Registration No. : | | | | | | | | | | |

Total number of printed pages – 4

B. Tech
BE 2105

First Semester Back Examination – 2014

PROGRAMMING IN C

BRANCH (S) : AEIE, AERO, AUTO, BIOTECH, CHEM, CIVIL, CSE, EC, EEE, EIE, ELECTRICAL, ENV, ETC, FASHION, IEE, IT, MANUFACT, MANUTECH, MECH, MINERAL, MINING, MM, MME, PLASTIC, TEXTILE

QUESTION CODE : L 346

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) Find the output of the following program with justification.

```
#include <stdio.h>
int counter(int i)
{
    static int count = 0;
    count = count + i;
    return count;
}
int main(void)
{
    int i, j;
    for (i = 0; i <= 5; i++)
        j = counter(i);
    printf("%d\n", j);
    return 0;
}
```

(b) Consider the following program.

```
#include <stdio.h>
void f(char**);
int main(void)
{
   char *argv[] = { "ab", "cd", "ef", "gh", "ij", "kl" };
   f(argv);
   return 0;
}
void f(char **p)
{
   char *t;
   t = (p += sizeof(int))[-1];
   printf("%s\n", t);
}
```


What is the output of this program on an implementation where int and all pointer types occupy 4 bytes?

(c) What value will be returned when you will execute following C code calling the function add (5, 6) ? Justify your answer.

```
#include <stdio.h>
int add(int a,int b){
   if(a!=0&&b!=0)
      return printf("%*c%*c",a,'\r',b,'\r');
   else return a!=0?a:b;
}
```

(d) What is a multi-dimensional array ? Explain how the elements of a multi-dimensional array are accessed.

(e) Can you write a C program without using main function? Give a simple example.

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

```
#include <stdio.h>
int main(void)
{
   struct node
   {
      int a;
      int b;
      int c;
```

```
};
struct node s = { 3, 5, 6 };
struct node *pt = &s;
printf("%d\n", *(int*)pt);
return 0;
}
```


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

```
#include<stdio.h>
int main()
{
    printf("%c\n", ~('C'*-1));
    return 0;
}
```

(h) How to find size of integer data type without using ***sizeof*** operator in C programming language ? Explain with an example.

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

```
#include <stdio.h>
int main(void)
{
    char p;
    char buf[10] = {1, 2, 3, 4, 5, 6, 9, 8};
    p = (buf + 1)[5];
    printf("%d\n", p);
    return 0;
}
```

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

```
int main()
{
    char *p;
    p="%d\n";
    p++;
    p++;
    printf(p-2, 23);
    return 0;
}
```

2. (a) Write a program in C to convert any number to English word. 5

(b) Write a program to remove duplicate elements in an array using in C. 5

3. (a) Write program in C to concatenate two strings using pointer. 5

(b) Write a C code for decimal to octal converter 5

4. (a) Write a recursive function to convert the decimal integer into binary equivalent. 5

(b) Draw a flowchart to find the sum of first 11 prime numbers. Covert the developed flowchart to the equivalent C program. 5

5. (a) Explain the different control statements in C with suitable examples. 5

(b) Using pointers, write a C program to read in an array of 50 numbers and print its elements in reverse order. 5

6. (a) Write a C program to find the sum of diagonal elements of any matrix (n × m). 5

(b) Write a C program to illustrate appending items to an existing file. 5

7. (a) Write a C program to read in the marks of 5 subjects of 50 students and display the result with standard rules for result. 5

(b) Explain Dynamic memory allocation in detail. Explain the different library routines which serve as memory management functions. 5

8. Write short notes with examples in each (any **two**) : 5×2

(a) Command Line arguments

(b) Structure vs UNION

(c) File handling functions

(d) Structured programming.