UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Second Semester – 2020

Roll No .....

Paper: Programming Fundamentals
Course Code: IT-102, IT-12395 Part – II

Time: 2 Hrs. 45 Min. Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Question # 2 Short Answer Questions. **4 x 5 = 20 marks**

i) Write down the output of the following code segment.

3)

```
#include<iostream>
using namespace std;
int main()
{       int x=1;

         while(++x<=5)
         {
            cout << x << " ";
           x++;
         }
return 0;
}
```

4)

```
#include<iostream>
using namespace std;
int main()
{
      int size = 10;
      int * ip = new int[size];
      for ( int i = 0 ; i < size ; i++)
            *(ip+i)= i+2;
      cout<<*(ip+3);

      return 0;

}
```

ii) Write a program that contains a function **int product_of_digits(int)** which takes an integer number as parameter and returns the product of the digits of that integer number.

For example, when 234 is passed to the function and it returns 24.

iii) Write a function name **isPrime**, which takes an integer as an argument and returns **true** if the argument is a Prime number, or **false** otherwise.**[only write the definition for this function]**.

bool isPrime (int num) ;

iv) Write down the all symbols used in flowcharts with there use.

Question # 3 **2 x 15 = 30 marks**

i)

Write a function, which takes starting and ending integer and print the ordered pairs on the screen:

Sample output:

Enter Starting number: 1
Enter Ending number: 5
(1,1) (1,2) (1,3) (1,4) (1,5)
(2,2) (2,3) (2,4) (2,5)
(3,3) (3,4) (3,5)
(4,4) (4,5)
(5,5)

P.T.O

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Second Semester – 2021

Roll N

Paper: Programming Fundamentals
Course Code: IT-102, IT-12395 Part – II

Time: 2 Hrs. 45 Min. Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q.2. Answer the following short questions: (4x5=20)

1. Write a function that, given the number of hours an employee worked and his hourly wage, computes and display his weekly pay.
   Void Weekly_pay(hours, hourlywage);
2. Write a function that calculate and display the area of a circle if the radius is between 10 to 20 otherwise it displays radius is not in range.
   Void area(radius);
3. What will be the output of the following C++ code?

```
#include <iostream>
  using namespace std;
  void abc (int *x)
  {
        *x = (*x + 1) * (*x);
  }
```

```
  int main ()
  {
        int num = 10;
        abc(&num);
        cout << num;
    return 0;
  }
```

4. What will be the output of the following C++ code?

```
#include <iostream>
using namespace std;
 int main ()
 {
        int n, k = 5;
        n = (100 % k ? k + 1 : k - 1);
        cout << "n = " << n << " k = " << k << endl;
        return 0;
 }
```

Q.3. Answer the following questions: (3x10=30)

1. Write a recursive function count (num, array, lengthofarray) that will count the number of times number appears in array.
2. Write a program that reads a file and counts the number of lines in it.
3. Write a program to search user define element in the 2-d array using pointer.
   When the above program is executed, it produces the output like:

```
Enter the size of the row and col: 2 3
Enter the elements of the array:
3 4 5
Enter the element to be searched: 6
6 is not present in the array.
```

UNIVERSITY OF THE PUNJAB

Second Semester 2011
Examination: B.S. 4 Years Programme

Roll No. Mehar

R: Programming Fundamentals
rse Code: IT-12395

TIME ALLOWED: 2 hrs. & 30 mins.
MAX. MARKS: 60

Attempt this Paper on Separate Answer Sheet provided.

University of Punjab Paper 1a200! 1a200!

Part-II

[30 marks]

QUESTION # 2

A) Write short answers to all of the following questions: (5 x 3)

a) What is a preprocessor?
b) What is meant by escape sequence?
c) What is the purpose of Assembler?
d) What is the purpose of switch statement?
e) Why do we need header files?

checked

B) Write the output of the following code segments: (5 x 3)

a)
```
int x, y, z;
double d = 4.0;
x = 7;
y = 5;

cout << 7 + 21 % 4 * 12 / 5 - 8 / 3   << endl;
cout << 8 / 3 + 190 % 10 / 9 * 8 - 10 << endl;
cout << 1 - (x+1)%3%y-(d*x+2)/4       << endl;
z = x + y + d;
cout << z % x << endl;
```

