

Ministry of Higher Education &  
Scientific Research  
Southern Technical University  
Technical Institute / Qurna  
Dep. of Computer Systems Techniques



Subject: C++ Programming  
Class: First – Morning  
Time: THREE Hours  
Date: 17 / 7 / 2021

Final Exam 2020/2021 - Model no. (2) – ( *Fivst* ) Attempt

**Note: Answer Five Questions Only**

Q1/ Write a program in C++ language to read ten(10) elements and then calculate the number of positive elements and the number of negative ones using (for or while) . ( 20 Mark)

Q2/ What are the following program output?

( 20 Mark)

```
#include <iostream>
using namespace std;
int main()
{ int n=5,y=6,m;
  while(n>0)
  {cout<<n--<<" : ";
   m=y-n;
   cout<<"+m<<endl; }
  return 0;
}
```

Q3/ Write a program in C++ to print the following form?

(20 Mark)

```
1 2 3 4 5
1 2 3 4
1 2 3
1 2
1
```

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Q4/ Write a program in C++ to find the value of (R) from the following equation:

$$R = X^2 + 3Y \div 3 + 5$$

( 20 Mark)

Q5/ Write a program in C++ to read two numbers A and B then find the biggest number.

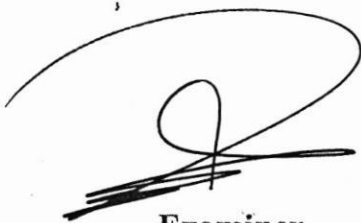
(20 Mark)

Q6/ Write a C++ program that calculates the area of triangle?

(20 Mark)

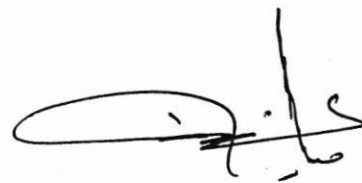
Hint... ( area of triangle = half base \* Height )

(BEST OF LUCK)



Examiner

Rawad Saleh Selman



Head of department

Maitham Abdulkareem Bachay



Final Exam 2020/2021 - Model no. (2) – ( First ) Attempt

Note: Answer All Questions

Q1/ Answer the following:

A / : In 2D array with size 4\*4 Find the address of element X[2,3] ,if you know that base Address = 90080, by row major order.

B / Construct a table to show the effect of the following operations on an empty Stack, stack with 7 size element and char data type:  
PUSH (A) ,PUSH(\*) , PUSH(X), POP() ,SIZE() , TOP, FULL, PUSH(M)  
EMPTY ,POP(),POP(),SIZE() , POP(),TOP, EMPTY ,POP().

C / Use Bubble - Sort algorithm to arrange elements in ascending Order in following list :

→ 8 , 65 , 44 , 11 , 40 , 78

( 24 Mark; each branch 8 marks)

Q2 / Choose only two:

( 20 Mark; each branch 10 marks)

A / Using stack to convert the following expression from infix to postfix notation;

$A+B*C/(E+5-F^8)$

B / Using Binary Search algorithm to find an element with Key=89 in the

Following list : → 16 - 19 - 28 - 44 - 53 - 55 - 67 - 77 - 87 - 98

C / what are important properties of tree data structure?

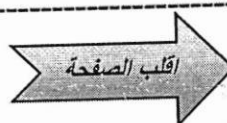
Q3/ Choose only two:

( 20 Mark; each branch 10 marks)

A / Write steps of stack algorithm for POP operation.

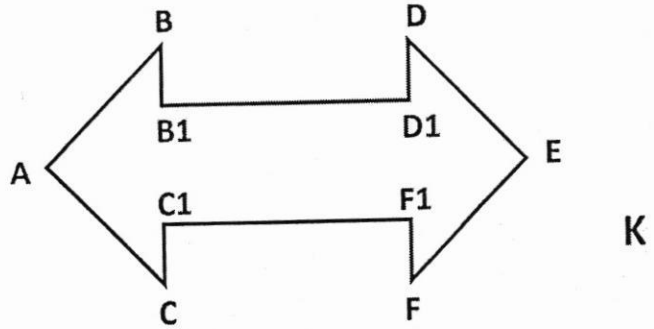
B / List Applications of Circular Queue.

C / Write steps algorithm to create a single Linked list.





Q4 / A / In this graph K find:



1. Adjancy Matrix .
2. The degree of each vertices .

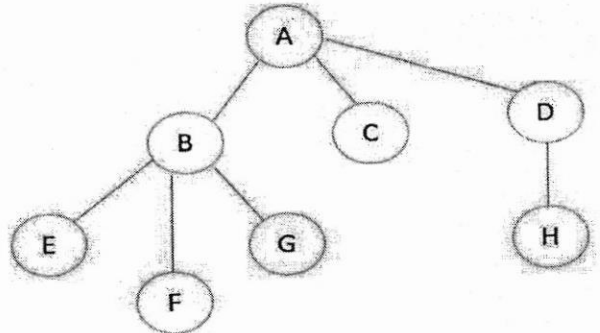
/ B / Define the following with an example for each one . ( Choose 4 only )

- 1- Double linked list .
- 2- Labelled Graph.
- 3- Digraph.
- 4- Circular queue.
- 5- Subtree.

( 20 Mark; each branch 10 marks)

Q5/ in following tree ,answer : ( Choose 4 only )

- 1-The Internal Nodes of tree are -----.
- 2- The Parent of node ( H )is -----.
- 3- The Siblings of node( F ) are -----.
- 4- The degree of ( C ) node -----.
- 5- Height of a tree -----.



( 16 Mark; each branch 4 marks)

( BEST OF LUCK)

Examiner

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