Registration no:

Total Number of Pages: 04

1st **Semester Back Examination 2016-17**
PROGRAMMING IN 'C'
BRANCH(S): ALL
Time: 3 Hours
Max Marks: 100
Q.CODE: Y722

Answer Part-A which is compulsory and any four from Part-B.
The figures in the right hand margin indicate marks.

Part – A (Answer all the questions)

Q1   **Answer the following questions:**   **(2 x 10)**

a) Is it true that a function may have several declarations, but only one definition?
    A.   Yes
    B.   No

b) Which of the following are unary operators in C?
    1.   !
    2.   sizeof
    3.   ~
    4.   &&

    A.   1, 2
    B.   1, 3
    C.   2, 4
    D.   1, 2, 3

c) The modulus operator cannot be used with a long double.
    A.   True
    B.   False

d) The way the break is used to take control out of switch and continue to take control of the beginning of the switch?
    A.   Yes
    B.   No

e) Can we use a switch statement to switch on strings?
    A.   Yes
    B.   No

f) Point out error in the following program.

```
int main()
{
  int i=1;
  for(;;)
  {
    printf("%d\n", i++);
    if(i>10)
```

```
        break;
    }
    return 0;
}
```

g) Functions cannot return a floating point number
    A.   Yes
    B.   No

h) Every function must return a value
    A.   Yes
    B.   No

i) A pointer to a block of memory is effectively same as an array
    A.   True
    B.   False

j) Is there any difference int the following declarations?
int fun(int arr[]);
int fun(int arr[2]);
    A.   Yes
    B.   No

Q2   **Answer the following questions with proper justifications in brief.**   **(2X10)**

a) Point out the error in the following program.
```
int main()
{
    int a = 10, b;
    a >=5 ? b=100: b=200;
    printf("%d\n", b);
    return 0;
}
```

b) Swap two variables without using third variable.

c) What is a pointer?

d) Swap two variables without using third variable.

e) What is the meaning of recursive function?

f) What would be the output of the following program?
```
int main()
{
    int i=-3, j=2, k=0, m;
    m = ++i && ++j && ++k;
    printf("%d, %d, %d, %d\n", i, j, k, m);
    return 0;
}
```

g) What would be the output of the following program?
```
int X=40;
int main()
{
    int X=20;
    printf("%d\n", X);
    return 0;
}
```

h) What will be output when you will execute following c code? Justify your answer.
```
#define MESS junk
```

```
int main()
{
    printf("MESS\n");
    return 0;
}
```

i) What would be the output of the following program?
```
int main()
{
    int x, y, z;
    x=y=z=1;
    z = ++x || ++y && ++z;
    printf("x=%d, y=%d, z=%d\n", x, y, z);
    return 0;
}
```

j) What will be the output of the program? Justify your answer.
```
void fun(int*, int*);
int main()
{
    int i=5, j=2;
    fun(&i, &j);
    printf("%d, %d", i, j);
    return 0;
}
void fun(int *i, int *j)
{
    *i = *i**i;
    *j = *j**j;
}
```

Part – B (Answer any four questions)

Q3 **a)** Discuss the similarities between array and pointer in C. Explain with one example. **(2)**

b) Write a program to find the roots of a quadratic equation. **(6)**

c) Generate a complete C program to find the value sin(x) using the given series: $x - x^3/3! + x^5/5! – x^7/7! + \ldots\ldots$(upto 'n' terms) up to the given accuracy. Also print the sin(x) using library function sin(x). **(7)**

Q4 **a)** What do you mean by recursion? Discuss the use of recursion function in C programming with an example. **(2)**

b) Write a program to multiply two integer numbers using recursive function, multiply (int a, int b). **(6)**

c) Write a recursive program to calculate the HCF of given two positive integer numbers. **(7)**

Q5 **a)** What is the size of int pointer, float pointer and char pointer in C in 32-bit compiler? **(2)**

b) Write at least three disadvantages of a pointer in C programming? **(3)**

c) Write a complete C program to sort a given set of integer numbers using call by reference and malloc() function by reading an 1-dimensional array of integer numbers. **(10)**

Q6 **a)** What is a self-referential structure? Explain with an example. **(3)**

b) Differentiate between Structure and Union giving one example in each. **(2)**

c) Write a program in C using structure for the addition of two complex numbers calling the function Complex add(Complex a, Complex b). **(10)**

Q7 **a)** Can main() call itself? Explain briefly. **(3)**

b) Write a C program to create an integer and read that file. **(6)**

c) Describe the following functions for file handling in C with general syntax: fopen(),fclose(),getc(),putc(),getw(),putw() **(6)**

Q8 **Write short notes on the following (Any Three):** **(5 x 3)**
a) Storage Classes
b) Dynamic Memory Allocation Functions
c) Enumeration
d) Do..while vs While
e) Function prototype

Q9 **a)** Write a program to revert a given positive integer number. **(9)**
b) Write a program to add two 3 x 3 matrices. **(4)**
c) Write a program to find the sum of the digits of a given 5 digit integer number. **(2)**