UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION

SEMESTER II

SESSION 2009/ 2010

SUBJECT NAME	:	COMPUTER PROGRAMMING
SUBJECT CODE	:	BFC 2042
COURSE	:	3 BFF
EXAMINATION DATE	:	APRIL/MAY 2010
DURATION	:	2 HOURS
INSTRUCTION	:	ANSWER ALL QUESTIONS.

THIS QUESTION PAPER CONTAINS FOURTEEN (14) PAGES

SECTION A
Instruction : Choose the **BEST** answer.

Q1. After execution of the code in **FIGURE Q1**, what will be the value of `input_value` if the value 0 is entered at the keyboard at run time?

```
cin >> input_value;
if (input_value > 5)
   input_value = input_value + 5;
else if (input_value > 2)
   input_value = input_value + 10;
else
   input_value = input_value + 15;
```

FIGURE Q1

A. 15
B. 10
C. 25
D. 0

Q2. What is the output of the following segment of code in **FIGURE Q2** if **4** is input by the user when asked to enter a number?

```
int num;
int total = 0;
cout << "Enter a number from 1 to 10: ";
cin >> num;
switch (num)
{
   case 1:
   case 2:   total = 5;
   case 3:   total = 10;
   case 4:   total = total + 3;
   case 8:   total = total + 6;
   default:  total = total + 4;
}
cout << total << endl;
```

FIGURE Q2

A. 0
B. 3
C. 13
D. 28

Q3. Based on **FIGURE Q3**, what will the following program segment display?

```
int funny = 7, serious = 15;
funny = serious % 2;
if (funny != 1)
{
   funny = 0;
   serious = 0;
}
else if (funny == 2)
{
   funny = 10;
   serious = 10;
}
else
{
   funny = 1;
   serious = 1;
}
cout << funny << "   " << serious << endl;
```

FIGURE Q3

A. 7 15
B. 0 0
C. 10 10
D. 1 1

Q4. In C++, **14%4=**

A. 1
B. 2
C. 3
D. 4

Q5. Based on **FIGURE Q5**, what will the following loop display?

```
int x = 0;
while (x < 5)
{
   cout << x << endl;
   x++;
}
```

FIGURE Q5

A. 0
1
2
3
4
5

B. 0
1
2
3
4

C. 01 2 3 4

D. The loop will display numbers starting at 0, for infinity.

Q6. Based on **FIGURE Q6**, what is the output of the following program?

```
#include <iostream>
using namespace std;

void showDub(int);

int main()
{
   int x = 2;

   showDub(x);
   cout << x << endl;
   return 0;
}

void showDub(int num)
{
   cout << (num * 2) << endl;
}
```

FIGURE Q6

A. 2
   2

B. 4
   2

C. 2
   4

D. 4
   4

Q7. Most programming languages offer three forms of the selection structure: `if`, `if/else`, and ____.

A. `switch`
B. `for`
C. `while`
D. `select`

Q8. Here is the header for a function named `computeValue`:

```
void computeValue(int value)
```

Which of the following is a valid call to the function?

A. `computeValue(10)`
B. `computeValue(10);`
C. `void computeValue(10);`
D. `void computeValue(int x);`

Q9. Which of the following is a valid C++ array definition?

A. `int array[0];`
B. `float $payments[10];`
C. `void numbers[5];`
D. `int array[10];`

Q10. Given the following declaration, where is **77** stored in the scores array?

```
int scores[]={83, 62, 77, 97};
```

A. `scores[0]`
B. `scores[1]`
C. `scores[2]`
D. `scores[4]`

(10 marks)

SECTION B

Instruction : Answer **ALL** the questions

Q11 From the flowchart in **FIGURE Q11**, write a C++ program to compute the total profit of a company. (Use `for` loop) (15 marks)

