

1. Which type of multistory building is more resistant to lateral movement caused by wind or seismic forces?

- a) Sway
- b) Nonsway
- c) Both are equally resistant
- d) It depends on the design

Answer: b) Nonsway

Explanation: Nonsway buildings are designed with sufficient stiffness and bracing to resist lateral movement, making them more resistant to wind or seismic forces compared to sway buildings, which are more flexible and prone to lateral displacement.

2. Which structural elements are commonly used to resist lateral loads in multistory buildings?

- a) Shear walls
- b) Bracing elements
- c) Both a and b
- d) Neither a nor b

Answer: c) Both a and b

Explanation: Shear walls and bracing elements are commonly used in multistory buildings to provide resistance against lateral loads such as wind or seismic forces. Shear walls provide stiffness and strength, while bracing elements (such as diagonal braces or moment frames) offer additional support and stability.

3. Which type of retaining wall is characterized by a thin vertical cantilever slab connected to a base slab?

- a) Gravity wall
- b) Cantilever wall
- c) Counterfort wall
- d) Anchored wall

Answer: b) Cantilever wall

Explanation: Cantilever retaining walls are characterized by a thin vertical cantilever slab connected to a base slab. They rely on the leverage provided by the base to resist the pressure of the retained earth.

4. In which type of retaining wall are vertical columns (counterforts) provided on the retaining face at regular intervals?

- a) Gravity wall
- b) Cantilever wall
- c) Counterfort wall
- d) Anchored wall

Answer: c) Counterfort wall

Explanation: Counterfort retaining walls are characterized by vertical columns (counterforts) provided on the retaining face at regular intervals. These counterforts act as additional support to resist the pressure of the retained earth.

5. Which type of water tank is commonly used for storing water above ground level and is characterized by its cylindrical shape?

- a) Rectangular tank
- b) Circular tank
- c) Square tank
- d) Intze tank

Answer: b) Circular tank

Explanation: Circular water tanks are commonly used for storing water above ground level due to their structural stability and efficient use of materials. Their cylindrical shape helps distribute water pressure evenly throughout the structure.

6. What type of tank is designed to store water below ground level and has a rectangular cross-section?

- a) Rectangular tank
- b) Circular tank
- c) Square tank
- d) Intze tank

Answer: a) Rectangular tank

Explanation: Rectangular tanks are often used for storing water below ground level due to their ability to efficiently utilize space and provide structural support against soil pressure.

7. Which type of tank is designed with a conical roof and is commonly used for storing water

overhead?

- a) Rectangular tank
- b) Circular tank
- c) Square tank
- d) Intze tank

Answer: d) Intze tank

Explanation: Intze tanks are characterized by a conical roof and are commonly used for storing water overhead. Their design allows for efficient distribution of water pressure and ease of construction.

8. What is the primary function of silos and bunkers in industrial settings?

- a) Storage of liquid materials
- b) Storage of solid materials
- c) Mixing of materials
- d) Heating of materials

Answer: b) Storage of solid materials

Explanation: Silos and bunkers are primarily used for the storage of solid materials such as grains, cement, or coal in industrial settings. They provide safe and efficient storage while facilitating easy retrieval and transportation of the stored materials.

9. Which type of bridge is characterized by T-shaped beams used in conjunction with a concrete slab for supporting loads?

- a) Arch bridge
- b) Suspension bridge
- c) T-beam bridge
- d) Truss bridge

Answer: c) T-beam bridge

Explanation: T-beam bridges utilize T-shaped beams in conjunction with a concrete slab for supporting loads, making them suitable for highway loading conditions. They are commonly used for medium-span bridges due to their simplicity and cost-effectiveness.

10. What concept involves applying forces to a structure to induce internal stresses that improve its load-carrying capacity?

- a) Precompression
- b) Preconsolidation
- c) Post-tensioning
- d) Prestressing

Answer: d) Prestressing

Explanation: Prestressing involves applying forces to a structure before subjecting it to external loads to induce internal stresses that improve its load-carrying capacity. This technique is commonly used in the construction of bridges, buildings, and other structures to increase their strength and durability.

