TANCET 2024 Architecture Question Paper with Solutions

Time Allowed :2 hours	**Maximum Marks :**100	**Total questions :**100

General Instructions

Read the following instructions very carefully and strictly follow them :

1. This question paper is divided into three sections:

(i) **Engineering Mathematics:** 20 questions (20 questions × 1 mark) for a total of 20 marks.

(ii) **General Engineering Concepts** : 35 questions(35 questions × 1 mark each) for a total of 35 marks.

(iii) **Specialization Questions:** 45 questions(45 questions × 1 mark each) for a total of 45 marks.

2. The total number of questions is 100, carrying a maximum of 100 marks.

3. The duration of the exam is 2 hours.

4. Marking scheme:

(i) 1-mark for correct answer, and $\frac{1}{3}$ mark will be deducted for every incorrect response.

(ii) No marks will be awarded for unanswered questions. 5. Follow the instructions provided during the exam for submitting your answers.

41. The time taken by hydraulic lime to slake is:

(A) 6 to 10 hrs

(B) 12 to 48 hrs

(C) 2 to 6 hrs

(D) More than 60 hrs

Correct Answer: (B) 12 to 48 hrs

Solution:

Hydraulic lime is a type of lime that sets and hardens due to the presence of impurities like clay. The time taken for hydraulic lime to slake (i.e., react with water and turn into a paste) is typically between 12 to 48 hours. This process involves the hydration of lime, which is a slower process compared to non-hydraulic lime.

Quick Tip

Hydraulic lime typically slakes within 12 to 48 hours depending on the temperature and environmental conditions.

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42. Surkhi is added to lime mortar to impart the following property:

(A) Improve workability

(B) Improve solubility

(C) Impart hydraulicity

(D) Impart ductility

Correct Answer: (C) Impart hydraulicity

Solution:

Surkhi is finely ground burnt clay or brick powder. When added to lime mortar, it improves the hydraulic properties of the mortar, making it set and harden in the presence of water. This process is known as imparting hydraulicity, which allows the mortar to set even under damp conditions.

Quick Tip

Surkhi is used in lime mortar to impart hydraulicity, making it suitable for use in water-logged conditions.

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43. What are the limitations of Timber Framed Structures?

(A) heavy-weight

(B) difficult to transport materials

(C) cannot withstand tensile load

(D) prone to fire

Correct Answer: (D) prone to fire

Solution:

Timber framed structures, while being lightweight and flexible, have a significant limitation in that they are prone to fire. Wood is a combustible material, and without proper fireproofing treatments, timber-framed buildings are more vulnerable to fire hazards compared to other materials like steel or concrete.

Quick Tip

Timber-framed structures need adequate fire protection measures to reduce the risk of fire damage.

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44. How alternate header and stretcher in each course of brickwork is known as?

(A) Garden wall bond

(B) Flemish bond

(C) English bond

(D) Dutch bond

Correct Answer: (C) English bond

Solution:

In brickwork, a bond refers to the arrangement of bricks in each course (row). An English bond consists of alternating headers (bricks laid across the width) and stretchers (bricks laid along the length) in each course. This bond provides strong structural integrity and is commonly used in load-bearing walls.

Quick Tip

The English bond is one of the strongest and most commonly used brick bonds in construction.

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45. The defect of white decayed spots concealed by healthy wood in timber is known as

(A) Burls

(B) Foxiness

(C) Druxiness

(D) Dead wood

Correct Answer: (C) Druxiness

Solution:

Druxiness is a defect in timber where white decayed spots, which are often concealed by healthy wood, occur due to fungal attack. This condition weakens the timber and makes it unsuitable for use in construction.

Quick Tip

Druxiness is caused by fungi and leads to the weakening of timber. It is essential to inspect timber for such defects before use.

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46. The timber which is fully or partially covered with resin is known as

(A) Impreg timber

(B) Lamin board

(C) Compreg timber

(D) Fibre board

Correct Answer: (A) Impreg timber

Solution:

Impreg timber refers to timber that is treated with a resin or other impregnating substances to enhance its properties such as durability, strength, and resistance to decay. The process involves fully or partially covering the timber with resin to protect it from environmental factors.

