==

<u>Question # 1 [35 %]</u> *Select the best answer for each of the following questions:*

1) What is the result of the following expression, using 8-bit pattern and tow's complement? $0000\ 0010$

$(1101)_3 - (27)_{16} = (\ldots\ldots\ldots)_2$ $1111\ 1110$

$1 \times 3^3 + 0 \times 3 + 1 \times 2^2 + 1 \times 3^3 = 1 + 9 + 27 = 37 - 39 = -2$

A) 00000010   B) 00000001   C) 11111101   (D) 11111110

2) Consider the following part of computer memory in Hex. If you know that, this is a representation of a number using floating point representation, what its decimal value?

00
00
BB
41

A) -23.375   (B) 23.375   C) 3.23   D) 375.23

$0\ 00,0001\ ,1011\ ,1011$

$131 - 127 = 4$

3) What is the **output** of following algorithm segment? $1.0_{11}1011$

$10_{11}.011$

SET x to three $x = 3$

WHILE x is less than or equal to three $x \leq 3$

    Display "*"

    Add one to x $x = 4$

END WHILE

(A) *   B) **   C) ***   D) ****

[1]

4) What is the **output** of the following statement?

```
printf("%d", 7 % 0);
```

A) No Output, because it has Syntax Error.

B) 7

C) No Output, because it will generate Runtime Error. ─

D) 0

5) The following are valid variable names except

A) DO   B) do   C) do_1   D) do1

6) What is the **output** of the following code segment?

```
int a=25, b=7 , c = 3, d=12;
if (d < c || a >= b && ++c != 9)
        printf("%d YES %5.1f ", c , 27.462 );  ─
else
        printf("%d NO %1.5f ", c , 27.462 );
```

A) 4   NO 27.46200'

B) 3   YES 27.46200

C) 4   YES   27.4

D) 4   YES   27.5

7) If the following statement is a valid call to the function SUM, then SUM must be a void function. ─

```
int num = SUM(x, y);
```

A) False

B) True

C) We cannot conclude if it's void or not void function.

8) What expression is equivalent to: Y *= X + W / Q;

A) Y = Y * X + W / Q;

B) Y = (Y * X) - (W / Q);

C) Y = (Y * X + W) / Q;

D) Y = Y * (X + W / Q);

[2]

9) What is the **output** of this code segment?

```
int X , Y;
for (Y = 0; Y < 4; Y += 1) {
    X=0;
    do {
        printf("%2d", Y - X);
        X++;
    } while (X < 2);
}
```

A) 012345   B) 014   C) 0123   D) 012234

10) What is the **output** of this program?

```
#include <stdio.h>
int printNum(int);
int main (){
    int i, R;
    for(i=2; i<9; i++){
        if( ! printNum(i) )
            printf(" %d ", i);
    }
    return 0;
}

int printNum(int y){
    int j , F = 0 ;
    for(j=2; j<=y/2; ++j){
        if(y%j == 0){
            F = 1;
            break;
        }
    }
    return F;
}
```

A) 2345678   B) 468
2357   D) No Output, because it has Syntax Error

Answer Table

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

[3]

The following program has many errors, you are required to correct it.

Just **rewrite** the line that has an error, see the example at the first line.

	#include<stdio.h>
#include<stdio.h>	
double Fun();	double Fun ( );
int main () {	
int x1,x2 ,f3;	int x1, x2 , f3;
double y1 , y2;	
printf(" ENTER THREE VALUES ");	
scanf("%d%d", &x1, &x3);	scanf ("%d %d ", &x1, &x2);
sum = x1+x2;	int sum = x1+ x2;
C.fe we	
printf("average = %.2f" , (x1+x2)/2.0);	return 0; { the end of function must be placed before function switch your print }
	switch (x) {
SWITCH (x1) {	
case 0: break;	
case 1: printf(" we have one point);	~~for~~ case 1: printf ("we have one point");
break;	
CASE 2: printf(" we have two points ");	case 2: printf ("we have two points"); break;
}	
return 0;	~~return~~ this will be delete since it's a repetition
}	
}	

Assuming the number of male people in Palestine in 2016 is 1.9 million and the number of female people in the same year is 2.3 million. The number of males increases at an annual rate of 0.7% , while the number of females increases at an annual rate of 0.5%.

Write an algorithm that determines and prints the year at which number of male people will exceeds (يزيد) number of female people. In addition, your algorithm should calculates and prints the total number of people.

Start
Set number of males equal 1.9 million = num_1
Set number of females equal 2.3 million = num_2
Set counter equal zero
Set sum equal zero

while num_2 more than num_1
  num_2 equal $num_2 + num_2 \times 0.005$
  num_1 equal $num_1 + num_1 \times 0.007$
  add one to counter

End while
print number of years equal counter
let sum = $num_1 + num_2$
print total number of people equal sum.

[5]

Stop

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Write a C program to read the distance and the travelled time for a number of cars (their count not known) then calculate their speeds.

Your program should calculate and perform the following

- In **main function**, read the distance and time values from a text file named **Data.txt**.
- Write a function named **calc_Speed** that accepts distance and time as inputs and returns speed as output.

$$speed = \frac{distance}{time}$$

- Using the above function (calc_speed), calculate the speed for every car. Display the speed on screen in **main function**.
- Write a function named **categories_Speed** that accepts the speed as input. The function returns 1 if the car is super-speed (speed over 120), and returns 0 if the car speed is normal (speed equal or below 120).
- In main function, calculate and display the **average speed** and how many cars in super-speed.

```c
#include <stdio.h>
#include <math.h>
float calc_Speed (float, float);      int Categories_Speed (float);
main ()
{
    FILE *in;
    float x, t, avg-speed, num-cars-super-speed;
    float speed, sum;
    int counter, int stat;
    in = fopen ("Data.txt", "r");
    stat = fscanf (in, "%f %f ", &x, &t);

    while ( x>0) {

        speed = calc_Speed (x, t);
        printf ("speed = %f", speed);

        ++ counter;
        sum = sum + speed;
        if ( Categories_Speed (speed)) {
            ++ i; }
        stat = fscanf (in, "%f %f ", &x, &t);
    }
    avg-speed = sum / (float) counter;
    printf ("average speed = %f ", avg-speed);
    printf ("number of cars in super speed = %d ", i);
    return 0;
```