1. Which type of steel superstructure is characterized by its use of large horizontal beams?

a) Plate girder bridge
b) Truss bridge
c) Arch bridge
d) Bowstring girder bridge

Answer: a) Plate girder bridge

Plate girder bridges utilize large horizontal beams (girders) to support the load. These girders are typically made of steel plates welded or bolted together.

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2. In a truss bridge, what component provides stability against lateral forces such as wind?

a) Deck
b) Abutment
c) Bracings
d) Piers

Answer: c) Bracings

Bracings in a truss bridge are diagonal or cross members that connect the vertical and horizontal elements of the truss structure. They provide stability against lateral forces like wind by transferring these forces between the truss members.

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3. Which type of bridge is known for its curved design resembling an arch?

a) Plate girder bridge
b) Truss bridge
c) Arch bridge
d) Bowstring girder bridge

Answer: c) Arch bridge

Arch bridges have a curved structure resembling an arch, which efficiently distributes weight and resists compression forces. This design has been used for centuries due to its strength and stability.

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4. What type of bridge is characterized by its arched upper chord and lower chord running parallel to each other?

a) Plate girder bridge
b) Truss bridge
c) Arch bridge
d) Bowstring girder bridge

Answer: d) Bowstring girder bridge

Bowstring girder bridges feature an arched upper chord and a lower chord that runs parallel to it, resembling the shape of a bowstring. This design provides strength and stability to the bridge structure.

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5. Which component of a lattice girder bridge is primarily responsible for resisting wind forces?

a) Deck
b) Bracings
c) Main girders
d) Piers

Answer: b) Bracings

Bracings in a lattice girder bridge play a crucial role in resisting wind forces. These diagonal or cross members help distribute the wind loads across the bridge structure, enhancing its stability.

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6. In a plate girder bridge, what are the large horizontal beams called?

a) Trusses
b) Girders

c) Bracings
d) Piers

Answer: b) Girders

The large horizontal beams in a plate girder bridge are called girders. These girders support the load of the bridge deck and distribute it to the bridge’s supports.

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7. Which type of bridge utilizes a framework of connected triangles to distribute loads efficiently?

a) Plate girder bridge
b) Truss bridge
c) Arch bridge
d) Bowstring girder bridge

Answer: b) Truss bridge

Truss bridges use a framework of connected triangles to distribute loads efficiently. This design maximizes strength while minimizing the amount of material needed, making truss bridges a popular choice for spanning long distances.

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8. What structural element connects the ends of an arch bridge to its abutments?

a) Piers
b) Bracings
c) Anchorages
d) Spandrels

Answer: c) Anchorages

Anchorages are structural elements that connect the ends of an arch bridge to its abutments. They secure the ends of the arch and help to resist the outward thrust generated by the arch’s curvature.

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9. Which type of bridge is characterized by its use of a curved upper chord and a straight lower chord?

a) Plate girder bridge
b) Truss bridge
c) Arch bridge
d) Bowstring girder bridge

Answer: c) Arch bridge

Arch bridges feature a curved upper chord and a straight lower chord, which together create the characteristic arch shape. This design efficiently distributes weight and resists compression forces.

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10. Which type of bridge design example is often used for pedestrian bridges due to its aesthetic appeal and simplicity?

a) Plate girder bridge
b) Truss bridge
c) Arch bridge
d) Bowstring girder bridge

Answer: c) Arch bridge

Arch bridges are often used for pedestrian bridges because of their aesthetic appeal and simple yet effective design. The graceful curve of the arch adds visual interest to the structure while providing necessary support for pedestrians crossing over it.