



UTHM

Universiti Tun Hussein Onn Malaysia

**FINAL EXAMINATION
SEMESTER I
SESSION 2013/2014**

COURSE NAME : COMPUTER PROGRAMMING I
COURSE CODE : BWA 10103
PROGRAMME : 1BWA
EXAMINATION DATE : JANUARY 2014
DURATION : 3 HOURS
INSTRUCTION : THE QUESTIONS COMPRISES OF
THREE PARTS **A, B & C**. PLEASE
ANSWER **ALL** QUESTIONS

THIS QUESTION PAPER CONSISTS OF **SEVEN (7)** PAGES

PART A

Choose the correct answer of the following questions (each question carries 2 marks)

- Q1** Which is not an integer data type?
A. Single
B. Byte
C. Short
D. Integer
- Q2** Which is a numeric data type?
A. Floating point
B. Integer
C. Boolean
D. Both (A) and (B)
- Q3** Which sequence of char data types is listed from lowest to highest?
A. a, A, z, Z
B. a, z, A, Z
C. A, a, Z, z
D. z, a, Z, A
- Q4** The Date data type does not hold which type of information.
A. Seconds
B. Hours
C. Quarters
D. Months
- Q5** The proper operator precedence, from first to last, is:
A. logical, comparison and arithmetic
B. arithmetic, comparison and logical
C. arithmetic, logical and comparison
D. comparison, arithmetic and logical
- Q6** When a condition in an if ... then statement tests true:
A. The next else statement is activated.
B. The next if statement is activated.
C. The next then statement is activated.
D. A condition can never test true.
- Q7** Which of the following statement is correct?
I. We can return a global variable by reference.
II. We cannot return a local variable by reference.
A. Only I is correct
B. Only II is correct.
C. Both I and II are correct.
D. Both I and II are incorrect.

- Q8** Which statement will send the value generated by a function procedure, called CalculateTax, back to the calling code?
- A. return Sales*0.08
 - B. CalculateTax = Sales*0.08
 - C. return CalculateTax(Sales*0.08)
 - D. Both (A) and (B).
- Q9** The scope of a variable refers to:
- A. The length of the variable.
 - B. The name of the variable.
 - C. The accessibility of the variable.
 - D. The datatype of the variable.
- Q10** Which of method will arrange the elements of an array in alphabetical order?
- A. Arrange
 - B. Assemble
 - C. Rank
 - D. Sort
- Q11** If we create a file by 'ifstream', then the default mode of the file is _____
- A. ios :: out
 - B. ios :: in
 - C. ios :: app
 - D. ios :: binary
- Q12** What is the output of this program?
- ```
#include <iostream>
using namespace std;
int main ()
{
 int a[2][4]={3, 6, 9, 12, 15, 18, 21, 24};
 cout<<*(a[1] + 2)<< *(*(a + 1)+2)<<2[1[a]];
 return 0;
}
```
- A. 15 18 21
  - B. 21 21 21
  - C. 24 24 24
  - D. Compile time error
- Q13** Which of the following will produce a value 9 if  $x = 9.7$ ?
- A. floor(x)
  - B. abs(x)
  - C. log(x)
  - D. ceil(x)

**Q14** Which is the output of this program?

```
#include <iostream>
using namespace std;
int main ()
{
 int arr[]={4, 5, 6, 7};
 int *p = (arr + 1);
 cout << *p;
 return 0;
}
```

- A. 4
- B. 5
- C. 6
- D. 7

**Q15** What is the use of function call operator?

- A. Overloading the methods
- B. Overloading the objects
- C. Overloading the parameters
- D. Overloading the variables

**Q16** Suppose that  $x$ ,  $y$  and  $z$  are int variables, and  $x = 10$ ,  $y = 15$  and  $z = 20$ . Determine whether the following expressions evaluate to true or false.