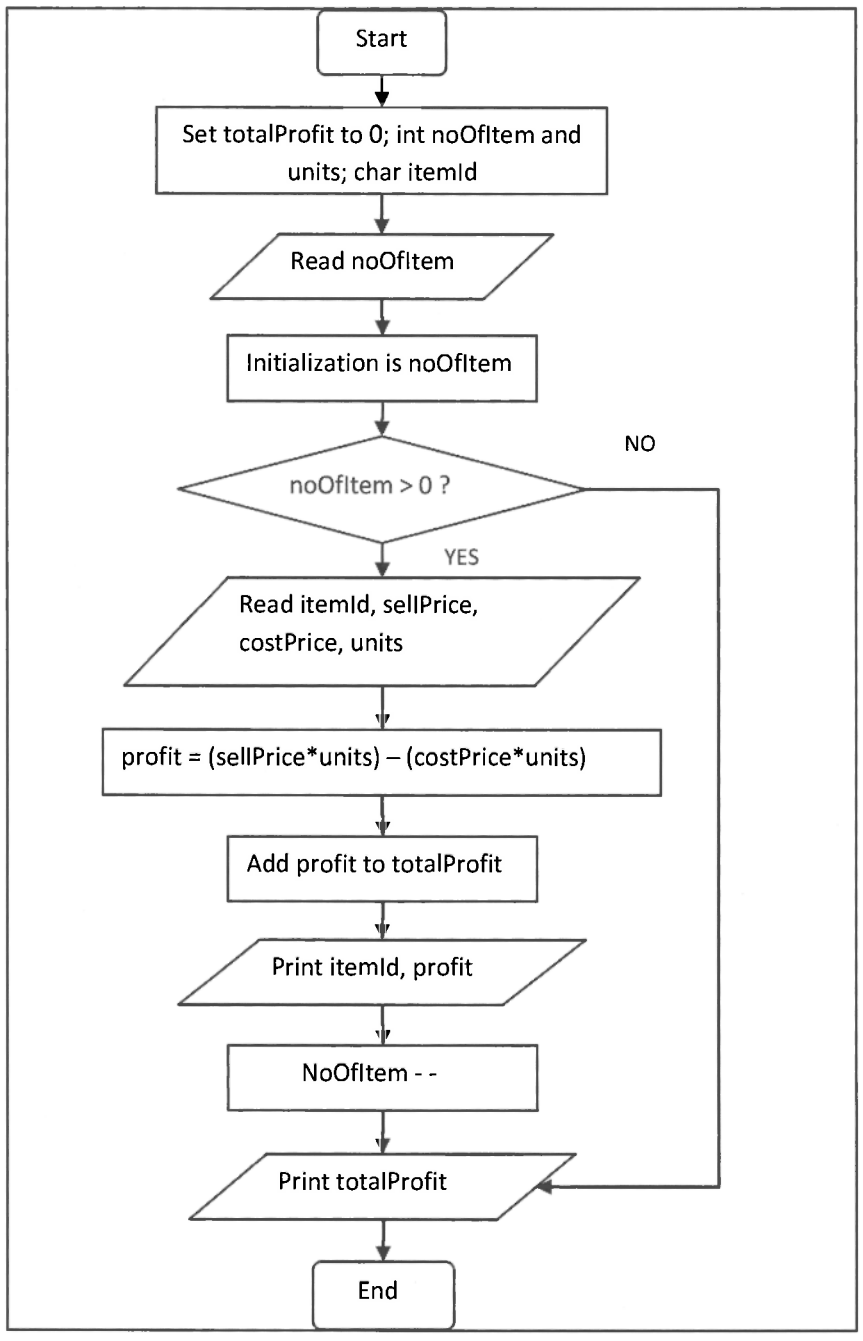

FIGURE Q11

Q12 Based on **FIGURE Q12**, trace the value of each variable in **line 1** until **line 6**, after the execution of each numbered line of statements. (14 marks)

