TERBUKA

UTHM
Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER II
SESSION 2016/2017

COURSE NAME	:	COMPUTER PROGRAMMING
COURSE CODE	:	BNJ 20802
PROGRAMME CODE	:	BNB/BNC/BNG/BNL/BNM
EXAMINATION DATE	:	JUNE 2017
DURATION	:	2 HOURS 30 MINUTES
INSTRUCTION	:	ANSWER **ALL** QUESTIONS

THIS QUESTION PAPER CONSISTS OF **FOUR (4)** PAGES

Q1   (a)   A computer can be define as a machine that manipulate data based on a list of instructions called program. Computer consist of hardware and software. The physical part of computer is called computer hardware.

(i)   Describe in detail typical hardware of a computer an include the diagram to support your explanation

(7 marks)

(ii)   Briefly explain the following computer programming terms

- Operating system
- High-level scripting language

(4 marks)

(iii)   State the differences between pseudocode and flowchart and how both can help in coding implementation

(3 marks)

(b)   A written C++ code are given below:

```cpp
#include <iostream>
using namespace std;
int main()
{
  int a=5, b=7, c=9, d=3, sum=7;

  a += 5 - b;
  d = c %= 2;

  sum *= 5 % b++ + c / ++d;

  cout << "\nThe sum is \t" << sum << endl;
  cout << "\nValue a =\t" <<a--;
  cout << "\nValue b =\t" <<b;
  cout << "\nValue c =\t" <<++c;
  cout << "\nValue d =\t" <<d;

return 0;
}
```

Estimate the value of a, b, c, d and sum by showing detailed calculation. Illustrate the output display if the program is executed on computer screen.

(11 marks)

Q2   (a)   In control structure, several option can be implemented, either using selection or repetition, to manipulate the flow of the program. However, break, continue and goto keyword can also be used to control the program flow, with certain restriction.
Discuss in detail, the function of the keyword, where it can be implemented and the limitation of all **THREE (3)** keyword mentioned.

(9 marks)

     (b)   Every computer programming will go through a process called program development cycle or software development method. Evaluate all the process

(5 marks)

     (c)   The following program has errors.

```
#includes <iostream>
using namespace std
int processfunc(int x, int y, int z);

int main();
{
  int a,b,c,d;
  cout>>"\nPlease enter a b c value\n";
  cin>>a;
  cin>>B;
  cin>>c;
  d=processfunc(a,b,c);

  cout << "\n\na =  << a;
  cout < "\nb = " << b;
  cout << "\nc = " << c;
  cout << "\nd = " << d;
  return 0;

int processfunc(int x, int y, int z)
{
  int w;      w = x * y / 2 - z
  return w;
}
```

Identify the errors and rewrite the correct program code.

(11 marks)

Q3   As a safety engineer in a car manufacturing company, you need to develop a simple system or program that detect or sense the car crash and immediately deploy an airbag when crash occur at the speed equal or faster than 40km/h. If an accident (crash) happen at speed slower than 40km/h, an airbag will not deploy. However, both condition of the crash will turn ON hazard

light automatically. For practicality of the program development, assume crash detector as 1 when crash is detected and 0 for otherwise (no crash is detected). While, airbag is 1 for an airbag deployment and 0 for no airbag deployment

(a) Analyze input, output and write a simple pseudocode of your system

(4 marks)

(b) Prepare the flowchart for above system

(7 marks)

(c) Construct the C++ program based on your flowchart in **Question 3(b)**

(14 marks)

Q4 (a) Programmer use programming instruction to manipulate data. Which means that, data play an important role in programs. Discuss the types of data available in C++ that can be used in the computer programming

(5 marks)

(b) (i) Define the term *function* in computer programming

(2 marks)

(ii) Discuss in detail how function work and the benefits (advantages) of using function in computer programming

(7 marks)

(c) Write a program that display the total and average from **SIX(6)** input scores. Both total and average calculation should be in **TWO (2)** different functions. Total and average are display in the main function. Using these functions, solve the problem by including argument and with return value

(11 marks)

- END OF QUESTIONS -