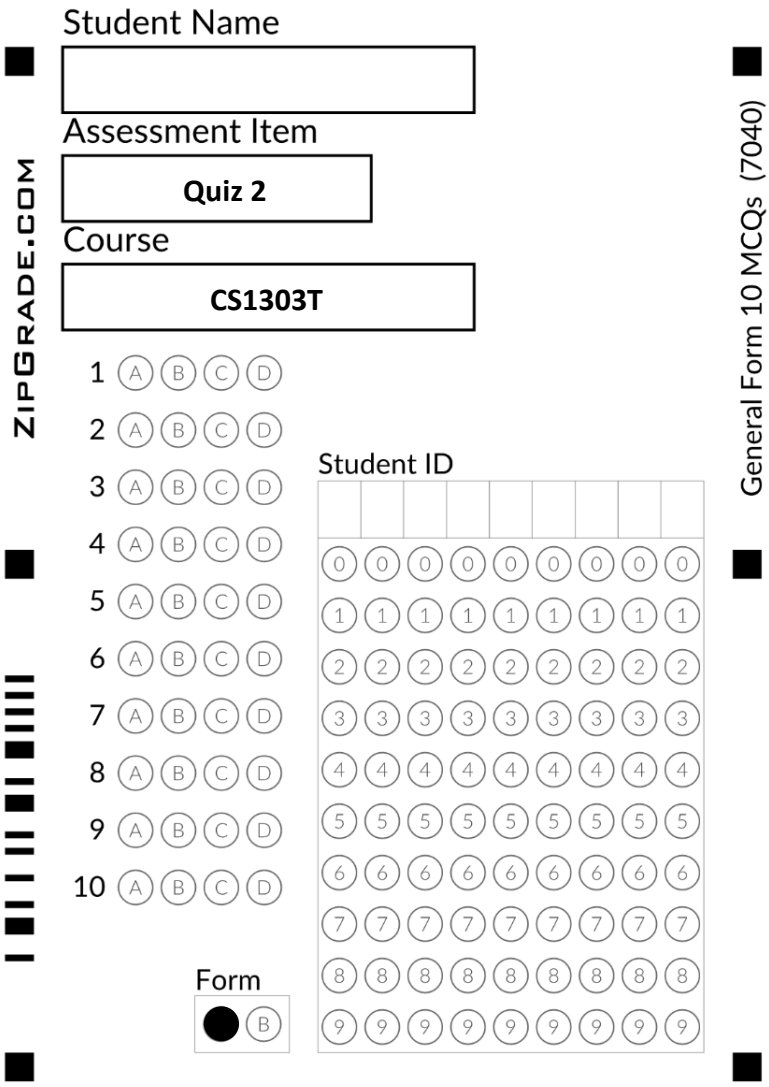

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General Form 10 MCQs (7040)

CS1303T

Discrete Structures 2

Quiz 2 (Trees)

Second Semester

1447 - 2026

Full Name: _____

Student ID: _____**Section:** _____

QUIZ INSTRUCTIONS:

- Turn off and put away all electronic devices (smartwatches, tablets, and phones, etc.).
- This quiz is closed book, closed notes.
- At the beginning of the quiz time, you will be handed two sheets: answer sheet & question sheet.
- Write down your name in Arabic and student ID on BOTH sheets.
- Use ONLY pencil to shade your answers and any other relative information on the answer sheet.
- Shade ONLY your student number and the form letter.
- Don't leave any question without an answer.
- Answers on the quiz sheet will not be considered.
- You must hand back both sheets before you leave the classroom.
- There are **10** multiple choice questions, each question worth one point.
- You have **20** minutes to complete the quiz.

Question 1 **CLO#** [1.1]

According to the foundational theorems of trees, an undirected graph is a tree if and only if:

A) There are multiple simple paths between any two vertices.
B) There is exactly one simple circuit within the graph.
C) There is a unique simple path between any two of its vertices.
D) Every vertex is directly connected to every other vertex.

Question 2 **CLO#** [1.1]

In the terminology of rooted trees, what defines an internal vertex?

A) A vertex with no children.
B) A vertex that has children.
C) A vertex that has no parent.
D) Any vertex that represents a file in a computer directory.

Question 3 **CLO#** [1.1]

If a rooted tree is structured such that every internal vertex has exactly m children, it is specifically referred to as:

A) A balanced m-ary tree.
B) A standard m-ary tree.
C) A full m-ary tree.
D) An ordered binary tree.

Question 4 **CLO#** [1.1]

Which of the following defines the "height" of a rooted tree?

A) The maximum of the levels of the vertices.
B) The total number of internal vertices.
C) The minimum of the levels of its leaves.
D) The total number of edges in the longest subtree.

Question 5 **CLO#** [1.2]

A rooted m-ary tree of height h is considered "balanced" if all of its leaves are located at which levels?

A) Exactly at level h.
B) At levels h or $h-1$.
C) At levels $h-1$ or $h-2$.
D) Distributed evenly across all levels.

Question 6 **CLO#** [1.1]

In a rooted tree, how many vertices are specifically designated as the "root"?

A) Exactly one
B) Exactly two
C) It depends on the number of leaves
D) Every internal vertex is considered a root

Question 7 **CLO#** [1.1]

In the context of a rooted tree, vertices that share the exact same parent are termed:

A) Ancestors
B) Descendants
C) Siblings
D) Leaves

Question 8 **CLO#** [1.1]

According to standard tree terminology, what is a vertex called if it has no children?

A) A parent
B) A sibling
C) An ancestor
D) A leaf

Question 9 **CLO#** [1.1]

A binary tree is a specific classification of an m-ary tree. In a binary tree, what is the value of m?

A) 1
B) 2
C) 3
D) 4

Question 10 **CLO#** [1.2]

Based on the fundamental theorem of tree edges, if a tree consists of exactly 10 vertices, how many edges must it contain?

A) 9
B) 10
C) 11
D) 20

--- End of Quiz 2 ---