CONFIDENTIAL

Infrastructure University
Kuala Lumpur

FINAL EXAMINATION
SEPTEMBER / OCTOBER SEMESTER 2016

BACHELOR OF SOFTWARE ENGINEERING (HONS)
BACHELOR OF INFORMATION TECHNOLOGY (HONS) IN NETWORK TECHNOLOGY
BACHELOR OF COMPUTER SCIENCE (HONS)
BACHELOR OF INFORMATION SYSTEM (HONS)

PROGRAMMING FUNDAMENTALS
(BTT107)

(TIME : 3 HOURS)

MATRIC NO. : | | | | | | | | | |

IC. / PASSPORT NO. : | | | | | | | | | | | | | | |

LECTURER : **JAYA MALATHY**

GENERAL INSTRUCTIONS

1. This question booklet consists of 10 printed pages including this page.
2. **SECTION A and SECTION B :** Answer **ALL questions** in the **ANSWER BOOKLET.**
3. **SECTION C:** Answer **ONLY ONE (1) question** in the **ANSWER BOOKLET.**

INSTRUCTIONS: **TIME: 3 *HOURS***

SECTION A **(30 MARKS)**

There are SIX (6) questions in this section. Answer ALL Questions in the Answer Booklet.

1. Trace the output of the following program segment.

(5 marks)


```
char string1[10] = {'K','A','J','A','N ','G'};
char string2[5] = {'J','E','R','R','Y'};
printf("%s\n", string1);
printf("%s\n", string2);
strcat(string1,string2);
printf("%s\n", string1);
printf("%c\n", string1[0]);
printf("%c\n", string1[5]);
```

2. Trace the output of the following program segment.

(3 marks)


```
int i=12, j=5;
printf("%d\n", i/j);
printf("%d\n", i%j) ;
printf("%.3f", (float)i/(float)j);
```

3. Trace the output of the following program segment

(4 marks)

```
float x[5];

x[0]=5.4;
x[1]=1.5;
x[2]=2.7;

printf("%.3f\n",x[4]);
printf("%.3f\n",x[1+2]);
printf("%.3f\n",x[1]+5);
printf("%.3f\n",x[3]+2);
```


4. Trace the output of the following program segment.

(2 marks)

```
char q[20]="Hello";
char s[20]="Goodbye";

printf("%d\n",strlen(q)+strlen(s));
printf("%s\n",strcat(q,s));
```

5. Trace the output of the following program segment.

(6 marks)

```
a = fabs(7.5)

b = floor(7.5)

c = fabs(0.0)

d = fabs(-6.4)

e = ceil(-6.4)

f = ceil(-fabs(-8 + floor(-5.5)))


printf("%.1f\n%.1f\n%.1f\n%.1f\n%.1f\n%.1f",a,b,c,d,e,f);
```

6. Write the output of the following:

a) `5 / 4 - 3 % 2 * 2`

(2 marks)

b) `6 + 17 % 3 - 2 * 3`

(2 marks)

c) `2 + 22 * ( 9 - 7 ) / 2`

(2 marks)

d) `( 16 + 7 ) % 2 - 1 * 5`

(2 marks)

e) `( 19 - 3 ) * ( 2 + 2 ) / 4 % 3`

(2 marks)

SECTION B **(40 MARKS)**

There are SIX (6) questions in this section. Answer ALL Questions in the Answer Booklet.

1. Write an if/else if statement based on the following:

```
Assign 0.20 to discount if dept equals 5 and price is RM100
or more.

Assign 0.15 to discount if dept is anything else and price
is more RM100 or more.

Assign 0.10 to discount if dept is 5 and price is less than
RM100.

Assign 0.05 to discount if dept is anything else and price
is less than RM100.

No discount for unsatisfied condition.
```

(5 marks)

2. Consider the following code, and answer the question:

```
char again;
int selection;
  printf("1. Addition ");
  printf("2. Subtraction ");
  printf("3. Quit ");
  printf("Enter your selection: ");
  scanf("%d",&selection);
```

a) Using the while loop, write an input validation loop that will accept numbers from range of 1 to 3.

