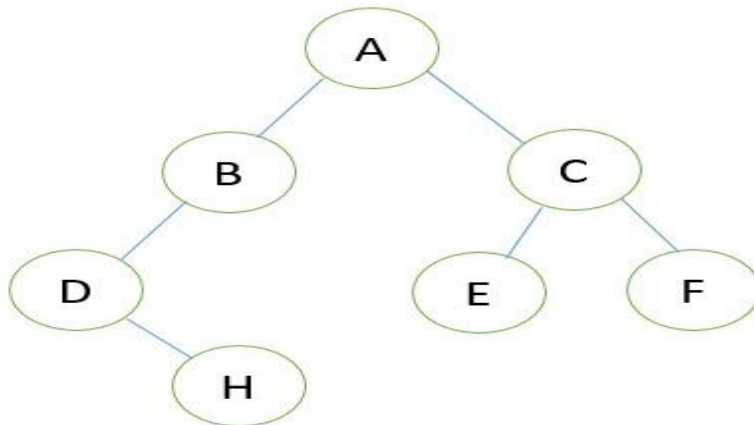


ALL QUESTIONS ARE COMPULSORY

1. a. Define the term “**Portable Device**” **/2marks**
b. List any 4 Portable devices do you know **/2marks**
c. Clearly, show how Laptop is different to desktop. **/4marks**

2. a. Explain the following terms **/6marks**
i. Queue
ii. Stack
iii. Array
b. Explain List Operations **/5marks**

- c. Study the following figure and organize those contents in: **/5marks**
i. Pre-order
ii. In-order
iii. Post order



- d. Build a tree, and on it, identify and show the following: **/5marks**
i. Root node iii. Siblings
ii. Edge iv. Leaf
v. Sub tree

3. Write an algorithm that receives a number as input from the user and check if it is palindrome or not. **/7marks**

4. a. Define the following terms: **/5marks**
i. Computer network ii. Router
iii. Latency iv. Jitter
v. Internet protocol

b. Name the class of the following IP address **/5marks**

- I. 12.89.45.01
- II. 186.5.89.02
- III. 225.192.9.08
- IV. 192.186.02.05
- V. 5.1.1.1

c. List any four computer network properties do you know **/4marks**

5. i. Explain different network metrics **/4marks**

ii. Categorize following devices according to their transmission modes **/5marks**

- a. TV
- b. Radio
- c. Walkie -Talkie
- d. Phone
- e. Computer

iii. Compare *Unshielded twisted pair (UTP)* with *Shielded twisted pair (STP)* **/4marks**

iv. Explain at least 3 internet protocol do you know **/3marks**

6. a. Distinguish database models do you know **/3marks**

b. Distinguish database users in a system **/3marks**

7. a. Explain the following terms: **/4marks**

- i. Entity
- ii. Cardinality
- iii. Attribute
- iv. Degree

b. Outline 7 database design steps **/5 marks**

8. A school decided to use database in order to manage different transactions online. The database will be composed by different tables. Some of them are:

1. Student table to describe the student information like: His/her Student_ID, Names, Age, Combination, Sex.

2. Teachers' table to describe the teacher's information like: His/her National_ID, Names, Martual_Stutus, Lesson, Telephone.

3. Parents' table to describe the parent information like: Names, District, Student_names, Telephone.

Design the entity relationship diagram for this database of that school.
/5marks

9. a. Define the term **“Pointers”** **/2marks**

b. What are the use of: **/2marks**

i. Asterisk sign

ii. Ampersand sign

10. By using pointers, write a C++ to calculate the area of circle. **/3marks**

11. List 3 concepts of object oriented programming **/3marks**

12. List access specifiers do you know **/3marks**