

وقت المراجعة



LIVE

الاثنين والثلاثاء

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OL Academy

مدرس المقرر



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ITCS110/CSC103

Computer Programming for Scientists and Engineers

Exam1

Midterm Exam Revision



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QUESTION #1:



Part A: Perform the following and **show your detailed steps**

1 $(7d4e)_{16} = (\quad)_2$

2

$$(256)_8 = (\quad)_{10}$$

3 $(101101)_2 * (101)_2 = (\quad \quad \quad)_2$

Part B: Draw a flowchart that prompts the user to enter from the keyboard a letter *let* ('R' or 'r', 'C' or 'c' representing a rectangle/cylinder) and two numbers (*t1* and *t2*), and calculates *rst* as follows.

$$\mathbf{rst} = \begin{cases} t1 + t2 & \text{if } let = 'C' \text{ or } 'c' \\ 2 \times \pi \times t1 \times (t1 + t2) & \text{if } let = 'R' \text{ or } 'r' \\ \text{prints an error message "Invalid input" and quit} & \text{otherwise} \end{cases}$$

If the user enters any other character, then prints an error message “Invalid input.”. Then prints the entered values and the value of **rst**.

QUESTION #2:



Part #A: Choose the best correct answer.

1 A manipulator required to display a floating-point number with 3 decimal places is:

(a) `setprecision(3)`

(b) `cmath(3)`

(c) `setw(3)`

(d) `setfill(3)`

(e) None

QUESTION #2:



Part #A: Choose the best correct answer.

2 A statement that defines a variable var used to store one character equals to 'Y' or 'N' is:

- (a) int var;
- (b) char var;
- (c) double var;
- (d) bool var;
- (e) None

QUESTION #2:



Part #A: Choose the best correct answer.

3 For the input line: *12.59 75.36 77.66*, What will be in *t2,t3,t4* variables after executing the following C++ code?

```
int t4 ; double t2,t3; cin >> t4 >> t3 >> t2 ;
```

- (a) *t4=1 t3=2.59 t2=75.36*
- (b) *t4=12.59 t3=75.36 t2=77.66*
- (c) *t4=12 t3=59 t2=75.36*
- (d) *t4=12 t3=0.59 t2= 75.36*
- (e) None

QUESTION #2:



Part #B: output

(a) What will be printed after executing the following C++ code? Show the exact output.

```
int x=4, y=5, z=8, w; double f;  
y *= z;  
cout << "Y = " << y << endl;  
w = x - 32 / z * (x - 17 / z);  
cout << "W = " << w << endl;  
cout << "F = " << x - 17.5 / z * x - 14.0 / z << endl;
```

OUTPUT:

QUESTION #2:



Part #B: output

(b) What will be printed after executing the following C++ code? Show the exact output.

```
double x=54.70, y=66.789, w= -99.128;
cout <<"X =" << setfill('!')<<setw(8)<< x <<'\n';
cout << fixed << setprecision(2)<< setfill('#');
cout <<"Y ="<<setw(9)<< y<<setprecision(2)<<'\n';
cout <<"W ="<<setfill('*') << setw(10)<< w<<endl;
cout << "BW =" << left << setw(8)<< w << endl;
```

OUTPUT:

QUESTION #3:



Part #A: Choose the best correct answer

A

```
int n=7;
switch (n)
{
    case 5: cout << "123" << "&&";<< break;
    case 6: cout << "def" << "???";
    case 7: cout << "abc" << "???";
    case 8: cout << "456" << "***"<< break;
    default: cout << "999" << "+++";
}
cout << "Nice Test\n" ;
```

- a) 456***999+++Nice Test\n
- b) def???abc???Nice Test
- c) abc???456*** Nice Test
- d) 456***999+++Nice Test
- e) None

QUESTION #3:



Part #A: Choose the best correct answer

B

```
float x=4.5, y=6.75;
cout << "Result is ";
if (x > y)
cout << 2*y-x << '\t';
else
cout << 2*y+x << '\t';
cout << "CSC_UOB\n ";
```

a) Result is -2.25 UOB_CSC103

b) Result is -2.25 CSC_UOB

c) Result is 18 CSC_UOB

d) Result is -2.25 UOB_CSC103\n

e) None

Part #B: Write a C++ program that prompts the user to enter from the KBD 3 values about an employee: The basic salary in BDs (double), the overtime hours worked (integer), and an employee rank (char) used to define the hourly rate as shown in the table below.

Employee Rank	A	B	C	D
Hourly Rate in BDs	12.000	9.750	7.500	5.250

The monthly salary in BDs is calculated as follows:

$$\text{monthly salary} = \text{basic salary} + \text{overtime hours worked} * \text{hourly rate}$$

Your program should print the entered values and the calculated monthly salary as shown below

Sample RUN

```
Enter 3 values (double, integer, char) please: 650.0 16 C
Basic salary: 650.000
Overtime hours worked: 16
Employee rank: C
Hourly rate: 7.500
Your monthly Salary = 770.000
```

QUESTION #4:



Part #A: Choose the best correct answer

```
int j=12;  
while (j >= 8)  
{  
    cout << 2 * j;  
    j-= 2;  
}
```

- a) 162024
- b) 242220
- c) 242016
- d) 202224
- e) None

Part #B: A company organizes a charity campaign for helping Gaza children. Every person can denote one or more banknotes in the donation box. Banknotes are of 3 colors: blue (5 BD), green (10 BD), and brown (20 BD). The box capacity is up to 4000 banknotes. Write a C++ program that, at the campaign end, prompts the user to enter from KBD the color of each banknote in the box ('B' for blue, 'G' for green, 'W' for brown), counts the number of blue (**countB**), green (**countG**), and brown (**countW**) banknotes, calculates the **total** amount collected as follows:

$$\text{total} = 5 \times \text{countB} + 10 \times \text{countG} + 20 \times \text{countW}$$

Note: Your program should produce and format the output as shown below.

Sample RUN

```
Enter the next banknote color (B,G, or W) please: B
Enter the next banknote color (B,G, or W) please: W
...
...
Enter the next banknote color (B,G, or W) please: B
Enter the next banknote color (B,G, or W) please: G
The number of blue banknotes = 1000
The number of green banknotes = 1500
The number of brown banknotes = 1500
The total amount collected = 50000
```