(2 marks)

b) Using the while loop, write an input validation loop that asks user to keeps entering a number if value entered is outside range of 1 to 3.

(4 marks)

c) Using the do-while loop, write an input validation loop that asks user to enter 'Y', or 'y' if to continue to process program.

(3 marks)

d) Using the while loop, write an input validation loop that will stop the program if user enter value 3.

(3 marks)

3. Answer the following:

a) Identify the problem for the following switch statement.

(1 mark)

b) Rewrite the correct code using the if else if statement.

(4 marks)

```
switch( digit / 4 )
{
   case 0,
case 1: printf("low. \n "); break;
     case 3: printf("high \n "); break;
}
```

4. What is the output of the following program, if:

```
if ( gender == 'f' || age <= 12 )
   printf("free barbie doll");
   printf("discount 25%");
```

a) gender = f , age = 10

(1 mark)

b) gender = m , age = 15

(1 mark)

5. Write a C statement(s) that accomplish the following array:

a) Declare an array named myList of 20 components of type int.

(1 mark)

b) Display the value of the tenth component of the array myList.

(1 mark)

c) Set the value of the fifth component of the array myList to 35.

(1 mark)

d) Set the value of the ninth component of the array myList to the sum of the sixth and thirteen components of the array myList.

(1 mark)

e) Set the value of the fourth component of the array myList to three times the value of the eight components minus 30.

(1 mark)

f) Declare a new array named specialSymbols of type char. Initialize this array to the following values: $, #, %, @, &, !, =

(1 mark)

6. Answer the following questions based on the C program below:

```
#include <stdio.h>
main()
{
FILE *fptr;
int total = 0, marks;
if ((fptr = fopen ("marks.dat", "r")) == NULL)
{
printf("Error in file opening!\n");
exit(1);
}
printf("Exam Marks: ");
while ((fscanf(fptr,"%d\n", &marks))!=EOF)
{
printf("%d\n",marks);
total=total+marks;
}
printf("Total Marks %d", total);
}
```


a) Is there any repetition in this program?

(1 mark)

b) If your answer to part (a) is yes, how many times this repetition will take place? If your answer to part (a) is no, just write 0.

(2 marks)

c) What is the condition to stop reading from the file.

(1 mark)

d) Explain the output of the program.

(2 marks)

e) Rewrite the program code above so that the data is written to a new file named "Addition.dat", where each of the marks are added with another 5 marks.

(4 marks)

SECTION C **(30 MARKS)**

There are TWO (2) questions in this section. Answer ANY ONE (1) question in the Answer Booklet.

1. Write a program using functions to display a basic arithmetic calculation option. The sample of output should be as follows:

```
SIMPLE CALCULATION PROGRAM:
Menu:
1. Add
2. Subtract
3. Multiply
4. Divide
5. Power
6. Quit

Enter your option > 1
The result:
12 + 20 = 32


Menu:
1. Add
2. Subtract
3. Multiply
4. Divide
5. Power
6. Quit

Enter your option > 6
Bye Bye
```


a) Use the Menu ( ) function to prompt the user to enter the calculation option. Two numbers will be randomly generated.

(20 marks)

b) Use the following functions to perform each of the operations:

- Add()
- Subtract()
- Multiply()
- Divide()
- Power()

.(10 marks)

2. Sun Book Shop sells school text books and wants to give discounts to their customers. The sample of output should be as follows:

Enter Purchase Amount : $21.20
More purchases : Y
Enter Purchase Amount : $44.50
More purchases : N
Total Purchases and Total Discount have been recorded in the Summary File
Purchase Amount After Discount $62.41

Total discount is based on the purchase price as given below:

Price	Percentage of discount given
Up to $50.99	5%
$51.00 - $100.99	10%
$101.00 - $250.99	20%
More than $251.00	25%

a) Use a suitable repetition structure to get the purchase amount input from the user and to calculate the discount given.

(13 marks)

b) Store the total purchase and total discount values in the Summary File.dat and display the purchase amount after discount.

(17 marks)

***** END OF QUESTIONS *****