11. Which material is commonly used for prestressing tendons in prestressed concrete structures?

- a) Steel
- b) Aluminum
- c) Wood
- d) Plastic

Answer: a) Steel

Explanation: Steel is the most commonly used material for prestressing tendons in prestressed concrete structures due to its high strength, durability, and ability to withstand tension forces.

12. Losses in prestressing refer to:

- a) Reduction in structural integrity
- b) Decrease in material strength
- c) Attenuation of prestress force
- d) Increase in construction cost

Answer: c) Attenuation of prestress force

Explanation: Losses in prestressing refer to the attenuation or reduction of the initially applied prestress force over time due to factors such as elastic deformation, creep, and relaxation of materials. These losses need to be accounted for in the design and construction of prestressed concrete structures.

13. In limit state design, what aspect of a structure is assessed to ensure that it remains serviceable and safe under all relevant conditions?

- a) Ultimate load-carrying capacity
- b) Serviceability
- c) Durability
- d) Aesthetics

Answer: b) Serviceability

Explanation: In limit state design, the serviceability of a structure is assessed to ensure that it remains functional, safe, and meets all relevant performance criteria under normal service conditions, including factors such as deflection, cracking, and vibration.

14. Which type of bridge is commonly associated with high-tensile strength cables suspended between towers?

- a) Arch bridge
- b) Suspension bridge
- c) T-beam bridge
- d) Truss bridge

Answer: b) Suspension bridge

Explanation: Suspension bridges are characterized by high-tensile strength cables suspended between towers, allowing for the construction of long-span bridges with minimal support structures. They are often used for crossing large bodies of water or deep valleys.

15. What is the primary function of shear walls in multistory buildings?

- a) To resist lateral loads

- b) To support vertical loads
- c) To provide insulation
- d) To enhance aesthetics

Answer: a) To resist lateral loads

Explanation: Shear walls in multistory buildings primarily serve to resist lateral loads such as wind or seismic forces by providing stiffness and structural integrity to the building. They help distribute these loads safely to the foundation, ensuring stability and safety.

16. Which type of retaining wall relies on its own weight to resist the pressure of the retained earth?

- a) Gravity wall
- b) Cantilever wall
- c) Counterfort wall
- d) Anchored wall

Answer: a) Gravity wall

Explanation: Gravity retaining walls rely on their own weight and the friction between the wall and the retained earth to resist the pressure exerted by the soil. They are commonly used for retaining relatively low heights of soil and do not require additional reinforcement.

17. What type of tank is commonly used for storing water in elevated locations such as rooftops?

- a) Underground tank



- b) Rectangular tank
- c) Circular tank
- d) Intze tank

Answer: d) Intze tank

Explanation: Intze tanks, characterized by their conical roofs, are commonly used for storing water in elevated locations such as rooftops. Their design allows for efficient distribution of water pressure and easy access for maintenance.

18. What is the purpose of counterforts in counterfort retaining walls?

- a) To resist vertical loads
- b) To enhance aesthetics
- c) To provide additional lateral support
- d) To increase water capacity

Answer: c) To provide additional lateral support

Explanation: Counterforts in counterfort retaining walls serve to provide additional lateral support and stability to the structure by resisting the pressure exerted by the retained earth. They are strategically placed along the retaining face to reinforce the wall against lateral movement.

19. Which factor is essential in the design of silos and bunkers for storing solid materials?

- a) Heat resistance
- b) Airtightness

- c) Structural stability
- d) Electrical conductivity

Answer: c) Structural stability

Explanation: Structural stability is essential in the design of silos and bunkers for storing solid materials to ensure the integrity and safety of the structure under the weight and pressure of the stored materials. Proper design considerations must be made to prevent collapse or deformation.

20. What distinguishes T-beam bridges from other bridge types in terms of their structural configuration?

- a) They utilize triangular trusses
- b) They incorporate a cantilever design
- c) They use T-shaped beams
- d) They feature suspension cables

Answer: c) They use T-shaped beams

Explanation: T-beam bridges are characterized by the use of T-shaped beams, which provide structural support and stability, particularly for medium-span bridges. This configuration allows for efficient load distribution and cost-effective bridge construction.

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