UTHM
Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER II
SESSION 2017/2018

COURSE NAME	:	COMPUTER PROGRAMMING
COURSE CODE	:	BEC 10102
PROGRAMME	:	BEJ / BEV
TEST DATE	:	JUNE/JULY 2018
DURATION	:	2 HOUR 30 MINUTES
INSTRUCTION	:	ANSWER **ALL** QUESTIONS

THIS QUESTION AND ANSWER PAPER CONSISTS OF **ELEVEN (11)** PAGES

Section A: Objective Questions

Q1 Rectangle symbol in flowchart is called as

A) Action symbol
B) Terminating symbol
C) Begin symbol
D) Connector symbol

(1 mark)

Q2 A graphical representation of an algorithm is called as

A) Pseudocode
B) Flowchart
C) Flowlines
D) Flow structure

(1 mark)

Q3 What will be the output of the following fragment code ?

```
void main ( ) {
      cout << "%d",'B' < 'A' ;
}
```

A) Error
B) 1
C) 0
D) None of these

(1 mark)

Q4 C++ programming language was developed by

A) Dennis Ritchie
B) Ken Thompson
C) Bill Gates
D) Bjarne Stroustrup

(1 mark)

Q5 The equality operator is represented by

A) :=
B) .EQ.
C) =
D) ==

(1 mark)

Q6 *continue* statement is used

A) to go to the next iteration in a loop
B) come out of a loop
C) exit and return to the main function
D) restarts iterations from beginning of loop

(1 mark)

Q7 Find out the error in following block of code.

```
if (x = 100)
     cout << "x is 100";
```

A) 100 should be enclosed in quotations
B) There is no semicolon at the end of first line
C) Equals to operator mistake
D) Variable x should not be inside quotation

(1 mark)

Q8 A program that specifies that an action is to be repeated while some condition remains true, is called

A) Repetition structure
B) Infinite structure
C) Non-terminating structure
D) None of them

(1 mark)

Q9 The difference between *while* structure and *do..while* structure for looping is

A) In while statement the condition is tested at the end of first iteration
B) In do structure the condition is tested at the beginning of first iteration
C) The do structure decides whether to start the loop code or not whereas while statement decides whether to repeat the code or not
D) In while structure condition is tested before executing statements inside loop whereas in do structure condition is tested before repeating the statements inside loop

(1 mark)

Q10 Observe the following block of code and determine what happens when x=2?

```
switch (x){
     case 1:
     case 2:
     case 3:
          cout<< "x is 3, so jumping to third branch";
                    goto thirdBranch;
     default:
          cout<<"x is not within the range, so need to say Thank
You!";
           }
```

A) Program jumps to the end of switch statement since there is nothing to do for x=2
B) The code inside default will run since there is no task for x=2, so, default task is run
C) Will display x is 3, so jumping to third branch and jumps to thirdBranch.
D) None of above

(1 mark)

Q11 Which of the following function declaration is/are incorrect?

A) int Sum(int a, int b = 2, int c = 3);
B) int Sum(int a = 5, int b);
C) int Sum(int a = 0, int b, int c = 3);
D) All are correct

(1 mark)

Q12 In C++ code, variables can be passed to a function by

A) Pass by value
B) Pass by reference
C) Pass by pointer
D) All the above

(1 mark)

Q13 Pass-by-reference function call is:

A) A method that passing the address of actual parameter to the function
B) A method that passing the value of actual parameter to the function
C) A method that passing the number of actual parameter to the function
D) A method that passing the data type of actual parameter to the function

(1 mark)

Q14 Select the incorrect statement about functions in C++:

A) Functions name can use reserve keywords
B) Variables declared in a function is local variables
C) There are two types of functions which are standard library and user-defined
D) Functions can return any data types or cannot return anything

(1 mark)

Q15 The following are the elements of functions except:

A) Function definition
B) Function prototype
C) Function call
D) Function initialization

(1 mark)

Q16 Position number contained within a square brackets e.g. my_array [5], is referred as

A) Post-scripts
B) Sub-scripts
C) Elements of an array
D) None of them

(1 mark)

Q17 `float a [3] = {10.2, 33.4, 44.4};` is an example of

A) Initializing variables
B) Initializing array
C) Initializing functions
D) None of them

(1 mark)

Q18 A string is terminated by a

A) Null character
B) Boolean expression
C) Semicolon
D) All of them

(1 mark)

Q19 What is mean of concatenation?