	`#include <iostream>`
	`#include <conio>`
	`void main()`
	`{`
	`int a=8,b=4,c=2;`
	`float x = 1.0, y = 2.0;`
Line 1	`cout<< a++ <<" "<< b-- <<" "<< --c <<" "<< endl;`
	`x = (float)(++a / c--);`
Line 2	`cout<< a <<" "<< c <<" "<< x <<" "<< endl;`
	`a = (b=c*(b%2));`
Line 3	`cout << a <<" "<< endl;`
	`b = 4%3;`
Line 4	`cout<< b<<" "<< endl;`
	`x = c = --y;`
Line 5	`cout << y<<" " << c <<" "<< x <<" "<< endl;`
Line 6	`cout << a << " " << b <<""<< c;`
	`getch();`
	`return ;`
	`}`

FIGURE Q12

i. Line 1 :

ii. Line 2 :

iii. Line 3 :

iv. Line 4 :

v. Line 5 :

vi. Line 6 :

Q13 Given **FIGURE Q13**,

```
#include <iostream>
#include <conio>

int main ( )
{
      double mark;
      cout << "Enter your mark";
      cin >> mark;

      if (mark >=75)
            cout << "Your score : A" << endl;
      if ((mark < 75) && (mark>=60))
            cout << "Your score : B" << endl;
      if ((mark < 60) && (mark>=45))
            cout << "Your score : C" << endl;
      if ((mark < 45)
            cout << "Your score : D" << endl;

            getch ();
      return 0;
```

FIGURE Q13

a) Draw a flowchart for the program in **FIGURE Q13**. (5 marks)

b) Given the input mark = 90.6, identify which `if` statement will be evaluated and what are the results of the evaluated expression? (3 marks)

Q14 Answer the following questions based on **FIGURE Q14** below.

```
#include <iostream>
#include <conio>
#include <iomanip>

int main () {
int vehicle_type;
do {
double toll = 0.50;
cout << "Enter vehicle class (1-3). Enter 4 to exit. ";
cin >> vehicle_type;
switch (vehicle_type){
case 1:
     cout << "Passenger car." << endl;
     cout << setiosflags(ios::fixed)<<setprecision(2);
     cout << "Your toll: " << ++toll << endl;
case 2:
     cout << "Bus." << endl;
     toll = 1.50;
     cout << "Your toll: " << ++toll << endl;
case 3:
     cout << "Truck." << endl;
     toll = 2.00;
     cout << "Your toll: " << ++toll << endl;
case 4 :
     cout << "Program terminated\n";
default:
     cout << "Vehicle Class Unknown! Choose again."<< endl;
     }
} while  (vehicle_type != 4);
getch();
return 0;
```

FIGURE Q14

a) In **FIGURE Q14** above, an important statement is missing which could cause the program to give incorrect output. What is the statement? Write in the statement at the appropriate lines. (4 marks)

b) Assume that the statement you have answered in **Q14(a)** is included in **FIGURE Q14**, what would be printed if the following input is keyed-in?

i.) 2 (2 marks)

ii.) 1 (2 marks)

iii.) 8 (2 mark)

Q15 Given the program in **FIGURE Q15** that reads an integer number and determines whether the number is even or odd. Complete the program by writing a function named `is_even`, that prints "yes" if the number is even, or prints "no", otherwise.

(8 marks)

```
#include <iostream>
#include <conio>

void is_even(int a);

int main (void)
{
        int a;
        cout << "Enter an integer:/n";
        cin >> a;
        cout << "Is" << a << "even? ";
        is_even(a);
        cout << endl;
        getch ();
  return 0;
}
```

FIGURE Q15

Q16 Write a complete program that consists of FOUR (4) user-defined functions, refer to the flow chart in **FIGURE Q16** and **TABLE 1** to solve this problem. (25 marks)

TABLE 1

NAME OF THE FUNCTION	PURPOSE OF THE FUNCTION
`int getCoin ( )`	to read the value of a coin input from the user. (input must be 10,20,50 and 100 only)
`void calculateCoin (int & totalCoin, int coin)`	to calculate the total coins entered by the user and display the total amount.
`int calculateBalance(int totalcoin)`	to compute the balance of the coin and display the balance amount.
`int main ( )`	to solve the problem by calling the appropriate function based on the following flow chart.