Quick Tip

Impregnated timber is highly durable and resistant to decay, making it suitable for outdoor applications.

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47. What is the maximum level of background noise allowed in the classroom?

(A) 35 dB

(B) 60 dB

(C) 20 dB

(D) 10 dB

Correct Answer: (A) 35 dB

Solution:

In a classroom, the background noise level is crucial for ensuring that students can focus and hear the teacher clearly. Excessive noise can create distractions and reduce the effectiveness of teaching.

According to the National Building Code of India (NBC), the recommended noise level for classrooms should not exceed 35 dB. This level of sound is considered to be low enough to maintain a quiet environment, where the teacher's voice can be clearly heard without strain. Background noise above this level can be disruptive to learning and communication.

Noise levels in classrooms are often influenced by external factors such as street traffic, mechanical equipment, and poor insulation. Therefore, ensuring that the noise level stays within the prescribed limit is essential for creating a conducive learning environment.

Quick Tip

Classrooms should ideally have a background noise level not exceeding 35 dB to facilitate better communication and concentration.

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48. The formation of dull patches on finished polished surface is

(A) Grinning

(B) Saponification

(C) Fading

(D) Bloom

Correct Answer: (D) Bloom

Solution:

Bloom refers to the appearance of dull, white patches on a polished surface, often caused by moisture or chemical reactions between the surface and its environment.

This defect is common in finishes such as varnishes or lacquers, which are often used on furniture, wooden surfaces, and even some decorative items. The cause of bloom is typically moisture that gets trapped within the coating layer, leading to a cloudy or dull appearance on the surface.

Bloom can also occur due to temperature fluctuations or high humidity, which can cause the applied finish to react with the air or contaminants. Once the moisture evaporates, it can leave behind a milky, uneven patch.

While bloom may not damage the material underneath, it ruins the aesthetic quality of the surface. Regular maintenance and careful control of the environment during application can help minimize this defect.

Quick Tip

To avoid bloom, ensure proper ventilation and control temperature and humidity levels when applying finishes.

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49. Which one of the following statements regarding distemper is wrong?

(A) They are treated as water paints

(B) They are durable than oil paints

(C) They exhibit poor workability

(D) They provide a good reflective coating

Correct Answer: (B) They are durable than oil paints

Solution:

Distemper is a water-based paint that is primarily used for interior walls. It is a traditional paint formulation consisting of pigments mixed with water, chalk, and a binding medium like glue.

The claim that distemper is more durable than oil paints is incorrect. In fact, oil paints are known for their greater durability, resistance to wear and tear, and ability to withstand environmental factors like moisture and dirt. Distemper, being water-based, is more prone to fading, peeling, and damage over time.

Distemper paints are easy to apply and provide a smooth, matte finish, but they are not as durable or resistant to cleaning compared to oil-based paints. While distemper provides a good reflective coating, it does not offer the long-term protection that oil paints provide.

Distemper is often used in dry, indoor environments and is suitable for areas with limited traffic, as it does not offer the same durability as oil-based paints.

Quick Tip

Distemper is suitable for indoor use but is less durable than oil paints and should be used in low-traffic areas.

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50. For M10 grade concrete, the proportion of cement, sand, and coarse aggregate is

(A) $1 : 1 : 2$

(B) $1 : 3 : 6$

(C) $1 : 2 : 4$

(D) $1 : 4 : 8$

Correct Answer: (B) $1 : 3 : 6$

Solution:

M10 is a grade of concrete that corresponds to a mix ratio of 1 part cement, 3 parts sand, and 6 parts coarse aggregate. This mix is typically used for low-strength applications such as pavements, footpaths, and non-structural works.

The grade of concrete is determined by the compressive strength it achieves after 28 days of curing. For M10 grade concrete, the mix ratio ensures that the strength is around 10 MPa (megapascals), which is sufficient for non-load-bearing applications.

The correct proportions are essential to ensure the workability, strength, and durability of the concrete. The mix ratio is determined based on the type of work being done, the materials available, and the expected loads on the concrete.

Quick Tip

M10 concrete is typically used in low-strength applications like footpaths or for non-structural purposes.