A) Separating a string from another string
B) Adding two strings
C) Adding two functions
D) None of them

(1 mark)

Q20 Consider the following fragment code.

```
int i;
int out=1;
for (i=0; i<10; i+=2)
      out+=i;
```

What will be the last value stored in the variable *out*?

A) 0 2 6 12 20
B) 1 3 7 13 21
C) 10
D) 21

(1 mark)

SECTION B: Answer ALL Questions

Q21 (a) Differentiate between function prototype and function definition.

(4 marks)

(b) List three benefits of using modular design to develop a program.

(3 marks)

(c) Answer the following questions based on the C++ program shown in **Figure Q21**.

```
1   #include <iostream>
2
3   using namespace std;
4
5   int main() {
6       double input1 = 0.0;
7       double input2 = 0.0;
8
9       cout << "Enter first number and press ENTER: ";
10      cin >> input1;
11      cout << "Enter second number and press ENTER: ";
12      cin >> input2;
13
        cout << "Average is: " << average(input1, input2)
14       << endl;
15
16      return 0;
17  }
```

Figure Q21

(i) Write the function prototype for the "*average*" function.

(2 marks)

(ii) Write the function definition for the "*average*" function.

(4 marks)

(iii) If you do not want to use function prototype, explain the correct way to write the C++ program such that it will compile without any error.

(2 marks)

Q22 Write C++ statements to do the following. Please note that all questions are related.

(a) Declare an array alpha of 15 components of type int.

(2 marks)

(b) Output the value of the tenth component of the array *alpha.*

(2 marks)

(c) Set the value of the fifth component of the array *alpha* to 35.

(2 marks)

(d) Set the value of the ninth component of the array *alpha* to the sum of the sixth and thirteenth components of the array *alpha.*

(2 marks)

(e) Set the value of the fourth component of the array *alpha* to three times the value of the eight components minus 57.

(2 marks)

(f) Output *alpha* so that five components per line are printed.

(5 marks)

Q23 Given the following code. Note that the left column is contains line number have been added to you identify certain parts of the program.

```
1.  #include <iostream>
2.  using namespace std;
3.
4.  void main(){
5.  int count, sum; float average = 0.0;
6.  int input, total_evenInput, total_oddInput;
7.
8.  input=count=sum=total_evenInput=total_oddInput=0;
9.  average=0.0;
10.
11.   while(1){
12.       cout<<"Insert integer numbers ";
13.       cout<<"(type -1 to stop the input):";
14.       cin>>input;
15.
16.       if (input==-1)
17.             break;
18.
19.       (input%2==0)?total_evenInput+=1:total_oddInput+=1;
20.
21.   }
22.
23.   cout<< total_evenInput << endl;
24.   cout<< total_oddInput << endl;
25. }
```

Figure Q23 (a)

(a) Rewrite the statement in line 19 using if-else statement

(8 marks)

(b) What will be the last value stored in the `total_evenInput` and the `total_oddInput` if the following input (refer to **Figure Q23(b)**) is inserted?

```
Insert integer input (type -1 to stop the input):3
Insert integer input (type -1 to stop the input):7
Insert integer input (type -1 to stop the input):100
Insert integer input (type -1 to stop the input):-1
```

Figure Q23(b)

(2 marks)

Q24 Construct a C++ program to produce the following output.

```
NUMBER      SQUARE      CUBE
  2           4          16
  4          16          64
  6          36         216
  8          64         512
 10         100        1000
```

Figure Q24

(15 marks)

Q25 Convert the following *switch* statement into *if..else*

```
switch (major_code) {
            case 1:
                  cout<<"Science Student";
                  break;
            case 2:
                  cout<<"Art Student";
                  break;
            case 3:
                  cout<<"Engineering Student";
                  break;
            case 4:
                  cout<<"Medical Student";
                  break;
            default:
                  cout<<"Code error";
      }
```

Figure Q25

(10 marks)

Q26 (a) Write a *for* loop code that calculates the sum of the first *n* natural numbers. For example, if the number entered is 5, the loop will calculate 1 + 2 + 3 + 4 + 5 = 15.

(8 marks)

(b) Convert the following *for* loop code to a *do while* loop code.

```
for (int x = 50; x > 0; x--)
      {
      cout << x << count << "second to go.\n";
      }
```

Figure Q26

(7 marks)

- **END OF QUESTION BOOKLET -**