UTHM
Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER II
SESSION 2015/2016

COURSE NAME	:	COMPUTER PROGRAMMING
COURSE CODE	:	DAJ10203
PROGRAMME	:	DAJ
EXAMINATION DATE	:	JUN / JULY 2016
DURATION	:	3 HOURS
INSTRUCTION	:	ANSWER **ALL** QUESTIONS

THIS EXAMINATION PAPER CONSISTS OF **ELEVEN (11) PAGES**

Part A: Multiple Choice Questions

1. _____ is the physical aspect of the computer that can be seen.

    A.   Hardware
    B.   Software
    C.   Operating system
    D.   Application program

2. Why do computers use zeros and ones?

    A.   Because combinations of zeros and ones can represent any numbers and characters.
    B.   Because digital devices have two stable states and it is natural to use one state for 0 and the other for 1.
    C.   Because binary numbers are simplest.
    D.   Because binary numbers are the bases upon which all other number systems are built.

3. _____ translates high-level language program into machine language program.

    A.   An assembler
    B.   A compiler
    C.   CPU
    D.   The operating system

4   Which of the following lines is not a C comment?

    A.   /** comments */
    B.   // comments
    C.   -- comments
    D.   /* comments */

5   _____ is called an insertion operator for sending output to the console.

    A.   A semicolon (;)
    B.   A period (.)
    C.   An asterisk (*)
    D.   (" ")

6   The following program displays ?

```
#include <stdio.h>

int main( )
{
  printf ("A");
  printf  ("B");

  return 0;
}
```

A.   A B
B.   AB
C.   B A
D.   BA

7   Analyze the following code.

I:
```
#include <stdio.h>

int main( )
{
  printf( "Welcome to C");
  return 0;
}
```

II:
```
#include <stdio.h>

int main( ) { printf("Welcome to C"); return 0; }
```

A.   Both I and II can compile and run and display Welcome to C, but the code in II has a better style than I.
B.   Only the code in I can compile and run and display Welcome to C.
C.   Only the code in II can compile and run and display Welcome to C.
D.   Both I and II can compile and run and display Welcome to C, but the code in I has a better style than II.

8   If a program compiles fine, but it produces incorrect result, then the program suffers _____.

A.   a compilation error
B.   a runtime error
C.   a logic error
D.   a syntax error

9   What will be the output of the following code?

```
int i = 1;
    int j = ++i;
    printf( "i is ",  i);
    printf( " and j is ", j );
```

    A.   i is 1 and j is 1
    B.   i is 1 and j is 2
    C.   i is 2 and j is 1
    D.   i is 2 and j is 2

10   Which of the following expression will yield 0.5?

    A.   1 / 2
    B.   1.0 / 2
    C.   (double) (1 / 2)
    D.   (double) 1 / 0.5

11   What is 1 + 1 + 1 + 1 + 1 == 5?
    A.   true
    B.   false
    C.   There is no guarantee that 1 + 1 + 1 + 1 + 1 == 5 is true.
    D.   Floating point number are approximated.

12   What is the output of the following code?

```
int x = 0;
if (x < 4)
{
   x = x + 1;
}
printf( "x is %d", x );
```

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

13   Suppose income is 4001, what is the output of the following code:

```
if (income > 3000)
{
   printf( "Income is greater than 3000" );
}
else if (income > 4000)
{
   printf( "Income is greater than 4000"  );
}
```

A.   Income is greater than 3000
B.   Income is greater than 3000 followed by Income is greater than 4000
C.   Income is greater than 4000
D.   Income is greater than 4000 followed by Income is greater than 3000

14   Which of the Boolean expressions below is correct and always evaluates to true?

A.   (true) && (4 => 3)
B.   !(x > 0) && (x > 0)
C.   (x > 0) || (x ≤ 0)
D.   (x != 0) || (x = 0)

15   What is the result of the following expression?

```
(3 + 4) * 2 <= 2 * (2 * (1 + 2))
```

A.   45
B.   23
C.   true
D.   false

16   The following loop displays _____.

```
for (int i = 1; i <= 10; i++)
{
  printf( i );
  i++;
}
```

A.   1 2 3 4 5 6 7 8 9
B.   1 2 3 4 5 6 7 8 9 10
C.   1 2 3 4 5
D.   1 3 5 7 9

17   Given the following four patterns,

Pattern A	Pattern B	Pattern C	Pattern D
1	1 2 3 4 5 6	1	1 2 3 4 5 6
1 2	1 2 3 4 5	2 1	1 2 3 4 5
1 2 3	1 2 3 4	3 2 1	1 2 3 4
1 2 3 4	1 2 3	4 3 2 1	1 2 3
1 2 3 4 5	1 2	5 4 3 2 1	1 2
1 2 3 4 5 6	1	6 5 4 3 2 1	1

Which of the pattern is produced by the following code?

```
for (int i = 1; i <= 6; i++)
  {
    for (int j = 6; j >= 1; j--)
      if (j <= i)
        printf("%d", j);
        printf(" ");
      else
        printf(" ");

  }
```

A.   Pattern A
B.   Pattern B
C.   Pattern C
D.   Pattern D

18   Suppose your function does not return any value, which of the following keywords can be used as a return type?
    A.   void
    B.   int
    C.   double
    D.   float

19   What is the output of the following code?

```
void f()
{
 printf( "1");
}
int main()
{
 f();
 return 0;
}
```

A.   0
B.   1
C.   nothing
D.   1.0

20   Each time a function is invoked, the system stores parameters and local variables in an area of memory, known as _____, which stores elements in last-in first-out fashion.
    A.   a heap
    B.   storage area
    C.   a stack
    D.   an array

Part B: True or False Questions

21　　(a)　Determine the output of this expression either **TRUE** or **FALSE**.