$(x \leq y - 2) \ \&\& \ (y \leq z) \ || \ (z - 3 \neq 25)$

- A. True
- B. False

**Q17** Pick out the correct statement.

- A. Increment operator ++ adds 1 to its operand
- B. Increment operator ++ adds 2 to its operand
- C. Decrement operator -- subtracts 1 to its operand
- D. None of the mentioned

**Q18** From, where does the template class derived?

- A. Regular non-templated C++ class
- B. Templated class
- C. A or B
- D. None of the mentioned

**Q19** Which of is used to describe the function using placeholder types?

- A. Template parameters
- B. Template type parameters
- C. Template type
- D. None of the mentioned

**Q20** What is the output of this program?

```
#include <iostream>
#include <fstream>
using namespace std;
int main ()
{
 ofstream outfile ("text.txt");
 for (int n = 0; n < 100; n++)
 {
 outfile << n;
 outfile.flush ();
 }
 cout << "Done";
 outfile.close ();
 return 0;
}
```

- A. Done
- B. Error
- C. Runtime Error
- D. None of the mentioned

**PART B**

**Q1** Describe the different modes in which files can be opened in C++. (8 marks)

**Q2** (i) Explain the constant member function? How is it declared? Give an example. (4 marks)

(ii) What happens in a while loop if the control condition is false initially? (4 marks)

**Q3** (i) Given

```
int * entry = new int[10];
```

Write code to fill the array with 10 numbers entered through the keyboard. (4 marks)

(ii) Compare procedural programming and object oriented programming. (4 marks)

**Q4** Assume the following list of keys:

85, 49, 55, 110, 2, 17, 45, 10, 98, 68, 92

This list is to be sorted using the Selection Sort algorithm and using the binary search, how many comparisons are required to find whether the following items are in the list? Show the values of first, last and middle and the number of comparisons of 15, 49, and 98 after the iteration of the loop.

(8 marks)

**Q5** (i) Write the program promptly and what will be the result of following expressions when they are executed in sequence?

```
int a = 10;
int b = 20;
c = ++a + ++a + ++a;
b = b++ + b++;
e = a++ + --a + b--;
f = b-- & ++a + b++;
cout<<c<<d<<e<<f;
```

(4 marks)

(ii) What is wrong with the following program?

```
int main ()
{
 const double PI;
 int n;
 PI = 3.14159265358979;
 n = 22;
}
```

(4 marks)

**PART C**

**Q1** (i) A problem has its solution given in the form of a pseudo code, as follows:

```

Read input from t_1, h and n ;
for $i = 1$ to n

 Compute $(x_i, y_i) = \left(2t_i^3 \cos t_i, \frac{t_i}{1 + \cos t_i} \right)$;

 if $x_i > y_i$
 Compute $z_i = 1 - \sin(x_i, y_i)$;
 Compute $w_i = \begin{cases} 0 & \text{if } z_i < 0; \\ 1 & \text{if } z_i > 0; \\ -1 & \text{if } z_i = 0; \end{cases}$
 else

 Compute $z_i = 1 - \cos(x_i, y_i)$;
 Compute $w_i = \begin{cases} 0 & \text{if } z_i < 0; \\ 1 & \text{if } z_i \leq 0; \end{cases}$
 endif

 Display the values of t_i, x_i, y_i, z_i and w_i ;
 Update $t_{i+1} \leftarrow t_i + h$
endfor

```

Assume the following initial values:  $n = 10, t_1 = -1$  and  $h = 0.1$ . Draw a flowchart from the pseudocode above to represent the solution.

(4 marks)

(ii) Write a complete Visual C++ program to find the product of two matrices.

(6 marks)

**Q2** What is the relationship between function templates and overloading? Write a function template for the function Power ( ) which has two parameters base and exp and returns  $\text{base}^{\text{exp}}$ . The type of base is the parameter to the template and exp is *int*. If exp is negative then it must be converted to its positive equivalent. For example,  $2^3$  and  $2^{-3}$  must both return 8.

(10 marks)

----END OF QUESTION----