- 1. Which design principle focuses on the disuniting of structures?
- a) Modularity
- b) Disintegration
- c) Disuniting
- d) Fragmentation

Answer: c) Disuniting

Explanation: Disuniting of structures refers to designing components in a way that they can be easily separated or disassembled. This principle enhances flexibility and ease of maintenance in structures.

- 2. What is the primary consideration for designing cross-sections based on material efficiency?
- a) Maximizing weight
- b) Minimizing strength
- c) Minimizing material usage
- d) Maximizing complexity

Answer: c) Minimizing material usage

Explanation: Designing cross-sections based on material efficiency involves minimizing the amount of material used while still maintaining structural integrity and strength.

- 3. Problems in design due to joint flexibility are primarily addressed by:
- a) Increasing joint rigidity
- b) Reducing material strength
- c) Ignoring joint flexibility

Design Principles MCQs

d) Allowing for joint deformation

Answer: d) Allowing for joint deformation

Explanation: Joint flexibility can cause issues in structural design, which can be addressed by allowing for joint deformation, ensuring that the structure can accommodate movement without failure.

- 4. Which design principle advocates for accommodating joint deformation?
- a) Structural rigidity
- b) Joint immobility
- c) Material uniformity
- d) Joint flexibility

Answer: d) Joint flexibility

Explanation: Joint flexibility is a design principle that suggests allowing for deformation at joints to mitigate issues related to stress concentration and structural failure.

- 5. What is the primary focus of designing cross-sections based on material efficiency?
- a) Maximizing weight
- b) Minimizing strength
- c) Minimizing material usage
- d) Maximizing complexity

Answer: c) Minimizing material usage

Explanation: Designing cross-sections based on material efficiency aims to minimize the

amount of material used while maintaining adequate strength and performance.

- 6. Which design approach emphasizes the ease of disassembling structures?
- a) Modular design
- b) Integrated design
- c) Fragmented design
- d) Unified design

Answer: a) Modular design

Explanation: Modular design focuses on creating components that can be easily assembled and disassembled, promoting flexibility and ease of maintenance in structures.

- 7. What is the primary challenge posed by joint flexibility in structural design?
- a) Increased structural integrity
- b) Reduced material usage
- c) Stress concentration
- d) Decreased joint mobility

Answer: c) Stress concentration

Explanation: Joint flexibility can lead to stress concentration at connection points, potentially causing structural failure if not properly addressed in the design phase.

- 8. Which principle advocates for designing components to be easily separated or disassembled?
- a) Integration
- b) Disintegration

- c) Disassembly
- d) Disuniting

Answer: d) Disuniting

Explanation: Disuniting involves designing components in a way that they can be easily separated or disassembled, promoting flexibility and ease of maintenance in structures.

- 9. What does the design principle of joint deformation allowance aim to prevent?
- a) Material efficiency
- b) Structural rigidity
- c) Stress concentration
- d) Component disintegration

Answer: c) Stress concentration

Explanation: Allowing for joint deformation aims to prevent stress concentration at connection points, which can lead to structural failure if not properly managed.

- 10. Which design principle focuses on optimizing the use of materials while maintaining structural integrity?
- a) Disuniting
- b) Material flexibility
- c) Material efficiency
- d) Structural rigidity

Answer: c) Material efficiency

Explanation: Material efficiency involves optimizing the use of materials in structural design to minimize waste while ensuring that the structure maintains adequate strength and performance.

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