COMSATS University Islamabad

Lahore Campus

**Department of Computer Science**

**Sessional 1 Examination – Spring 2020**

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| Course Title: | Programming Fundamentals | | | | Course Code: | |  | Credit Hours: | | 4(3,1) |
| Course Instructor/s: | Dr. Muhammad Aksam Iftikhar | | | | Programme Name: | | BCS | | | |
| Semester: | 2nd | Batch: | FA19-BCS | Section: | A | | Date: | | 11-Mar-20 | |
| Time Allowed: | **1 Hour** | | | | Maximum Marks: | | | | 20 | |
| **Student Name:** |  | | | | **Reg. No.** |  | | | | |
| **Instructions:**   * Provide to-the-point answers. | | | | | | | | | | |

**Q No. 1 [5 Marks]** Encircle the correct choice against each of following questions.

1. What will be the output of the following statement:

cout << 4-2\*3+7/5+25.5\*2;

* 1. **51**
  2. 51.4
  3. 61
  4. Crashes the program at runtime

1. Which of the following are correct C++ statements?

**a) cout << "Hello There" << endl;**

b) cout << "Hello"; << " There" << endl;

c) cout << Hello << There << endl;

d) cout << 'Hello There' << endl;

1. A compound statement may contain:

a) exactly 1 statement

b) more than 1 statements enclosed within ( )

**c) more than 1 statements enclosed within { }**

d) only an empty statement

1. What will be the output of following code. (**Hint**: Apply precedence and associativity rules.)

int i = 1, j = 10, n = 0;

cout << i + j!=10 || n<0 && j+i==10;

a) 0

**b) 1**

c) 2

**d) No output, error in the cout statement.**

1. Suppose that str1, str2, and str3 are string variables, and str1 = "English", str2 = "Computer Science", and str3 = "Programming".

Select all of the following expression(s), whose result is true.

**a. str1 >= str2**

**b. str1 != "english"**

c. str3 < str2

**d. str2 >= "Chemistry"**

**Question 2:** Answer each of the following question in the space provided below. **(Marks: 16)**

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| 1. **[Marks: 2]** What is the purpose of the function cin.eof() in an endfile-controlled loop? |
| **Answer.**  The cin.eof() function is used to test the end of file after an input. This is mostly used in batch mode of program execution. If an input operation results in end of file, then this function returns true, otherwise it returns false. |
| 1. **[Marks: 2]** Assume the following program code:   int x = 15, y = -1;  char z = ‘C’;  cin >> x >> y >> z;  cout << “X = “ << x << “, ” << “Y = “ << y << “, ” << “Z = “ << z;  What will be the program output if the user enters the following input:  10 2P K |
| **Answer.**  X = 10, Y = 2, Z = P |
| 1. **[Marks: 4]** We know that a switch statement is just an alternate to nested if statement.   Convert the following switch statement into an equivalent nested if statement such that the program output remains the same. Assume alpha is an integer variable already declared. |
| **Solution**  **#include<iostream>**  **using namespace std;**  **int main()**  **{**  **int alpha = 4;**  **if(alpha == 1 || alpha == 2)**  **alpha = alpha + 2;**  **else if (alpha == 4)**  **{**  **alpha++;**  **alpha = 2 \* alpha;**  **alpha = alpha + 5;**  **}**  **else if(alpha == 5)**  **{**  **alpha = 2 \* alpha;**  **alpha = alpha + 5;**  **}**  **else if(alpha == 6)**  **alpha = alpha + 5;**  **else**  **alpha--;**  **cout << alpha;**  **}** |
| 1. **[Marks: 7]** Write down a program segment, which first reads and validates the maximum marks (a positive number between 1 and 100) in a subject. The program then repeatedly asks the user to input obtained marks for different student in that subject, until the user enters -1. In the end, the program should output average marks in the subject.   **Hint:** The program must use both input-validation (for maximum marks) and sentinel-controlled loop (for obtained marks).  **Note 1:** Assume that the input obtained marks are always less than maximum marks.  **Note 2:** The program should also be able to handle if obtained marks are not entered for any student. [Refer to the program sample output 3.] |
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| **SOLUTION:** #include<iostream>  #include<iomanip>  using namespace std;  int main()  {      int max\_marks, sum = 0, obtained\_marks, num\_subjects=0;      float average = 0.0;      do      {          cout<<"Enter Max Marks [1-100]: ";          cin>>max\_marks;      } while(max\_marks<1 || max\_marks>100);      cout<<"Input obtained Marks [-1 to exit]: ";      cin>>obtained\_marks;      while(obtained\_marks!=-1 )      {          sum = sum+obtained\_marks;          num\_subjects++;          cout<<"Input obtained Marks [-1 to exit]: ";          cin>>obtained\_marks;      }      if(num\_subjects>0)          cout<<"Percentage: "<<fixed<<setprecision(2)<<((double)sum)/(num\_subjects\*max\_marks)\*100<<"%";      else          cout<<"obtained marks not entered";  //5-6+1.4+51  } |