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51. What is the recommended slump of concrete for normal RCC work?

(A) 25 mm to 50 mm

(B) 70 mm to 80 mm

(C) 80 mm to 150 mm

(D) 160 mm to 180 mm

Correct Answer: (C) 80 mm to 150 mm

Solution:

The slump test is conducted to measure the workability of concrete, particularly for reinforced cement concrete (RCC) work. It helps assess the consistency and flowability of the mix.

For normal RCC work, the recommended slump range is between 80 mm and 150 mm. This range provides an optimal balance between the ease of mixing, placing, and compacting concrete, while ensuring that it has the required strength and durability.

A slump value below 80 mm indicates stiff concrete that may be difficult to work with, while a slump value above 150 mm indicates a very wet mix that may result in segregation and reduced strength.

Quick Tip

The ideal slump range for normal RCC work is between 80 mm and 150 mm to ensure the right balance of workability and strength.

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52. Who pioneered the Domino House?

(A) Frank Lloyd Wright

(B) Louis Sullivan

(C) Le Corbusier

(D) Auguste Perret

Correct Answer: (C) Le Corbusier

Solution:

Le Corbusier, a famous modernist architect, pioneered the concept of the Domino House. This design was a revolutionary step in the development of modern architecture and construction techniques.

The Domino House was designed with a flexible, open-plan layout that used concrete slabs and pilotis (supports) to create free-form spaces. This design allowed for the mass production of housing, which was a key objective for Le Corbusier, given the urban housing crisis in the early 20th century.

The Domino House concept influenced the development of modern architecture by allowing for open, adaptable spaces. This design served as a precursor to the International Style, which emphasized functional and minimalist design principles.

Quick Tip

The Domino House concept by Le Corbusier laid the foundation for modernist architecture and mass-produced housing.

53. Which of the following elements was commonly used in Gothic Architecture?

(A) Round Arches

(B) Pendentives

(C) Rose windows

(D) Battlemented parapets

Correct Answer: (C) Rose windows

Solution:

Gothic architecture is known for its verticality and the use of light, which is achieved through large windows. One of the most prominent features of Gothic architecture is the rose window, a large, circular window with intricate stained glass designs.

The use of rose windows allowed natural light to enter the structure, creating a spiritual atmosphere within the church or cathedral. These windows were often located in the western façade or at the end of the transept.

Other features such as pointed arches and flying buttresses are also typical of Gothic architecture, but rose windows are especially iconic for their visual and symbolic significance.

Quick Tip

Rose windows are a hallmark of Gothic architecture and are known for their elaborate and intricate designs.

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54. The middle portion of an Entablature is called as

(A) Pediment

(B) Cornice

(C) Frieze

(D) Corbel

Correct Answer: (C) Frieze

Solution:

An entablature is the horizontal structure supported by columns in classical architecture. It consists of three main parts: the architrave (lowest part), the frieze (middle part), and the cornice (topmost part).

The frieze is the middle section of the entablature, often decorated with reliefs or inscriptions. It lies between the architrave and cornice and plays a decorative and visual role in classical architecture.

The pediment, which is often seen above the entablature, is the triangular section of a roof above the columns, but it is not part of the entablature itself.

Quick Tip

In classical architecture, the frieze is the middle section of the entablature and often features intricate relief sculptures.

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55. Which of the following mosques does not have a courtyard?

(A) Jama masjid, Cambay

(B) Atala Masjid, Jaunpur

(C) Jama Masjid, Mandu

(D) Jama Masjid, Gulbarga

Correct Answer: (D) Jama Masjid, Gulbarga

Solution:

Courtyards are an integral part of many Islamic mosque designs, serving as open spaces for gatherings, ablution, and prayer. However, not all mosques feature a courtyard.

Among the given options, the Jama Masjid in Gulbarga does not have a traditional open courtyard, unlike the other mosques which have a central courtyard. This is due to the unique architectural style influenced by regional traditions in southern India.

The Gulbarga mosque has a more enclosed and compact layout compared to the expansive courtyards seen in mosques like the Jama Masjid in Cambay and Atala Masjid in Jaunpur.

