SET A-BATCH I

Faculty of Engineering and Technology, Department of Information Technology

15IT102-Program Design and Development

Cycle Test – II

Year/Sem: I/II **Date:26-8-2015**

Time: 3:15-4:05 AM **Max. Marks: 25**

Instructional Objectives:

IO1 – Gain knowledge about problem solving in computers

IO2 – Understand the basic components and structure of a C program

Outcomes :

a1: To gain fundamental knowledge in the context of problem solving concepts.

a2: To understand the applications of algorithms, flowcharts and programming concepts in problem solving skills.

PART B [Answer any three questions] **(3x4=12 marks)**

1. Find the output of the following and explain the code:

(a)

```
int main()
{
   int k=1;
   printf("%d == 1 is" "%s\n", k, k==1?"TRUE":"FALSE");
   return 0;
}
```

(b)

```
int main()
{
   float a=3.15529;
   printf("%0.2f\n", a);
   printf("%0.5f\n", a);
   return 0;
}
```

2. Define looping. Differentiate top tested and bottom tested loops.

3.

```
#include <stdio.h>

int main()
{
   char a = 30;
   char b = 40;
   char c = 10;
   char d = (a * b) / c;
   printf ("%d ", d);

   return 0;
}
```

4. Write a program that prompts the user to enter a String and displays the number of vowels and consonant in the string.

Part-C **(1x13=13 marks)**

5. Write the program for the following questions

(i)A pentagonal number is defined as n(3n-1)/2 for n=1,2,3 .. and so on. So, the first few numbers are 1, 5, 12, 22, ... Write a function with the following header that returns a pentagonal number:

intgetPentagonalNumber(int n) (8)

Write a test program that uses this function to display the first 10 pentagonal numbers.

(ii) A 2-digit number is said to be a special number if the sum of the sum of its digits and the products of its digits is equal to the number itself. For example, 19 is a special number. The digits in 19 are 1 and 9. The sum of the digits is 10 and the product of the digits is 9.

10+9 = 19

Write a C program to find the special numbers between limits m and n(both inclusive). Assume that m and n are 2-digit numbers.

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PART B [Answer any three questions] **(3x4=12 marks)**

1. What is the difference between auto and static variables? Explain the difference using a C program (a single program that which have both static and auto variables). Write the output of the program.

2.What is the output of the following segment when executed?

i)
```
for(m=0;m<3;++m)
printf("%d\n",(m%2)?m:m+2);
```

ii)
```
int m=-14,n=3;
printf("%d\n",m/n*10);
n=-n;
printf("%d\n",m/n*10);
```

3. Find out the formatted output for the given code:

a)
```
 main()
{
inti = 40;
float x = 839.21;
printf("|%d|%5d|%-5d|%5.3d|\n", i, i, i, i);
printf("|%10.3f|%10.3e|%-10g|\n", x, x, x);
}
```

4. Find the output of the following programs

a)
```
#include<stdio.h>
int main()
{
   int a, b = 10;
   a = -b--;
   printf("a = %d, b = %d", a, b);
   return 0;
}
```

b)
```
#include<stdio.h>
```
(2)

```
 int main()

 {
```

```
    int num=300;
    while(num>255);
    printf("Hello");
}
```

PART C **(1x13=13 marks)**

5. i) Write a c program with two subfunction . One subfunction to calculate the difference of his previous salary and current salary . Another subfunction to calculate his income for the current salary. (8)

ii) Given an exam marks as input, display the appropriate message based on the rules below:

If marks is greater than 49, display “PASS”, otherwise display “FAIL”

However, for input outside the 0-100 range, display “WRONG INPUT” and prompt the user to input again until a valid input is entered (5)

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PART B [Answer any three questions] **(3x4=12 marks)**

1. Solve the expression in precedence order step by step:

i) a= 4/2*(2-6)-7^2 (2)

ii) c=(2==2)?(5++):(--6) (2)

2. Describe the unconditional branching?

3. Convert the following code to functions **with return type and with parameter:**

```
 int main()
{
        sumofn();
}
void sumofn()
{
        int n=7,sum=0;
                for(i=0;i<7;i++)
                {
                sum=sum+i;
                }
        printf(" sum of 7 numbers: %d" ,sum);

}
```

4) What will be output of the following code?

```
#include<stdio.h>

void main(){

   switch(5/2*6+3.0){
```

```
    case 3:printf("David Beckham");
        break;
    case 15:printf("Ronaldinho");
        break;
    case 0:printf("Lionel Messi");
        break;
    default:printf("Ronaldo");
  }
}
```

Part-C **(1x13=13 marks)**

5. i)Write a C program to display Prime Numbers Between two Intervals (start & end range) using functions with no return and with arguments? (7)

ii) Write a program to enter the temperature and print the following message according to the given temperature by using if else ladder statement. (6)

1. T<=0 “Its very very cold”.

2. 0 < T < 0 “Its cold”.

3. 10 < T < =20 “Its cool out”.

4. 20 < T < =30 “Its warm”.

5. T>30 “Its hot”.

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PART B [Answer any three questions] **(3x4=12 marks)**

1. What is the difference between register and extern? Explain the difference using a C program?

2. Write a program that prompts the user to enter an integer and checks whether the number is divisible by both 5 and 6, divisible by 5 or 6, or just one of them (but not both).

3. Evaluate the following expression:

15&&!(10<20)||15>30 ||((5/2.0==0 && 10/2.0!=0.0) ||-6<0.0)

4. Find the output for the following program

```
int a=1, b=2;

switch(value)

{

case 1: printf("%d", a);

        break;

case 2:

case 3: printf("%d", b);

case 4: printf("HELLO");

        break;

}
```

What are the solutions for value = 1,2,3,4?

Part-C **(1x13=13 marks)**

5.i)Generate C code for the given sequence using recursive function and depict the execution flow for the value"6". (9)

0 1 1 2 3 5 8 13 …….

ii) Write a C program to that allows the user to enter 'n' numbers and finds the number of positive numbers entered and the sum of all positive numbers entered using looping.

Sample Input and Output:

Enter the value of n

4

Enter the number

5

Enter the number

-2

Enter the number

-1

Enter the number

6

Number of positive numbers entered is 2 and the sum is 11