

CODE A

Time:1 hours

Mid Semester Exam-I: MTH409

Full Marks 50

1. Reproduce the program in the answer sheet and underline the errors in the code. [8]

```
#include <stdio.h>
int main( )
{
float Int,z;
int x,y,char;
x=2,y=3;
x+y;
x+y=1;
x-y == 1;
z=2.0;
Int=z
}
```

2. The following statements are part of a C program in which both the x and y are integers. What are the values of x and y in each of the following? [3+3+4]

a. $x=3,y=2;$
 $\text{if}(x < y++)$
 $\quad x +=2;$
 $\text{if}(x > y)$
 $\quad y +=2;$

$x = \text{---}, y = \text{---}$

b. $x=1,y=5;$
 $\text{for}(i=1;i<5;i +=2)\{$
 $\quad x +=i;$
 $\quad y *=(i++); \}$

$x = \text{---}, y = \text{---}$

c. $x=1,y=2;$
 $\text{while}(x+y<12)\{$
 $\quad x++;$
 $\quad \text{if}((x\%2)==0)\text{continue};$
 $\quad y++;\}$

$x = \text{---}, y = \text{---}$

3. Following is the Taylor-series expansion for $\cos(x)$:

$$\cos(x) = 1 - \frac{x^2}{2!} + \frac{x^4}{4!} - \frac{x^6}{6!} + \dots$$

Write a program that reads a value of x and calculates $\cos(x)$ using the first 15 terms only and prints out the result. [10]

4. Write a program that implements the following sum

$$2 + 4 + 7 + 11 + 16 + 22 + \dots + 121$$

and prints out the result. [7]

5. A program reads three integers input representing a date of September as day, month, year. Then it checks the validity of the date entered. Next it prints out the date of the following day. [10]

(Typical input: 28 9 1992 Typical output: Date following 28/9/1992 is 29/9/1992)

6. Write a program which reads a single letter of alphabet. If the alphabet is in lowercase between a and g, the program prints out the alphabet in uppercase form. If it is anything else, the program should print out X. [5]