

--Question Starting--

1. Analyze the following statements regarding the OSI Reference Model and TCP/IP protocol suite:

- I. OSI model's transport layer ensures end-to-end communication between hosts and provides error recovery.
- II. In the TCP/IP suite, the Internet Protocol (IP) is responsible for logical addressing, which ensures data packets are routed across multiple networks.
- III. The Data Link layer in the OSI model is equivalent in function and operation to the Network Interface layer in the TCP/IP suite.

Which of the following is correct?

- (1) I and II only
- (2) I and III only
- (3) II and III only
- (4) All of the above

Answer Key: 2

Solution:

? Statement I(Correct): The transport layer in the OSI model indeed provides end-to-end communication and is responsible for error recovery and flow control.

? Statement III(Correct): The Data Link layer of the OSI model aligns closely with the Network Interface layer of the TCP/IP suite, both handling framing, physical addressing, and can control access to the media.

? Statement II(Incorrect): While IP handles logical addressing, it does not ensure data packets are routed across networks on its own; this task involves multiple protocols within the Internet layer of the TCP/IP suite, including IP but also others like ICMP and ARP for full routing functionality.

Hence, Option (2) is the right answer.

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2. Consider these statements about 3-D object representation and transformations:

- I. A Bezier curve is defined by its control points, and any change in a control point alters the entire shape of the curve.
- II. The Viewing Pipeline includes transformation from world coordinates to normalized device coordinates.
- III. Quadric surfaces can only represent shapes like spheres and cylinders but not free-form surfaces.

Which of the following is correct?

- (1) I and II only
- (2) I and III only
- (3) II and III only
- (4) All of the above

Answer Key: 2

Solution:

? Statement I(Correct): Bezier curves are indeed defined by control points, and adjustments to these points affect the whole curve, illustrating a global control characteristic.

? Statement III(Correct): Quadric surfaces are limited to representing simple geometric forms such as spheres, cylinders, cones, and paraboloids, and do not support more complex or free-form surfaces.

? Statement II(Incorrect): The Viewing Pipeline indeed involves transformations, but it transforms coordinates from world coordinates to view coordinates, then to projection coordinates, and finally to normalized device coordinates, not directly as stated.

Hence, Option (2) is the right answer.

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3. Evaluate the following statements regarding microprogrammed control units:

- I. Microprogramming involves a sequence of microinstructions stored in control memory to generate control signals.
- II. Control memory can be implemented using ROM, which stores fixed microprograms or RAM for dynamic alteration.
- III. Address sequencing complicates the control unit design but allows for more flexibility and sophisticated

control logic.

Which of the following is correct?

- (1) I and II only
- (2) I and III only
- (3) II and III only
- (4) All of the above

Answer Key: 4

Solution:

? Statement I(Correct): Microprogramming is indeed the process where microinstructions are stored in control memory to direct the control unit in generating the necessary control signals for operation.

? Statement II(Correct): Control memory can be implemented using either ROM, for unchangeable microprograms, or RAM, which allows for modifications and updates in microprograms.

? Statement III(Correct): Address sequencing indeed introduces complexity in the design of control units but is necessary for implementing conditional and iterative control structures, thereby providing enhanced flexibility and control.

Hence, Option (4) is the right answer.