7
-8
-8.52

7+21

b)
```
int number = 2;
if (!(number <= 0 || number >= 5))
     cout << "number found!";
else
     cout << "number is not found.";
```

checked

number found

c)
```
bool flagT, flagF;
flagT = true;
flagF = false;

if ( !(!flagF && flagT) || (!flagF && flagT) )
     cout << "$$";
cout << "##";
```

int 0 1 1

$$

PTO

d)
```
int marks = 80;
if (marks >= 90)
      cout << "Excellent Result!";
if (marks >= 80)
      cout << "Very Good Result.";
if (marks >= 70)
      cout << "Good Result.";
if (marks >= 65)
      cout << "Satisfactory.";
else
      cout << "Unsatisfactory.";
```

e)
```
double d = 0.0;

while ( d < 1)
{
      cout << d << ", ";
      d = d + 0.3;
}
cout << d;
```


Part-III (Subjective)

QUESTION # 3 [10 marks]

What is the purpose of a loop? What are the different types of loops available in C++?

QUESTION # 4 [10 marks]

What is a function? What are the different ways to write and use the functions? Mention the advantages of function overloading.

QUESTION # 5 [10 marks]

Write a program that takes 10 integer numbers from user and displays the maximum and second maximum number.

UNIVERSITY OF THE PUNJAB

Second Semester 2012

Examination: B.S. 4 Years Programme

Roll No. .....

PAPER: Programming Fundamentals **TIME ALLOWED: 2hrs. & 30 mins.**
Course Code: IT-12395 **MAX. MARKS: 60**

Attempt this Paper on Separate Answer Sheet Provided.

Question NO. 02:

1. Write a **Pseudo-Code** for a program that outputs the word **"Warning"** provided that either the value of the variable **temperature** is greater than or equal to **100,** or the value of the variable **pressure** is greater than or equal to **200**, or both. Otherwise outputs the work **"OK"**.

2. Draw a **Flow-Chart** for a program that takes an **odd number** (no need to check for invalid input) from the user and display previous **hundred odd number.**

Question No. 03

Write the outputs of the following programs completely on your answer sheet against the appropriate question, **NO CREDIT will be given if the output is partially correct.** There is NO SYNTEX ERROR in the program however it may generate runtime error or produce an output that is different from the targeted one.

Program Code

1.
```
void main(strung [] args)
{
      int a = 0, b = 0, x = 1, y = 2;
      b = a++;
      x = ++a;
      y = b++;

      ++x;
      Y++;

      cout << x-- <<endl;
      cout << --y <<endl;
      cout << x <<endl;
      cout << y <<endl;
}
```

2.
```
void main()
{
      int x = 0, y = 2, z = 1;
       bool a = true, b = false;

       if (z < x || y >= z && z ==1)
            if (a && b)
                        cout<< y;
            else
                        cout<< x;
}
```

3.
```
void main()
{
      for(int i=0; i<=6; i+=2)
      {
             If(i<2)
               continue;
```

Sample Execution

The input values are underlined.

```
What is the speed of the vehicle in mph? 40
How many hours has it traveled? 5

Hour                Distance Traveled
-------------------------------------------------------

1                   40
2                   80
3                   120
4                   160
5                   200
```

Input Validation: *Do not accept a* ***negative number*** *for* ***speed*** *and do not accept any value* ***less than 1*** *for time* ***traveled.***

B. Write a program in **C++** that consists of a **function** named **search** the function accept a 1-D array of integers and a **key** value as parameters. The function try to **locate** the key value in the array and return true if the value exist in the array **false** otherwise.

For example, the input array with values

{1, 2, 3, 4, 5, 6, 7, 8, 9, 10} with the cells to function

Search (A, 1) and **search (A, 0)** will return **true** and **false** respectively.

No need to implement the main function.

☺ ☺ ☺ ☺ **Best of luck** ☺ ☺ ☺ ☺

UNIVERSITY OF THE PUNJAB

Second Semester 2013

Examination: B.S. 4 Years Programme

Roll No. .....

