CONTENTS

(*COMPUTER SCIENCE*)

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PRACTICE SET – 1

1. What is the total number of edges in the complete graph on n vertices?

(a) n (b) ${}^{n}c_2$

(c) $n^{n}c_2$ (d) n(n–1)

2. Which of the following statement is false?

(a) A tree with n nodes has n–1 edges.

(b) A labeled rooted binary tree can be uniquely constructed given its post order and preorder traversal result.

(c) A complete binary tree with n internal nodes has (n+1) leaves.

(d) The maximum number of nodes in a binary tree of height h is $2^{h+i} - 1$.

3. A graph G on n vertices has a Hamiltonian circuit if for any two vertices u and v of G that are not adjacent, the degree of u plus the degree of v should be :

(a) Equal to n+1.

(b) Less than or equal to n.

(c) Greater than or equal to n+1

(d) Greater than or equal to n

4. Which of the following statement is false?

A graph G with n vertices is a tree if :

(a) G is connected and is circuitless.

(b) G is connected and has n edges.

(c) G is minimally connected graph.

(d) G is circuitless and has n–1 edges.

5. How many pendant vertices are there in any tree?

(a) One (b) None

(c) At least one (d) At least two

6. Which of the following statement is false?

(a) The complete graph of five vertices is planar.

(b) Kuratowski's second graph is non planar.

(c) A graph in which all vertices are of equal degree is a regular graph.

(d) The distance between vertices of a connected graph is a metric

7. What is the maximum number of the edges can a simple graph with n vertices and k components have?

(a) n – k (b) (n–k) (n–k+1)

(c) (n–k) (n–k+1)/2 (d) (n+k+1)

Read the following passage carefully and answer the following (Q.Nos. 8-11) questions :

In computing, SISD (single instruction, single data) is a term referring to a computer architecture in which a single processor, a uniprocessor, executes a single instruction stream, to operate on data stored in a single memory. This corresponds to the von Neumann architecture.

SISD is one of the four main classifications as defined in Flynn's taxonomy. In this system classifications are based upon the number of concurrent instructions and data streams present in the computer architecture. According to Michael J. Flynn, SISD can have concurrent processing characteristics. Instruction fetching and pipelined execution of instructions are common examples found in most modern SISD computers.

In computing, MISD (multiple instruction, single data) is a type of parallel computing architecture where many functional units perform different operations on the same data. Pipeline architectures belong to this type, though a purist might say that the data is different after processing by each stage in the pipeline. Fault-tolerant computers executing the same instructions redundantly in order to detect and mask errors, in a manner known as task replication, may be considered to belong to this type. Not many instances of this architecture exist, as MIMD and SIMD are often more appropriate for common data parallel techniques. Specifically, they allow better scaling and use of computational resources than MISD does. However, one prominent example of MISD in computing are the Space Shuttle flight control computers.

8. Von Neumann architecture is

(a) SISD (b) SIMD

(c) MIMD (d) MISD

9. To achieve parallelism, one needs a minimum of

(a) 2 processors

(b) 3 processors

(c) 4 processors

(d) none of the above