UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER I
SESSION 2011/2012

COURSE NAME	:	COMPUTER PROGRAMMING
COURSE CODE	:	DAE 20102 / DEE 2112
PROGRAMME	:	2 DAE / DAL / DEK
EXAMINATION DATE	:	OCTOBER 2011
DURATION	:	2 ½ HOURS
INSTRUCTION	:	ANSWER **ALL** QUESTIONS IN **PART A** AND **TWO (2)** QUESTIONS IN **PART B** ONLY.

THIS QUESTION PAPER CONSISTS OF NINE (9) PAGES

PART A
Instruction: Answer **ALL** questions.

Q1 (a) Flowchart can be used to design and represent algorithm. Draw and explain three (3) symbols and definition to represent the flowchart notation.

(6 marks)

(b) Identifier is a special symbol for naming the entity/element as variable, constant, function and etc for a program. Give three (3) rules for naming the identifier.

(6 marks)

(c) Gives suitable data type and variable name to store the following values:

(i) Weight in kilogram.
(ii) The distance in meter between PPD to F2.
(iii) Student amount in DAE 20102 class.
(iv) Name of the lecturer teaching 2 DEE.

(8 marks)

Q2 Find the errors in the following code:

(a)
```
#include<stdio.h>

main()
        printf("Today is your final exam")
        printf("Don't be nervous. Good Luck for your final! ");
        }
```

(2 marks)

(b)
```
#include<stdio.h>

void main(){
        int Square, x = 2;
        square = pow(x,2);      /* calculate value of x to the power of 2 */
        printf("The square value is %d X %d = %d", x, x, square);
         }
```

(2 marks)

(c)
```
#include<stdio.h>

void main(){
        double passenger_age;
        double ticket_price;
        if (passenger_age>=18)
          ticket_price=40;
        else if
          ticket_price=40/2;
        }
```

(2 marks)

(d)
```
#include<stdio.h>

void main(){
        char student_name[50];
        char gender;
        printf("Student name is %c", student_name);
        scanf("Student gender is %c", gender);
        }
```

(2 marks)

(e)
```
#include<stdio.h>

void main(){
        int height, weight, length;
        double volume;
        volume=height*weight*length;
        printf("volume of a box is %d,volume);
        }
```

(2 marks)

Q3 (a) Complete the following *while* loop by fill in the blank (i to iv) to calculate total value for all odd number between 1 and 20, and display the total value to the screen.

```
__(i)__ number;
int __(ii)__=0;
while ( number < __(iii)__ ) {
      total += number;
      __(iv)__;          /* increase the value of number */
}
printf ("Value for odd number between 1 and 20 is %d", total);
```

(4 marks)

(b) This is the complete program for an operation.

```
# include <stdio.h>
int max (int x, int y);
int main(){
int m, n;
do
        {
        printf("\n m=");
        scanf("%d",&m);
        printf("\n n=");
        scanf("%d",&n);
        printf("\n Maximum is %d", max(m,n));
        }
while (m!=0);
return 0;
}
int max (int x, int y)
{
if (x<y)
        return y;
else
        return x;
}
```

After this code executes, define the output (i,ii,iii) if variable 'm' and 'n' are entered as below:

m	n	output
347	231	(i)
0	0	(ii)
78	79	(iii)

(6 marks)

Q4 (a) Rewrite the '*switch*' statement below as a multilevel '*if*' statement.

```
switch (color){
case 11: printf("Yellow\n");
   break;
case 23: printf("Red\n");
          break;
case 33: printf("Blue\n");
   break;
default:
   printf("Color unknown\n");
}
```

(5 marks)

(b) Rewrite the following code segment by using '*for*' statement.

```
product = 1;
next = 1;
while (next <= m) {
product = product * next;
next = next + 1;
}
```

(5 marks)

Q5 (a) Given the following data declaration:

```
float a = 10.0, b = 3.2, c;
int x = 10, y = 20, z;
```

What values generated by the following expressions?

