CS118 Programming Fundamentals

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Course Instructor

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_____ Roll No	_____ Section	_____ Signature

DO NOT OPEN THE QUESTION BOOK OR START UNTIL INSTRUCTED.

Instructions:

1. Verify at the start of the exam that you have a total of Five (5) questions printed on Nine (9) pages including this title page.
2. Attempt all questions on the question-book and in the given order.
3. The exam is closed books, closed notes. Please see that the area in your threshold is free of any material classified as 'useful in the paper' or else there may a charge of cheating.
4. Read the questions carefully for clarity of context and understanding of meaning and make assumptions wherever required, for neither the invigilator will address your queries, nor the teacher/examiner will come to the examination hall for any assistance.
5. Fit in all your answers in the provided space. You may use extra space on the last page if required. If you do so, clearly mark question/part number on that page to avoid confusion.
6. Use only your own stationery and calculator. If you do not have your own calculator, use manual calculations.
7. Use only permanent ink-pens. Only the questions attempted with permanent ink-pens will be considered. Any part of paper done in lead pencil cannot be claimed for checking/rechecking

Question	1	2	3	4	5	Total
Points	10	10	5	5	10	40
Score						

Vetted By: _____**Vetter Signature:** _____

University Answer Sheet Required: No ■   **Yes** ☐

| **Question No. 1** | **(06+04= 10)** |

a) Draw flow chart for the following problem

A user wants to go to a super market. S/he will check the local bus fare if it is less than or equal to Rs. 10, user will go there by bus otherwise s/he will walk to the super market as it is just 10 minutes away.

At the market user will be using a shopping cart and will be adding items which s/he wants to buy. The maximum shopping budget for this visit is Rs. 500.

After paying for all the items user is asked if s/he wants a shopping bag if s/he says yes. S/he is given a bag and added Rs. 5 to the total bill. If s/he says no, it means s/he already brought the required shopping bag with him/her.

After paying the bill user weighs the shopping bag(s), and if it weighs more than 5 kg user will go back to his/her house by bus otherwise s/he will simply walk back. ***At the end you should display the total expenditure of this visit.***

Note: Total Expenditure could be greater than Rs .500.

b) A palindrome is a number that if read reverse is the same number.(e.g. 1243421, 4516154, 9100019 Write an algorithm that inputs a number from the user and then prints whether the number is a palindrome number or not. Remember that the user will enter a number with **7 digits always**. (**Hint: Use modulus and division**)

Question No. 2	**(2.5 * 04 = 10)**

Write Output of the following Programs

<table>
<tr>
<td>

a)
```cpp
#include <iostream>
using namespace std;
int main(){
     int a, b ;
     cin >> a >> b;
     cout << a << ' ' << b << endl;
     a = a + b ;
     b = a - b ;
     a = a - b ;
     cout << a << ' ' << b << endl;
     return 0;
}
```
</td>
<td>

Output
Assume a=12 b=13

12 13
13 12
12 12
</td>
</tr>
<tr>
<td>

b)
```cpp
#include "iostream"
#include "iomanip"
using namespace std;

int main(){
     int x = 11, y = 15, z = 64;
     cout << x/2.0 << ' '
          << x+y/3 << ' ' << z/6
          << endl;
     cout << setprecision(2)
          << fixed << x/3.0 << ' '
          << x+y/2 << ' '<< z/3;
}
```
</td>
<td>

Output

5.5 16 10
3.67 18 21
</td>
</tr>
<tr>
<td>

c)
```cpp
#include "iostream"
using namespace std;

int main (){
  int a = 1, b=3, c=5;
  b = ++c + a++ ;
  c = a++;
  cout << a << ' ' << b << ' ' << c ;
  cout << "\na + b + c = "
       << a + ++b + c << endl;
  return 0;
}
```
</td>
<td>

Output

3 7 2
a + b + c = 13
</td>
</tr>
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<td>

d)
```cpp
int main () {
     int z = 10;
     cout << ++z / 2 << endl;
     cout << z++ - 2 << endl;
     cout << z ;
}
```
</td>
<td>

Output

5
8
12
</td>
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</table>

Question No. 3		(5)

Find out the error in the following code snippet and write only the corrected line in the space provided. Mention the line number as well.

<table>
<tr>
<td>

a)
```
1.  int main(){
2.      int x = 12, z = 10;
3.      y2 = 10 ;
4.      cout << x << y2 << z ;
5.      return 0;
6.  }
```
</td>
<td>

```
3. int y2 = 10;
```
</td>
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b)
```
1.  int main(){
2.      const int a, b ;
3.      int y = a + b ;
4.      cout << y;
5.  }
```
</td>
<td>

```
2. const int a = 10, b = 5;
```
</td>
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c)
```
1.  int main()
2.  {
3.      double a = static_cast<double>50,
4.             b = 2.5 ;
5.      int y = a + b ;
6.      cout << y;
7.  }
```
</td>
<td>

```
3. static_cast<double>(50)
```
</td>
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d)
```
1.  int main(){
2.      float x;
3.      cout << "Enter the value' for x = " ;
4.      cin >> x ;
5.      cout << x % 2 ;
6.  }
```
Sample output must be
Enter the value' for x = 99
1
</td>
<td>

```
2. int x;
3. cout << "Enter the value\' for x = " ;
```
</td>
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</table>

Question No. 4	01*05 = 05

Dry Run following lines and mention output of each line in the table.

For each line use a = 10, b = 3 and c = 5

Sr.	Line of code	Output
1.	`cout << 15 / 2 + static_cast<double>(c)<< endl ;`	12
2.	`cout << --a * b / c++ << endl ;`	5
3.	`cout << static_cast<int>('a') / 10 + 3 * c<< endl ;`	24
4.	`cout << static_cast<int>('A') % 11 + a / b<< endl ;`	13
5.	`cout << 10.5 / 2 + 4 * 1.5 + 10 << endl ;`	21.25

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Question No. 5	(10)

Write a program that takes Name, CGPA, Age and batch from the user by printing only one output statement and you must use only one input statement to take the input of all. The program will take input three times and print the results in the format given below. Sample run of the program is also shown below.

Sample run 1:

Please enter Name, CGPA, Age and batch of the first student : Rizwan 3.45 22 2019
Please enter Name, CGPA, Age and batch of the second student : Ali 3.25 23 2019
Please enter Name, CGPA, Age and batch of the third student : Jamil 2.15 21 2019

```
Sr.         Name   CGPA    Age    batch
**1******Rizwan***3.45*****21*****2019
--2---------Ali---3.25-----23-----2019
  3       Jamil   2.15     21     2019
```

Sample run 1:

Please enter Name, CGPA, Age and batch of the first student : Lisa 1.05 23 2018
Please enter Name, CGPA, Age and batch of the second student : Student 3.15 22 2017
Please enter Name, CGPA, Age and batch of the third student : Jim 2.33 20 2018

```
Sr.         Name   CGPA    Age    batch
**1*********Lisa***1.05*****23*****2018
--2-----Student---3.15-----22-----2017
  3         Jim   2.33     20     2018
```