Quick Tip

Not all mosques feature a courtyard, as architectural styles vary greatly depending on region and cultural influences.

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56. Who designed Centre for Development Studies building in Trivandrum?

(A) Laurie Baker

(B) Raj Rewal

(C) A. Kanvinde

(D) B.V. Doshi

Correct Answer: (A) Laurie Baker

Solution:

The Centre for Development Studies building in Trivandrum was designed by Laurie Baker, a well-known architect who was deeply involved in sustainable and cost-effective architecture. He is renowned for using local materials and innovative building techniques to create energy-efficient structures.

Baker's design for the Centre for Development Studies emphasizes the use of natural ventilation, passive cooling, and materials that are locally sourced. His work was highly influenced by the climate and cultural context of Kerala.

Laurie Baker's architectural style focuses on low-cost, environmentally sustainable buildings that are well integrated into the local environment.

Quick Tip

Laurie Baker is known for his innovative use of local materials and sustainable design in architecture.

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57. The cold bath area in a Roman bath is called as

(A) Calidarium

(B) Apodyterium

(C) Palaestra

(D) Frigidarium

Correct Answer: (D) Frigidarium

Solution:

In Roman baths, the bathhouse was divided into several sections, each serving a specific function. The cold bath area, where bathers could cool off after using the hot baths, is known as the ”frigidarium.”

The frigidarium was typically a large, cold pool where bathers would refresh themselves. It was designed to be at a much lower temperature than the hot bath areas like the caldarium, which were heated.

Other areas of the Roman bath included the apodyterium (changing room) and the palaestra (exercise area), but the frigidarium specifically refers to the cold bathing area.

Quick Tip

The frigidarium was an essential part of Roman bath culture, offering a place for cooling down and relaxation after using the hot baths.

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58. Which of the following is not a character of Saxon Building?

(A) Pilaster Strips

(B) Double Splayed windows

(C) Long and short quoins

(D) Buttressed walls

Correct Answer: (D) Buttressed walls

Solution:

Saxon buildings are characterized by distinctive features such as pilaster strips, double-splayed windows, and long and short quoins. These elements were part of the regional architectural style during the Saxon period in medieval England.

However, buttressed walls are more commonly associated with later architectural styles, such as Gothic architecture. In Saxon buildings, walls were often thick and solid, but the use of

flying buttresses (which are external supports) became a prominent feature only in Gothic structures.

The other features listed—pilaster strips, double-splayed windows, and long and short quoins—are all typical of Saxon architecture, reflecting the period's design and construction techniques.

Quick Tip

Saxon buildings typically used solid, thick walls with internal support rather than external buttresses.

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59. Ogee arch tracery is used widely in _____ style of architecture.

(A) Perpendicular Gothic

(B) Decorated Gothic

(C) Romanesque

(D) Greek

Correct Answer: (B) Decorated Gothic

Solution:

The ogee arch is a distinctive architectural feature characterized by a double curve in the arch shape, which resembles an "S" shape. This feature is most commonly associated with the Decorated Gothic style of architecture.

The Decorated Gothic style, which emerged during the 14th century, is known for its intricate designs and decorative elements, including ogee arches. This style emphasizes verticality, detailed tracery, and elaborate windows, all of which contribute to its light and airy atmosphere.

While the Perpendicular Gothic style also uses tracery, it is primarily known for its more rigid, vertical forms and fan-like patterns in window designs. The Romanesque and Greek styles do not typically feature ogee arches.

Quick Tip

Ogee arches are a signature element of the Decorated Gothic style, providing elegance and complexity to the architecture.

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60. Which of the building is designed by Louis Kahn?

(A) Capitol Complex in Chandigarh

(B) Kimbell Art Museum

(C) Yale School of Architecture

(D) Tokyo Imperial Hotel

Correct Answer: (B) Kimbell Art Museum

Solution:

Louis Kahn was an influential 20th-century architect known for his monumental, modernist approach to design. He was responsible for several iconic buildings, including the Kimbell Art Museum in Fort Worth, Texas.

The Kimbell Art Museum is celebrated for its use of light, space, and simple materials like concrete and brick. Kahn's design emphasizes the relationship between light and architecture, making the building an example of his belief in the spiritual power of architecture.

