

# UNIVERSITI TUN HUSSEIN ONN MALAYSIA

# **FINAL EXAMINATION** SEMESTER II **SESSION 2016/2017**

COURSE NAME

: C++ PROGRAMMING

COURSE CODE

: BWB 10203

PROGRAMME CODE : BWQ

EXAMINATION DATE : JUNE 2017

**DURATION** 

: 3 HOURS

INSTRUCTION

: ANSWERS ALL QUESTIONS

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THIS QUESTION PAPER CONSISTS OF SEVEN (7) PAGES

### SECTION A - True or False

- Q1 State whether the following are *true* or *false* and explain your answer.
  - (a) In a counter-controlled while loop, it is not necessary to initialize the loop control variable.

(3 marks)

(b) Consider the following syntax: char name[16] = "John K. Miller";

The above syntax declares name to be an array of 14 characters because the string "John K. Miller" has only 14 characters.

(3 marks)

(c) A sentinel-controlled while loop is an event-controlled while loop whose termination depends on a special value.

(3 marks)

(d) The address operator & can be applied only to constants and to expressions.

(3 marks)

(e) If a function has no parameters, the parentheses is no longer require to be included in the syntax line.

(3 marks)

(f) Array cannot be declare as const array parameter.

(3 marks)

(g) Keywords typename and class as used with a template type parameter specifically mean "any user-defined class type."

(3 marks)

(h) All function-template definitions begin with the keyword template, followed by an braces({ and }).

(3 marks)

(i) The break statement is required in the default case of a switch selection statement to exit the switch properly.

(3 marks)

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(j) Consider the following source code.

Suppose the input is 10. The output of the code is: 100

(3 marks)

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#### SECTION B - Short answer

### Q2 Refer the following C++ code:

```
1.
     #include <iostream>
     using namespace std;
3.
     int main()
4.
5.
      int r=0;
6. .
      const PI=3.14;
      cout << "Enter radius value of a circle: ";</pre>
      cin >> radius;
9.
      while (r!=0);
10.
      r++;
11.
      do
12.
        {
13.
           luas = PI*radius*radius;
           cout <<"\nThe size of a circle is: " <<luas <<endl;</pre>
14.
15.
           cout <<" Enter another radius value: ";</pre>
16.
           cin >> r;
17.
        }
18.
          return 0;
19.
```

(a) The above program has errors. Find the errors by specifying the line numbers and explain the reasons.

(5 marks)

- (b) If the errors has been corrected, what would be the output of the above program? (2 marks)
- (c) How many times block { . . } is repeated?

(2 marks)

(d) If the conditional repetition structure has changed to while  $(r \le 3)$ , how many time the block  $\{..\}$  is repeated?

(2 marks)

(e) Remove two commands in lines 15-16 in block { . . } . What will happen? Explain. (4 marks)



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#### BWB 10203

- Q3 Write the analysis step (output, input and process) for the problems below.
  - (a) A bank is charging 5% interest per year for a loan. Monthly payments will be made for a certain period of time. Calculate the monthly payment amount a person needs to pay by asking the user to enter the loan amount and time period on their own.

(3 marks)

(b) Calculate the density of an iron block in g cm<sup>-3</sup>. The block has a mass of 1800g. Given the formula for density is:

Density = 
$$\frac{\text{mass}}{\text{volume}}$$

AND

iron volum  $e = length \times width \times height$ 

(3 marks)

(c) Determine the weight of 5 different steel cylinders by using the following formula:

weight = density  $\times \pi \times \text{radius}^2 \times \text{height}$ 

Prompt the user to enter the radius and height separately for the 5 steel cylinders given the density is the same for all cylinders.

(3 marks)

(d) A travelling wave of wavelength 0.60m moves at a speed of 2ms<sup>-1</sup>. Calculate the frequency given the formula as:

 $v = f\lambda$ 

where:

v = wave speed, f = frequency  $\lambda =$  wavelength



(3 marks)

(e) The users are require to enter a series of integer numbers. If the number is an even number, the program will then calculate the sum of the even numbers. Meanwhile, if the entered number is an odd value, the program will calculate the sum of the odd numbers. The program will stop when the user enters the sentinel value of 999.

(3 marks)

- Q4 Identify the following programs either it has an error or not. If the program has an error, Locate the error, classify it as either a syntax, compile-time, link-time, runtime or a logical errors. Explain the error and correct it.
  - (a) #include<iostream>
     using namespace std
     int main()
    { int n = 22;
     int m += 33;
     cout<< n << endl;
     cout<< m <<endl;
    }</pre>

(3 marks)

(b) if (n<0)
 cout<<"n is negative\n";
 cout<<"Is that ok?\n";
 else
 cout<<n is non-negative\n";</pre>

(3 marks)

(3 marks)

(3 marks)

(e) #include<iostream>
 using namespace std;
 int main()
 { float x = sqrt (-1.01)
 cout<<"x is: "<<x<<endl;
}</pre>

(3 marks)

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# SECTION C - Choose ONE (1) question. Write a complete program.

- A company named Best Options is doing analysis of its 10 best sales representatives. The analysis is important for the company to search for the best salesperson among them. That particular salesperson will be awarded a token of appreciation from the company. A computer program is required to assist the company in doing the analysis. Write a C++ source code to do the following:
  - (a) Declare three arrays namely Staff\_ID of type integer, Staff\_Name of type string, and Sales of type double. The array size is 10.
  - (b) Prompt the user to enter the salesperson's name, ID and their respective sales. Then read the input into the corresponding arrays.
  - (c) Print the name, ID and the amount of sales of the salesperson with the highest sales.

    (25 marks)
- Write a program that has **TWO** (2) functions. The function named display () will receive an array of age [10] from main body. Then, the program will evaluate and display the status of age based on input from user. If age is less than or equal to 18, the program will store to children array. However, if the age is greater than 19, the program will store to adult array. The program also has to calculate and display the total numbers of each array.

(25 marks)

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-END OF QUESTIONS -

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