b) Write a C function which takes basic salary of an employee as input and calculates his TA, DA, HRA and GROSS salary as follows :
- TA = 10% of basic
- DA = 20% of basic
- HRA = 40% of basic
- and GROSS salary includes basic salary and all allowances.
- Using the above function write a C program which accepts the basic salary and calculates his allowances and displays the gross salary. 5

6. (a) Write a C program to open a file "NUM" containing numbers only and copies all even numbers to a file "EVEN" and all odd numbers to a file "ODD". 5
- (b) Describe the following terms : 1×5
- (i) fseek()
 - (ii) ftell()
 - (iii) a+
 - (iv) fopen()
 - (v) FILE
7. (a) Write a C program to create a structure COMPLEX to represent a complex number, using the structure write a program to add two complex numbers and display their sum. 5
- (b) Find the error in the following program and correct it : 5

```
# include "stdio.h"
int fun(int * , int)
int main()
{
    int a=10,b=a;
    clrscr();
    int s[]={0};
    char*s= ' Time is money ";
    printf("%s/n" s);
    fun(a,b);
    if a = b
        printf(" they are equal");
    else
        printf(" They are not Equal")
}
void fun(int *p,int *q)
{
    *p = *p + 10;
    q = q + 20;
}
```

8. (a) Write a C program to input n different numbers and find the largest among them. 5
- (b) Write a C program to input a string, input two numbers and find a substring between these positions i.e. Let the string is "welcome", two numbers you have entered are: x1=3 and x2=5 then the substring will be : "com". 5
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(OLD COURSE)

Answer Question No. 1 which is compulsory and any **five** from the rest.

The figures in the right-hand margin indicate marks.

1. Answer the followings: 2×10

(a) What will be the number of iterations of the following function call: abc(x)?

for a positive whole number $x > 0$.

```
int xyz(int k)
{
    return abc(--k);
}
int abc(int m)
{
    if(m==0) return m;
    else
        return m+xyz(m);
}
```

(b) Write some application of union.

(c) Differentiate between macro and function.

(d) What will be the value of x and why? $x = \text{strcmp}(\text{"XyZaF"}, \text{"XyZeF"});$

(e) What is the difference between getche() and getch() ?

(f) Distinguish between break; and continue; statement. Where they are used ?

(g) What is the output

```
void main()
{
    int a=210;
    printf("%d %d %d %d", a, a=200, ++a, a--);
}
```

- (h) What is the basic difference between malloc() and calloc() ?
- (i) Differentiate between row major order and column major order.
- (j) What is the difference between while and do while loop ?
2. (a) Write a C program to input n and calculate e^x , note that n is a positive whole number. 5
Note That: $e^x = 1 + x + x^2/2! + x^3/3! + \dots$
- (b) Write a C program to input a number and test whether it is a perfect square or not. 5
3. (a) With example differentiate between call by value and call by address in function calling. 5
- (b) Write a C program to input a string and find its reverse. 5
4. (a) Write a program using recursion for printing Fibonacci series for n numbers ? 5
- (b) Write a C program to input n and print 5
1
22
333
if n=3
5. (a) Write a C program to input a positive whole number in decimal and convert it to binary. 5
- (b) Write a C program which takes basic salary of an employee as input and calculates his TA, DA, HRA and GROSS salary as follows: 5
TA= 10% of basic
DA=20% of basic
HRA=40% of basic
and GROSS salary includes basic salary and all allowances.

6. (a) Write a C program to input an array and display the largest in it using dynamic memory allocation. 5
- (b) Write a program to accept the information about student such as name, semester, age and gender using structure and store it into file. 5
7. (a) Write a C program to input 3 numbers and find the largest among them. 5
- (b) Write a C program to input n and print sum of cubes of first n numbers where n is a positive whole number. 5
8. Write short notes on any two : 5×2
- (a) DMA – dynamic memory access
- (b) Static vs Register storage class
- (c) Loop - while, for, do-while
- (d) Enum
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