While the Capitol Complex in Chandigarh was designed by Pierre Jeanneret and Le Corbusier, and the Tokyo Imperial Hotel was designed by Frank Lloyd Wright, Louis Kahn's work on the Kimbell Art Museum stands out as a defining example of his architectural legacy.

Quick Tip

Louis Kahn's designs, like the Kimbell Art Museum, focus on light, simplicity, and monumental forms.

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61. Which of the following architects designed Carson Pirie Scott Store building?

(A) Louis Sullivan

(B) Mies van der Rohe

(C) William Le Baron Jenney

(D) Richardson

Correct Answer: (A) Louis Sullivan

Solution:

The Carson Pirie Scott Store, located in Chicago, was designed by the renowned architect Louis Sullivan in 1899. Sullivan is often regarded as the father of modernism in architecture due to his innovative use of ornamentation and structural design.

The building is notable for its iron and glass façade, which marks an important step toward modern skyscraper design. Sullivan's design broke away from traditional architectural forms, embracing functional aesthetics.

While Mies van der Rohe, William Le Baron Jenney, and Richardson were all influential architects, the Carson Pirie Scott Store is most closely associated with Louis Sullivan.

Quick Tip

Louis Sullivan's work on the Carson Pirie Scott Store exemplifies his belief in the expression of function through form, marking an early step in modern architectural design.

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62. What was the population of the contemporary city proposed by Le Corbusier?

(A) 1 million

(B) 4 million

(C) 3 million

(D) 5 million

Correct Answer: (C) 3 million

Solution:

Le Corbusier, one of the most influential architects of the 20th century, proposed a vision for a contemporary city that could accommodate a population of 3 million people. This vision was laid out in his plan for the "Ville Radieuse" (Radiant City).

The Ville Radieuse was designed to be a model city with efficient traffic flow, abundant green spaces, and high-rise buildings to house a large population. The plan was never fully realized, but it significantly influenced modern urban planning.

Le Corbusier's approach to urban design sought to address the problems of overcrowding and inefficiency in cities by using zoning, skyscrapers, and green spaces to create a more livable and organized city.

Quick Tip

Le Corbusier's vision for the Ville Radieuse envisioned a city for 3 million people, emphasizing efficiency, green spaces, and modern design principles.

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63. Santa Maria del Fiore cathedral has

(A) Pendentive dome

(B) Double shell dome

(C) A conical dome

(D) Hemispherical dome

Correct Answer: (B) Double shell dome

Solution:

The Santa Maria del Fiore cathedral, also known as the Florence Cathedral, features a remarkable double-shell dome designed by Filippo Brunelleschi. This dome is one of the greatest engineering feats of the Renaissance.

The double-shell design consists of two layers of masonry, with the inner shell supporting the dome's structure and the outer shell serving as a decorative covering. This innovative approach allowed the dome to be built without the need for scaffolding, which was previously thought to be impossible for such a large span.

The design of the dome is a key feature of the cathedral and a symbol of Renaissance engineering and architecture. It helped to inspire future architectural developments in dome construction.

Quick Tip

The double-shell dome of the Santa Maria del Fiore cathedral is a masterpiece of Renaissance engineering, showcasing Brunelleschi's innovation in dome construction.

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64. The Mysore Palace was designed by

(A) George Willet

(B) Henry Irwin

(C) Edwin Lutyens

(D) James Ransome

Correct Answer: (B) Henry Irwin

Solution:

The Mysore Palace, one of the most iconic buildings in India, was designed by the British architect Henry Irwin in 1897. The palace was constructed after the original wooden palace was destroyed by fire in 1897.

Henry Irwin designed the palace in a blend of Hindu, Mughal, Rajput, and Gothic styles, making it a unique example of Indo-Saracenic architecture. The palace features grand courtyards, intricate woodwork, and beautiful stained glass windows.

The Mysore Palace is famous for its grandeur and is a major tourist attraction, symbolizing the royal heritage of the Wodeyar dynasty of Mysore.

Quick Tip

The Mysore Palace, designed by Henry Irwin, is an iconic example of Indo-Saracenic architecture and a symbol of royal heritage in India.