PAPER: Programming Fundamentals | **TIME ALLOWED: 2hrs. & 30 mins.**

Course Code: IT-12395 / IT-102 | **MAX. MARKS: 50**

Attempt this Paper on Separate Answer Sheet Provided.

Question # 2:- Write a brief description about each of the following [2 x 10 = 20]

1. What is the difference between a syntax error and a logic error?
2. How many the int variable M, D and Y be defined in one statement, with months initialize to 2 and years initialize to 3?
3. Write a statement that declares a variables num of integer type as a constant having a value 5.
4. How pre-increment operators is different from post-increment operator?
5. How the && operator works.
6. Write an if statement that sets the variable hours to 10 when the flag variable is set to true.
7. Which loop should you use when you know the number of required iteration?
8. Why do local variables lose their values between calls to the function in which they are define?
9. How do you return a value from a function?
10. When you pass an array name as an argument to the function, what is actually being passed?

Question # 3:- Answer the following questions [3 x 10 = 30]

1. Write a program that display the following output

   20 18 16 14 12 10 8 6 4 2 0
2. Write a program that display the sum of all the value exist in between 0 and 1000.
3. Write a program that take three float variable from the user and display the largest of them.

☺☺☺ Best of Luck ☺ ☺ ☺

UNIVERSITY OF THE PUNJAB

Second Semester 2014

Examination: B.S. 4 Years Programme

Roll No. .....

PAPER: Programming Fundamentals **TIME ALLOWED: 2hrs. & 30 mins.**

Course Code: IT-102 / IT-12395 **MAX. MARKS: 50**

Attempt this Paper on Separate Answer Sheet Provided.

Question # 2:- Write a brief description about each of the following [2 x 10 = 20]

1. What is the difference between a logic error and a runtime error?
2. How can you get the size in bytes of any data type exist in C++.
3. Write a statement that creates an array of 100 integer element dynamically.
4. What value will be displayed on the console by the program; `float f = 5.00F; cout << f;`
5. How the || operator works.
6. Write an if statement that sets the variable minutes to 0 when the flag variable is set to false.
7. Which loop should you use when you know that it should be executed at least once?
8. How global variables are different from local variables?
9. What value is return to the operating system on the successful completion of a program?
10. When you return an array name from a function, what is actually being returned?

Question # 3:- Answer the following questions [3 x 10 = 30]

1. Write a program that display the following output

   2 4 6 10 16 26 42 68 110 178 228

2. Write a program that display the sum of all the even numbers exist in between 0 and 1000.
3. Write a program that take three float variable from the user and display the smallest of them.

UNIVERSITY OF THE PUNJAB

Roll No. .....

Second Semester 2015

Examination: B.S. 4 Years Programme

PAPER: Programming Fundamentals | **TIME ALLOWED: 30 mins.**

Course Code: IT-102, | **MAX. MARKS: 10**

Attempt this Paper on this Question Sheet only.

Question # 01:- Write the selected option (**A or B**) on your answer sheet against each of the following [1 x 10 = 10]

1.	Computers can do many different jobs because they can be programmed?	A. True	B. False
2.	Pseudo code is not an actual programming language.	A. True	B. False
3.	A variable must be defined before it can be used?	A. True	B. False
4.	A computer can directly understand machine languages and high-level languages.	A. True	B. False
5.	The = operator and the == operator perform different operation?	A. True	B. False
6.	A computer can directly understand machine languages and high-level languages.	A. True	B. False
7.	x != y is the same as (x > y || x < y || x==y)?	A. True	B. False
8.	The do-while loop is a post conditional loop?	A. True	B. False
9.	Static local variables are not destroyed when a function returns?	A. True	B. False
10.	The last element in an array is accessed by the subscript 4 of an array with 5 elements?	A. True	B. False

UNIVERSITY OF THE PUNJAB

Second Semester 2015
Examination: B.S. 4 Years Programme

Roll No. .....

PAPER: Programming Fundamentals — **TIME ALLOWED: 2 hrs. & 30 mins.**
Course Code: IT-102, — **MAX. MARKS: 50**

Attempt this Paper on Separate Answer Sheet provided.