No	Expression	Output	TRUE/FALSE
i.	```#include<stdio.h>

main ( )
{
int a,b,c,d,e;
        a = 4;
        b = 5;
        c = 5;
        d = 6;
        e = 10;
        a*=b+c*d/e;
printf("a=%d",a);
return 0;
}``` | a=24 | |
| ii. | ```#include<stdio.h>

main ( )
{
        int i,j;
        i =10;
        j =!i>14;

printf("j=%d",j);
return 0;
}``` | j=0 | |
| iii. | ```#include <stdio.h>

int main(void)
{
        int a,b,c,d,e;
        a = 8;
        b = 12;
        c = 10;
        d = a*b*c;
        e = (d + 165) /
166;
        printf("e=%d\n",
e);
        return 0;
}``` | e=6 | |

(6 marks)

(b)   State whether the following are TRUE or FALSE

    i.   Names of functions in two different files linked together must be unique

    ii.   The expression h++ and ++h are same.

    iii.   A long double can be used if range of a double is not enough to accommodate a real number.

    iv.   In a call to printf() function the format specifier %d can be used to print binary equivalent of an integer.

(8 marks)

(c)   `4+2%3-10*4 = 40`

(2 marks)

(d)   To access each of the structure elements, the operator dot (.) is used

(2 marks)

(e)   A string can be initialize as follows: `char pet[] = "fish";`

(2 marks)

Part C: Partial Programming (40 marks)

22   (a)   Display the output of this program.

```
#include<stdio.h>
main()
{
        int h=55;
        printf("%d\n",h);
        printf("%d\n", ++h);
        printf("%d\n",h++);
        printf("%d\n",h);
        printf("%d\n",--h);
        printf("%d\n",h);
        return 0;
}
```

(6 marks)

(b)   Calculate and identify the value for each of the expressions below:

```
#include<stdio.h>
main()
{
        int a = 6, b = 3, c = 7;
        intf;

        f = QUESTION;
        printf("%d", f);
        return 0;
}
```

No	f = QUESTION	Calculation	Output, %d
i.	a + b + c		
ii.	c % b		
iii.	(a > 0) && (b < 0)		
iv.	4 * a + 1 * (c – b)		
v.	(5 + c * 2) % (2 * a / b)		

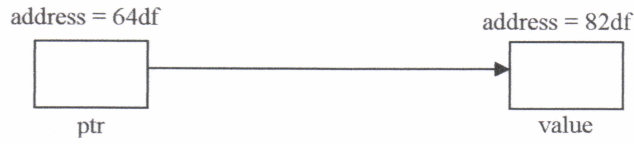(10 marks)

(c)   Predict the output of this program

```
#include<stdio.h>
void square (int x, int y);
main ()
{
        int num1=6;
        int num2=3;
        square (num1,num2);
        return 0;
}
void square (int x, int y)
{
printf("Square of %d is %d\n",x,x*x);
printf("Square of %d is %d\n",y,y*y);
}
```

(4 marks)

(d)

```
int value = 36;
int *ptr;
ptr = &value;
```

address = 64df   address = 82df

ptr   value

Write value for each of the following based on the above declaration and diagram

(i)   value

(4 marks)

(ii)   ptr

(4 marks)

(iii) &value

(4 marks)

(iv)   *ptr

(4 marks)

(v)   &ptr

(4 marks)

Part D: Programming

23   BMI or in the other word Body Mass Index, is a person's weight in kilograms divided by the square of height in meters. In mathematical form:

$$BMI = \frac{weight\ (kg)}{height\ (m^2)}$$

BMI is an inexpensive and easy-to-perform method of screening for weight category, for example underweight, healthy weight, overweight, and obesity. This category is shown in Table 1. Usually, people are only interested to know their weight category since this directly related to human health.

Table 1: Category of BMI

BMI	Weight Category
Below 18.5	Underweight
18.5 – 24.9	Healthy Weight
25.0 – 29.9	Overweight
30.0 and Above	Obese

From given scenario, answer following question:

(i)   Identify two (2) inputs

(2 marks)

(ii)   Identify the output

(1 mark)

(iii)   Write the pseudocode to represent how to calculate human BMI

(7 marks)

(iv)   Develop a program to calculate human BMI using C programming

(10 marks)

-     **END OF QUESTION** -