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65. The alteration or repetition of elements with defined intervals between them, creates a sense of movement and it is used to establish a texture or pattern.

(A) Contrast

(B) Rhythm

(C) Monotony

(D) Emphasis

Correct Answer: (B) Rhythm

Solution:

Rhythm in architecture refers to the repetition or alteration of elements at regular intervals, creating a sense of movement or flow. This can be seen in architectural elements like columns, windows, and doorways that are spaced regularly.

Just like music, rhythm in architecture establishes a visual ”beat” through repeated patterns. It helps to guide the viewer’s eye and create a cohesive design.

Contrast, monotony, and emphasis are other design principles but do not specifically relate to the concept of movement through repetition or intervals in the same way rhythm does.

Quick Tip

Rhythm in architecture is akin to the rhythm in music – it’s about repeating elements at intervals to create movement and continuity.

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66. Gandhi Nagar plan in Gujarat is an example for

(A) Clustered organization

(B) Organic organization

(C) Radial organization

(D) Grid organization

Correct Answer: (D) Grid organization

Solution:

The Gandhi Nagar plan in Gujarat is a clear example of grid organization. In this plan, streets are laid out in a regular grid pattern, which is typical of many modern city plans for its simplicity and efficiency.

A grid organization ensures easy navigation, clear demarcation of spaces, and uniformity in the city’s layout. It is especially beneficial for dense urban areas.

Organic organization would imply a more natural, irregular layout. Radial organization centers around a focal point, and clustered organization typically features groups of buildings or spaces.

Quick Tip

Grid organization is a structured and uniform layout used in many modern city plans for its efficiency and ease of navigation.

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67. Which of the following architects is NOT a part of the De-constructivist movement?

(A) Rem Koolhass

(B) Mies Van der Rohe

(C) Peter Eisenmann

(D) Bernard Tschumi

Correct Answer: (B) Mies Van der Rohe

Solution:

The Deconstructivist movement in architecture is known for its fragmented, non-linear design forms and an apparent lack of harmony or order. It emerged in the 1980s and includes architects like Rem Koolhass, Peter Eisenmann, and Bernard Tschumi.

Mies van der Rohe, however, is associated with the International Style and Modernism, known for his emphasis on minimalism, structural honesty, and clean lines. His work does not align with the chaotic, fragmented aesthetic of Deconstructivism.

Koolhass, Eisenmann, and Tschumi are key figures in Deconstructivism, pushing boundaries in form and structure to create dynamic, often unpredictable buildings.

Quick Tip

Mies van der Rohe is a modernist architect, not associated with Deconstructivism, which focuses on fragmentation and disordered forms.

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68. Which one of the following DOES NOT come under Schmitt's classification of design method?

(A) Routine design method

(B) Creative design Method

(C) Innovative design method

(D) Craft design method

Correct Answer: (D) Craft design method

Solution:

Schmitt's classification of design methods includes routine, creative, and innovative design methods, each representing different approaches to the design process.

The routine design method involves repetitive tasks based on established norms and standards, typically used for small-scale or low-complexity designs. The creative and innovative design methods involve more original and flexible approaches, often seeking novel solutions to complex problems.

"Craft design method" is not part of Schmitt's classification. Craftsmanship is a different concept that involves the manual and artistic skills in the creation of objects, rather than a formal approach to the design process.

Quick Tip

Schmitt's design classification focuses on how the design process is approached, not on craftsmanship, which is more about hands-on creation.

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69. The book "The Pattern Language" is written by

(A) Frank Gehry

(B) Walter Gropius

(C) Le Corbusier

(D) Christopher Alexander

Correct Answer: (D) Christopher Alexander

Solution:

”The Pattern Language” is a seminal book written by Christopher Alexander, which introduces a system of design patterns for creating more human-centric spaces and buildings. The book is a guide to designing environments that foster well-being, focusing on aspects like the flow of space, light, and the emotional responses they evoke. It has had a profound influence on architecture, urban design, and software development.

While Frank Gehry, Walter Gropius, and Le Corbusier are influential architects, they are not associated with this particular work. