Reg. No. | | | | | | | | | | |

MANIPAL INSTITUTE OF TECHNOLOGY
MANIPAL UNIVERSITY, MANIPAL - 576 104
First Semester MSc. Make-Up Examination – Dec 2015
SUB: C-PROGRAMMING TECHNIQUES (MAT-609)

Time: 3 Hrs. **Max. Marks: 50**

Note: a) Answer any FIVE full questions.
b) All questions carry (3+3+4) marks.

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1. a) Explain the term *identifier* in C with an example. What are the rules to be followed while constructing a valid identifier?

   b) Explain *local* and *global* variables.

   c) Explain the working of the *switch* statement with an example.

2. a) Write a C-program to perform arithmetic operations on two numbers.

   b) Explain the different primary datatypes in C.

   c) Point out errors, if any, in the following code snippets:

   i.
```
void main()
{
int m,n;
if(mn%2 != 0)
i=1;
}
printf("%d",i);
```

   ii.
```
int twod[][]={2,4,6,8};
  printf("\n %d", twod);
```

3. a) What is a *pointer* ? How to declare and initialize a *pointer* ?

   b) Write a C-program using functions to check whether a given number is prime or not.

c) Write the output of the following codes:

i.
```
int x=2,y=3,s1,s2;
s1 = x + (++y);
s2 = (x++) + (y--);
printf("%d %d \n", s1, s2);
```

ii.
```
char s[]= "CALIFORNIA";
int i;
{
puts(s);
for(i=0; i<strlen(s); i++)
s[i]=(s[i]>='A'&&s[i]<='Z')?('a'+s[i]-'A'):s[i];
puts(s);
}
```

4. a) Write a short note on one-dimensional arrays in C.

b) Explain the use of the following library functions:
i. *printf*() ii. *getchar*() iii. *puts*()

c) Write a C-program to calculate the roots of a quadratic equation $ax^2+bx+c=0$ with non-zero co-efficients a, b, c. Print whether the roots are real or complex.

5. a) Write a C-program to find the sum of two matrices.

b) Explain, in brief, any three string handling functions.

c) List the following operators in C:
i. Arithmetic Operators ii. Relational Operators.

6. a) What is a *structure*? Explain with syntax and example.

b) Explain the *goto* statement with an example.

c) Write a C-program to sort an array using selection sort technique.