



Question 1:

(12 Marks)

A. (8 Marks) Determine the output for each of the following code snippets (assuming successful compilation):

a) (2 Mark)	b) (2 Mark)
<pre>cout<< "Welcome \t to \n Programming \n";</pre> <p>Answer: Welcome to Programming</p>	<pre>int x=4, y; // declaration y = x%5 + 4; cout<< "Z="<<y;</pre> <p>Answer: Z= 8</p>
c) (2 Mark)	d) (2 Mark)
<pre>int z =3, x=2; switch (z){ case 2: cout<<"Shoubra"; break; case 3: cout<<"Benha"; default: cout<<"University"; }</pre> <p>Answer: Benha University</p>	<pre>for (int i =5; i <= 14; i+= 4) cout << i;</pre> <p>Answer: 5 9 13</p>

B. (4 Marks) Write for loops that will print each of the following outputs:

a) (2 Mark)	b) (2 Mark)
5 10 15	\$ \$ \$ \$
<p>Answer: for (int i =5; i <= 15; i+= 5) cout << i << "\t"</p>	<p>Answer: for (int i =1; i <= 4; i++) cout << "\$";</p>

Question 2:

(7 Marks)

1. The purpose of using a loop is to.....

a. make decision

c. repeat operation(s) many

times

b. declare variables

d. declare constants



2. Which of the following is not a comparison operator in C++ language?

- a. >
- b. <=
- c. =
- d. ==

3. Which of the following is not a standard data type?

- a. int
- b. float
- c. date
- d. char

4. Below is an example of a logical operator.

- a. &&
- b. !
- c. ++
- d. a and b

5. char a='b'; char b='c'; char c=a; cout<<"b"<<b<<"c" <<a<<"b"<<c;
The output of this program segment is:

- a. abccbbb
- b. accabb
- c. bccbbb
- d. None of the above

6. Which of the following is a correct declaration to a constant:

- a. const float X = 3.14;
- b. # define float X = 3.14;
- c. None of them
- d. float X 3.14;

7. Which of the following is a correct comment:

- a. None of them
- b. /* This is a comment */
- c. /// This is a comment //
- d. /*/ This is a comment

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CPE 101
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Duration: 3 hours
№ of Questions: 5 in 2 page(s)
Total Mark: 40

Question 3:

(7 Marks)

Write a complete C++ program that determines the number of days in a month. The program should ask the user to enter a month number, and prints the number of days in this month according to:

Month 1,3,5,7,8,10,12: "31 days"

Month 4,6,9,11: "30 days"

Month 2: "29 days if the year is divisible by 4 else 28 days".

Answer:

```
# include <iostream.h>
void main () {
int month, year ;
cout << " Please enter the number of the month " ;
cin >> month ;
    switch ( month ) {
case 1: case 3: case 5: case 7: case 8: case 10: case 12:
    cout << " The number of days in this month is 31 days " << endl ;
break ;
case 4: case 6: case 9: case 11:
    cout << " The number of days in this month is 30 days " << endl ;
break ;
case 2:
    cout << " Please enter the year: " ;
cin >> year ;
    if ( year % 4 == 0 )
    cout << " The number of days in this month is 29 days " << endl ;
    else
    cout << " The number of days in this month is 28 days " << endl ;
break ;
default :
    cout << " The month number should be in the range from 1 to 12 " ;
}
}
```

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Question 4:

(7 Marks)

The factorial of a nonnegative integer is written as $n!$ (pronounced “n factorial”) and is defined as follows:

$$n! = \begin{cases} n(n-1)(n-2) \dots \dots 1 & , n \geq 1 \\ 1 & , n = 0 \end{cases}$$

For example: $5! = 5 * 4 * 3 * 2 * 1$, which is 120.

Write a complete C++ program that accepts a nonnegative number and prints its factorial.

Answer:

```
#include <iostream>
int main() {
int n, fact = 1 ;
cout << "Please enter a number" << endl ;
cin >> n ;
    while ( n > 0 ) {
        fact = fact * n ;
        n -- ;
    }
cout << "The factorial of your number is" << " " << fact ;
    return 0;
}
```

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Question 5:

(7 Marks)

Write a complete C++ program that accepts a character grade (A, B, C, or F) from the user and prints its equivalent integer GPA (4, 3, 2, and 0 respectively) using switch case.

Answer:

```
#include <iostream>
int main( ) {

cout << "Please enter your grade:" << endl ;
cin >> Grade ;

switch (Grade){
case 'A':
cout << "your GPA is 4";
break;
case 'B':
cout << "your GPA is 3";
break;
case 'C':
cout << "your GPA is 2";
break;
case 'F':
cout << "your GPA is 0";
break;
default:
cout << "Wrong grade, you must enter a grade in the range from 0 to 100";
}

return 0;
}
```

Good Luck
Dr. Shady Yehia Elmashad