



Answer the following questions:

Question [1] (25 marks) [ILOs: a1,b1,b2,c1,c2,c3,c4]

a) What is the meaning of: Algorithm, Flowchart, Selection sorting?

b) What is the output of the following C program?

```
#include<stdio.h>
int main()
{ int i,j;
  for(i=1;i<=9;i++)
  {
    for(j=1;j<=9;j++)
    {
      if(i<j)
        printf("%d*%d=%d%\t",i,j,i*j);
    }
    printf("\n");} }
```

c) Write a C program to get the sum of the series:

$$SUM = 1 - \frac{1}{2} + \frac{1}{3} - \frac{1}{4} + \dots + \frac{1}{99} - \frac{1}{100}$$

What is the expected output?

Question [2] (60 marks) [ILOs: a1,b3,b4,b7,c1,c2,c3,c4]

أجب عن هذا السؤال بالورقة المخصصة لذلك والموجودة في نهاية كراسة الإجابة

• **Write True (T) or False (F) for the following sentences:**

- 1) An algorithm should exhibit at least 2 outputs.
- 2) A graph is a linear data structure.
- 3) There are no errors in the following C code: `printf("x=%f",x);`
- 4) There are no errors in the following C code: `for(i=5; i<=10; ++);`
- 5) There is 1 error in the following C code: `scanf("%d",a);`
- 6) A queue is LIFO (Last In First Out) list.
- 7) Switch statement can have any number of case instances.
- 8) The keywords can not be used as variable names.
- 9) Functions can be called either by value or reference.
- 10) The output of: `printf("%.5f " , 65.5);` is 65.50000
- 11) There are no errors in the following C code: `if(x==5) printf("%d"x);`



- 12) Tower of Hanoi is an application of stack.
- 13) There are 2 errors in the following C code: `int area(int L, int W) L*W;`
- 14) A Stack is FIFO (First In First Out) list.
- 15) Functions can return more than one value at a time.
- 16) A function can not be defined inside another function.
- 17) The correct size of the datatypes is: `int < char < double`.
- 18) Linear array is also called one-dimensional array.
- 19) Process of removing an element from stack is called **Pop**.
- 20) A do-while loop is used to ensure that the statements within the loop are executed at least once.
- 21) The following C loop is run for 2 times: `while(2) {printf("x=%f ",x);}`
- 22) Maximum number of arguments that a function can take is 3.
- 23) An algorithm is a sequence of ambiguous instructions for solving a problem.
- 24) Process of inserting an element in stack is called **Push**.
- 25) Time complexity of insertion sort in the best case is $O(n)$.
- 26) The following C loop is run forever: `for(;;) printf(" welcome");`
- 27) There are 2 errors in the following C code: `scanf("%d %d",&a,b);`
- 28) The logical or mathematical model of a particular organization of data is called a data structure.
- 29) The simplest type of data structure is linear array.
- 30) Network printer is an application of queue.

• **Select the suitable answer of the following:**

- 31) The data structure which is one ended is.....
a) queue b) Graph c) Stack d) Tree
- 32) What data structure is used for depth first traversal of a graph?
a) queue b) stack c) list d) tree
- 33) How many minimum number of functions are need to be presented in C language?
a) 0 b) 1 c) 2 d) 3
- 34) The switch statement is also called as:
a) looping b) certain structure c) selective structure d) none of these



- 35) Which of the following correctly declares an array B of size 10 elements?
a) int B=10; b) int B[10]; c) B{10}; d) array B[10];
- 36) What is the index number of the last element of an array with 100 elements?
a) 100 b) 99 c) 0 d) Programmer-defined
- 37) To represent hierarchical relationship between elements, which data structure is suitable?
a) queue b) Graph c) Stack d) Tree
- 38) A graph is a collection of nodes, called And line segments called arcs or that connect pair of nodes
a) graph node, edges b) edges, vertices c) vertices, paths d) vertices, edges
- 39) Which of the following accesses the seventh element stored in array?
a) array[6]; b) array[7]; c) array(8); d) array;
- 40) Which of the following gives the memory address of the first element in array A?
a) A[0]; b) A[]; c) A(0); d) &A[0];
- 41) Which looping process is best used when the number of iterations is known?
a) do-while b) while c) for d) switch
- 42) It is guaranteed that a _____ has at least 1 Byte and a _____ has at least 8 Bytes.
a) int, float b) char, double c) bool, char d) char, short
- 43) Number of error in following C code is:
voide main(){print("Kafrelsheikh University.\n")}
a) 1 b) 2 c)3 d) 4
- 44)is very useful in situation when data have to stored and then retrieved in reverse order.
a) Tree b) Queue c) Stack d) list
- 45) Which of the following data structure can not store the non-homogeneous data elements?
a) Stacks b) Lists c) Pointers d) Arrays
- 46) Number of error in the following C code: **void Main(){printf("Welcome\n")}**
a) 2 b) Zero c) 1 d) 3
- 47) Number of error in the following C code is: **printf("see you soon\n");**
a) Zero b) 1 c) 2 d) 3
- 48) Number of error in the following C code is: **printf("How are you?\n)**
a) Zero b) 1 c)2 d)3
- 49) The output of the following C program is:
#include<stdio.h>
void main(void){int i=0; while(1){printf(" %d", ++i); if(i==3) break;}}
a) 1 2 3 4 b) 1 2 3 c) i=1 i=2 i=3 d) 0 1 2
- 50) The output of the following C program is:
#include<stdio.h>
void main(void){int i; for(i=1; i<=3; i++)
{printf("%d", i); if(i==3) continue; printf("%d",i);}}
a) 11223 b) 11233 c) 123123 d)332211



تابع السؤال الثاني (الجزء الثاني)

- 51) The output of the following C program is:
`#include<stdio.h>`
`int a[3]; void main(void){int i; for (i=0; i<3; i++) printf("a[%d]=%d", i, i);}`
a) a[0]=0a[1]=1a[2]=2 b) 0 0 0 c) a[0]=0 a[1]=0 a[2]=0 d) 1 2 3
- 52) The format identifier %f is also used for _____ data type?
a) int b) double c) float d) char
- 53) Which of the following data structure is linear type?
a) Tree b) Graph c) Stack d) Binary tree
- 54) What is the size of a char data type?
a) 4 Bytes b) 2 Bytes c) 1 Byte d) Depends on the system/compiler
- 55) What is the size of long in a 32-bit compiler?
a) 1 Byte b) 2 Bytes c) 4 Bytes d) 8 Bytes
- 56) %c access specifier is used for
a) Integer type b) Character type c) Floating type d) String type
- 57) Which of the following is non-linear data structure?
a) Tree b) Queue c) Stack d) list
- 58) What is the output of this C code? `void main() { int i = 10; i = i / 4; printf("%d\n", i); }`
a) 2.25 b) 2 c) 1 d) Compile time error
- 59) What is the value of y in this C code? `void main() { int y = 6 * 5 / 2 - 1; }`
a) 6.75 b) 1.85 c) 14 d) 20
- 60) is a pile in which items are added at one end and removed from the other
a) Tree b) Queue c) Stack d) list

With my best wishes <<<<<<<<< & & >>>>>>>>> Ass. Prof. Dr. Tamer Medhat