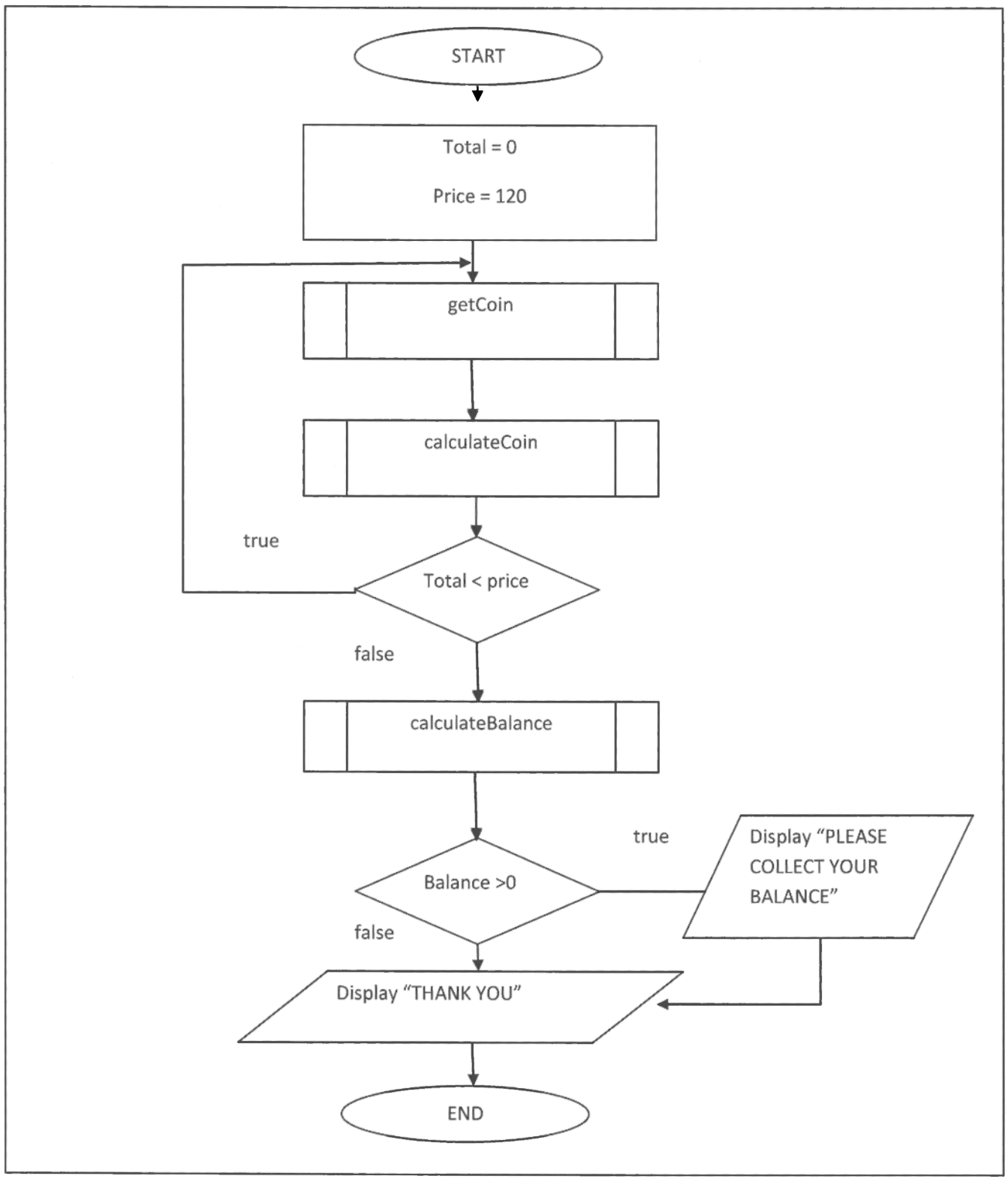
START
Total = 0
Price = 120
getCoin
calculateCoin
true
Total < price
false
calculateBalance
true
Display "PLEASE COLLECT YOUR BALANCE"
Balance >0
false
Display "THANK YOU"
END

FIGURE Q16