(i) z = x % y + 2
(ii) c = y / a * 4 / x + 2

(2 marks)

(b) Given the following function:

```
int funC (int x, int y, char z){
int n =0, i;
switch( z ) {
case '+' : for(i = x; i<= y; i++)
   n+=y;
   return n;
case '*' : for(i = x; i<=y; i++)
   n*=y;
   return n;
default  : printf("Unknown operation!");
}
```

For each of the following statement, what are the values for val?

(i) val = funC (6, 9, '+') ;
(ii) val = funC (1, 3 ,'*');

(2 marks)

(c) A typical program development environment consists of SIX (6) phases to be executed. Sketch the block diagram for their flow.

(6 marks)

PART B
Instruction: Answer **TWO (2)** questions only.

Q6 (a) Write a C code using 'array' to produce output as below:

2 4 6 8 10

(5 marks)

(b) By referring to the array data code in **Q6**(a), demonstrates how to access the data from any THREE (3) array index.

(5 marks)

(c) Trace the display output for the following fragment code:

```
int listA[]={8,9,10};
int listB[]={1,2,3};
for (int i=2; i>=0; i--){
 printf("%d : ", listB[i]));
 printf("%d\n", listA[i]*listB[i]));
}
```

(5 marks)

(d) Complete the mode and descriptions for file opening mode in C (i to iv).

Mode	Description
r	(i)
(ii)	Create a file for writing. If the file already exists, discard the current content.
r+	(iii)
(iv)	Create a file for update. If the file already exists, discard the current contents.

(5 marks)

Q7 (a) Define the format and function of the statement below:

(i) getc () and putc ()
(ii) getchar () and putchar ()
(iii) getch () and putch ()
(iv) gets () and puts ()

(8 marks)

(b) State an advantage of using gets () / puts () instead of using printf () / scanf ()?

(2 marks)

(c) Write a program that input three (3) integers from keyboard, and prints the sum, average and multiplication of these numbers. The screen output should appear as:

Input the different integers: 9 1 8
Sum is 18
Average is 6
Multiplication is 72

(10 marks)

Q8 Write a complete C program which prompts the user to enter nine (9) digits of integer using two (2) dimensional array and print all the numbers in single line.

(20 marks)

Q9 (a) Write a user-defined function code for the following statement:

A function called *average* accepts two (2) floating point numbers then display the average number and return that value.

(5 marks)

(b) State whether the following statements are true or false. If the answer is false, explain why.

(i) An array can store many different types of values.
(ii) An array subscript should normally be float data type.
(iii) It is an error if an initializer list contains more initializers than size of array.

(5 marks)

(c) Complete the table below (i to x):

a	b	c	Expression	True/False	Value (0/1)
9	4	5	c < a - b	(i)	(ii)
-3	21	8	b > c + a * 4	(iii)	(iv)
7	8	5	a % c * b < 7	(v)	(vi)
2	2	2	(a > c) || (b< a)	(vii)	(viii)
10	-6	4	(a + b / c) != -1	(ix)	(x)

(10 marks)

Q10 (a) Draw the graphical representation of a pointer in memory based on the following segment code.

```
int w = 9, z = 7;
int *wPtr, *zPtr;
wPtr = & w;
zPtr = & z;
*wPtr = w + z;
```

(4 marks)

(b) Complete the following program by writing suitable C statements (i, ii, iii) that can read values a, b and c from studentdata.dat and display all values to the screen.

```
# include <stdio.h>
void main ()
{
FILE  * fpt;
int a;
float b;
char c;
fpt =  fopen ("studentdata.dat " , "r" );
_____(i)_____ //read  values of variable a, b and c
_____(ii)_____ //display all values of a, b and c
_____(iii)_____ //close a file
```

(6 marks)

(c) Write C statements to do the following:

(i) Define a structure called *worker* which consist of three (3) data members: Department, number of technician and number of engineer.

(3 marks)

(ii) Declare the *shiftA* as variable of type *worker*.

(1 mark)

(iii) Assign the following values for the specific data members :

Department : TEST
Number of technician: 30
Number of engineer: 6

(3 marks)

(iv) Display all the details about *shiftA*. Your running program should at least meet the following output.

ShiftA
****
Department : TEST
Number of technician: 30
Number of engineer: 6

(3 marks)