

--Question Starting--

Match the following characteristics with the corresponding interconnection structure in multiprocessor systems:

1. Broadcast communication with a shared medium (Characteristic)
2. Direct point-to-point links between processors (Characteristic)
3. Centralized switching network for data transfer (Characteristic)
4. Hierarchical arrangement of multiple interconnection networks (Characteristic)

Options:

- A. Crossbar Switch
- B. Multistage Interconnection Network
- C. Bus-based Structure
- D. Mesh Topology

Choose the correct answer from the options given below:

- (1) 1-C, 2-A, 3-B, 4-D
- (2) 1-C, 2-A, 3-B, 4-B
- (3) 1-A, 2-C, 3-D, 4-B
- (4) 1-C, 2-B, 3-A, 4-B

Answer Key: 2

Solution:

? Broadcast communication with a shared medium is characteristic of a bus-based structure, but in this context, the question emphasizes the nature of the medium, which aligns with the shared bus or similar structures.

? Direct point-to-point links between processors are typical of a multistage interconnection network, which employs multiple stages to connect processors efficiently.

? Centralized switching network, such as a crossbar switch, provides a direct and dedicated path between any two processors.

? Hierarchical arrangements of multiple interconnection networks resemble multistage interconnection networks, which are layered to improve scalability.

Hence, Option (2) is the right answer.

--Question Starting--

3. Match the following knowledge representation tools with their primary functional characteristic:

1. Semantic Networks (Characteristic)
2. Frames (Characteristic)
3. Rules (Characteristic)
4. Conceptual Dependency (Characteristic)

Options:

- A. Graph-based structure emphasizing relationships
- B. Object-oriented data structures with slots and fillers
- C. If-Then logical constructs for inference
- D. Formalism for representing meaning through dependencies

Choose the correct answer from the options given below:

- (1) 1-A, 2-B, 3-C, 4-D
- (2) 1-B, 2-A, 3-D, 4-C
- (3) 1-A, 2-B, 3-D, 4-C
- (4) 1-D, 2-C, 3-B, 4-A

Answer Key: 1

Solution:

? Semantic Networks are graph structures that emphasize relationships among concepts, making option A appropriate.

? Frames are object-oriented structures characterized by slots and fillers, which allow representing complex objects and their attributes.

? Rules are logical if-then statements used for inference, matching their primary function.

? Conceptual Dependency formalism models meaning through dependencies among concepts, focusing on dependencies.

Hence, Option (1) is the right answer.