Question # 02:- Write a brief description about each of the following [2 x 10 = 20]

1. What is the difference between a syntax error and a logical error?
2. How can you get the size in bytes of any data type exist in C++.
3. Write a statement that declares a variable num of integer type as a constant having a value 5.
4. What value will be displayed on the console by the program; `float f = 5.00F; cout << f;`
5. How the && operator works.
6. Write an if statement that sets the variable minutes to 0 when the flag variable is set to false.
7. Which loop should you use when you know the number of required iterations?
8. How global variables are different from local variables?
9. How do you return a value from a function?
10. When you return an array name from a function, what is actually being returned?

Question # 03:- Answer the following questions [3 x 10 = 30]

1. Write a program that display the following output

   2 4 8 16 32 64 128 256 512 1024 2048

2. Write a program that display the average of all the values exists in between **0** and **1000**.
3. Write a program that take three float variables from the user and display them in their ascending order.

UNIVERSITY OF THE PUNJAB

Second Semester - 2017
Examination: B.S. 4 Years Programme

Roll No. [redacted]

PAPER: Course
ER: Programming Fundamentals
rse Code: IT-102, IT-12395

TIME ALLOWED: 2 hrs. & 30 mins.
MAX. MARKS: 50

Attempt this Paper on Separate Answer Sheet provided.

int (n %320

Question # 02 [5 x 4 = 20]

Write a brief description about each of the following

1. Difference between pre and post increment operator with the help of an example.
2. How the || operator works. Explain with the help of an example.
3. What is the significance of static variables in programming?
4. How do you return an integer pointer from a function? Explain with the help of an example.
5. When you pass an array name from a function, what is actually being passed and why?

Question # 03 [3 x 10 = 30]

Answer the following questions

1. Write a program that take three distinct integers from user and display the second smallest of them.
2. Write a program that display all the numbers divisible by three exists in between 1 and 10000 using a while loop.
3. Write a function that accept two parameters, an array of integers and its size, the function should return the average of all the elements exist in that array.

☺☺☺ Best of Luck ☺☺☺

```
n=1;
while(n<=10000)   n
{                 3
cout<< n;
n+1;
}
```

PAPER: Programming Fundamentals
Course Code: IT-102, IT-12395 Part – II

Roll No. .....

TIME ALLOWED: 2 Hrs. & 45 Min.
MAX. MARKS: 50

Attempt this Paper on Separate Answer Sheet provided..

Question # 2 Short Answer Questions. 4 x 5 = 20 marks

i) **Write down the output of the following code segment.**

```
#include<iostream>
using namespace std;
int main()
{
    int a=2;
    for(int a=2;a<=10;a++)
        a=a+2;
    cout<<a<<endl;
    return 0;
}
```

```
#include<iostream>
using namespace std;
int main()
{
    int i = 6;
    int j = 1 ;
    for(i = 0 ; j > i ; j--)
    {
        cout<< j-1<<" ";
    }
    return 0;
}
```

ii) A car holds 12 gallons of gasoline and can travel 350 miles before refueling. Write a program that calculates the number of miles per gallon the car gets. Display the result on the screen.

[Use the following formula to calculate miles per gallon (MPG)]

MPG = Miles Driven / Gallons of Gas Used

iii) Write a function name **isPositive**, which takes an integer as an argument and returns **true** if the argument is a positive number, or **false** otherwise.**[only write the definition for this function]**.

```
bool isPositive ( int num ) ;
```

iv) Draw Flow chart in which you get restaurant bill as input and then it will computes the tax and tip on a restaurant bill. The tax should be 6.75 percent of the meal cost. The tip should be 15 percent of the total after adding the tax. Display the meal cost, tax amount, tip amount, and total bill on the screen.

