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Total number of printed pages – 4

B. Tech  
BE 2105

First Semester Regular Examination – 2014

PROGRAMMING IN 'C'

BRANCH : B. TECH

QUESTION CODE : H 450

Full Marks – 70

Time : 3 Hours

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 following questions with proper justifications 2 × 10

(a) What will be output if you will compile and execute the following C code ?  
Justify your answer

```
void main(){
    int a=2;
    if(a==2){
        a=~a+2<<1;
        printf("%d",a);
    }
    else{
        break;
    }
}
```

(b) What will be output of following c code ? Justify your answer.

```
int main(){
    int i,j;
    i=j=2,3;
    while(--i&&j++)
        printf("%d %d",i,j);
    return 0;
}
```

P.T.O.

- (c) What will be output when you will execute following c code ? Justify your answer.

```
#define PRINT printf("Incredible India"); printf(" TeamIndia");
void main(){
    int x=1;
    if(x--
        PRINT
    else
        printf("The Innovative Survives");
    }
```

- (d) What would be the output of the following program ? Answer with justification.

```
int main()
{
    char *p= "The Matrix Reloaded";
    int i=0;
    while(*p)
    if (!isupper(*p++)) ++i;
    printf("%d",i);
    return 0;
}
```

- (e) What would be the output of the following program ? Answer with justification.

```
static int i=10;
int main(){
    i=5;
    for(i=0;i<5;i++){
        static int a=10;
        printf("%d",a++);
    }
    return 0;
}
```

- (f) What will be output when you will execute following c code ?

```
void main(){
    short num[3][2]={3,6,9,12,15,18};
    printf("%d %d",*(num+1)[1]**(num+2));
}
```

- (g) What will be the output of the following program? Justify your answer

```
int main()
{int i;
char s[]="Biju Patnaik University";
for (i=0;s[i]!='\0';++i)
if((i%2)==0) printf("%c %c",s[i],s[i]);
return 0;
}
```

- (h) What will be output of following c code ? Justify your answer.

```
void main()
{
struct bitfield
{
signed int a:3;
unsigned int b:13;
unsigned int c:1;
};
struct bitfield bit1={2,14,1};
printf("%d",sizeof(bit1));
}
```

- (i) What will be output when you will execute following c code ? Justify your answer.

```
void main(){
int year=1;
switch(year<<2+year){
default:printf("Final Year");
case 4: printf(" Pre-Final Year");
case 5: printf(" Second Year");
case 8: printf(" First Year");
}
}
```

- (j) What does the following program print ? Justify your answer.

```
void f(int *p, int *q)
{p = q;
*p = 2;
}
int i = 0, j = 1;
int main()
{f(&i, &j);
printf("%d %d \n", i, j);
return 0;}
```



2. (a) Write a complete program to calculate the determinant of any  $N \times N$  square matrix. 6
- (b) Write a C function that has three inputs which are integers. The function returns true if the first number raised to the power of the second number equals the third number. 4
3. (a) Write a program segment that use only bitwise operators to multiply any number by 2 and divide by 2. 1.5+1.5
- (b) Write a menu-based program in C that uses a set of functions to perform the following operations : 2+5
- Reading a Complex Number
  - Writing a Complex Number
  - Additions of two Complex numbers
  - Subtraction of two Complex numbers
  - Multiplication of two Complex numbers
4. (a) Write a recursive function to convert the decimal integer into binary equivalent. 5
- (b) Draw a flowchart to find the Fibonacci series till term 1000. Convert the developed flowchart to the equivalent C program. 5
5. (a) Write a c program which takes a string from command line with main function has no parameter and convert the string in uppercase ? 6
- (b) While compiling a program the following error message "Floating point formats not linked" is obtained. What is wrong with the program ? Explain with one example. 4
6. (a) Write a C program to accept records of the different states of India using array of structures. The structure should contain state, population, literacy rate, and income. Display the state whose literacy rate is highest and whose income is highest. 5
- (b) Write a complete program to define an integer pointer array of any number of integers. Initialize them to any integer values from the keyboard. Find the sum, average, minimum and maximum of these numbers. Sort these integers in descending order. 5
7. (a) Write a program to compare two files specified by the user, displaying a message indicating whether the files are identical or different. 5
- (b) C Program to add two numbers using Command Line Arguments 5
8. Write short notes on any two with examples in each : 5 × 2
- Self referential Structure
  - Storage Classes
  - Function Prototype
  - Dynamic Memory Allocation.