Question # 3: 3 x 10 = 30

Write a program for the following Input a positive integer from the user (lets say **n**) and display the sum of the first **n** terms of the following series:

$$1^2 + 2^2 + 3^2 + 4^2 + 5^2 + 6^2 + \Lambda$$

Three **sample runs** of your algorithm might look like (Input is underlined in sample run, only to distinguish from display messages):

```
Enter the number of terms: 3
Sum of first 3 terms of the series is: 14
```

```
Enter the number of terms: 0
Sum of first 0 terms of the series is: 0
```

```
Enter the number of terms: 5
Sum of first 5 terms of the series is: 55
```

Question # 4:

Implement a function **specialSearch** which takes a one-dimensional array of integers, its size, and an integer *key* as arguments. This function will determine the number of elements less than, number of elements greater than and equal to *key* in the given array. The prototype of your function should be:

void specialSearch (int arr[], int n, int key, int& numLess, int& numGreater, int & numEqual)

In the above function prototype: **arr** is an array which contains **n** integers in *unsorted* order, **key** is the value based upon which the searching will be performed, **numLess , numGreater** and **numEqual** are reference parameters which will be used to return the counts of the number of elements less ,greater and equal to the **key**.

[Note: only write the definition of function]

Question # 5:

Write a program that take three district integers from user and display the second smallest of them?

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions: (6x5=30)

1. Assume "file.txt" has following text in it. What will be the output of the given program?

"PU is;; the;;largest institution, of;; higher, learning; in; Pakistan."

```
#include <iostream>
#include <fstream>
#include <string>
using namespace std;
int main()
{
    fstream file; string s;
    file.open("file.txt", ios::in);
    getline(file,s,';');
    cout <<s<< endl;
}
```

2. Assume "file.txt" has following text. What will be the output of the given code?

"PU is;; the;;largest institution, of;; higher, learning; in; Pakistan."

```
#include<iostream>
#include<fstream>
#include<string>
using namespace std;
int main()
{
        fstream file;
        string s;
        file.open("file.txt", ios::in);
        int i = 0;
        while (i<5)
        {
                getline(file, s, ',');
                i++;
        }
        cout << s << endl;
}
```

3. What will be the output of the following program?

```
#include <iostream>
using namespace std;
int main()
{
   int arrA[2][4] = {1,2,3,4,1,2,3,4};
   i = 0;
   cout << arrA[i][i++];
}
```

4. Which of the following is an INVALID way to set ptrB. See code

```
#include <iostream>
using namespace std;
int main()
{
        int a=2, *ptrA, ** ptrB;
        return 0;
}
```

5. What will be the value of y at the end of the following program?int x = 4; int y = 7;int* p = &x-(y++);

6. What will be the output of the following program?

```
#include <iostream>
using namespace std;
int main()
{
        int a[2] = { 2 , 3}, * p, * q;
        p = a;
        q = ++p;
        *p++;
        (*q)++;
        cout << a[0]<<","<<a[1];
        return 0;
}
```

Q.2. Answer the following questions: (3x

Part A: Specify output of the following.

```
#include<iostream>
using namespace std;
int main()
{
        int C[5] = {5,7,9,6,5};int j = 0;
        cout << "Prefix example" << endl;
        cout << "contents before:" << endl;
        for (int i = 0; i < 5; i++)
                cout << C[i] << " ";
        cout << endl;
        C[j] = ++j;//prefix increment, index is taken as a new updated j value
        cout << "contents after:" << endl;
        for (int i = 0; i < 5; i++)
                cout << C[i] << " ";
        cout << endl;
        return 0;
}
```

```
#include<iostream>
using namespace std;
int main()
{
        int C[5] = { 5,7,9,6,5 };int element = 5;
        for (int i = 0; i < 5; i++)
        {
```

```
            if (C[i] == element)
            {
                cout << "Element found at index " << i;
                break;
            }
        }
        return 0;
}
```

```
#include <string>
#include<iostream>
using namespace std;
int main()
{
    string x = 10;
    string y = 20;
    string z = x + y;
    cout << z;
    return 0;
}
```

Part B

What string will be stored in singing_string after the following code is run?

```
char singing_string[20] = "DoBeDo";
strcat(singing_string, " to you");
```

How many characters are in each of the following character and string constants?

a. '\n'
b. 'n'
c. "Mary"
d. "M"
e. "Mary\n"

Part C

1. Write a program that implements a function that declares an array of 4 elements and take their sum. After that if returns
1 if the sum lies in the range 0-10
2 if the sum lies in the range 11-30
3 if the sum is greater than 30
The relevant message regarding the range should be printed on console in the main function.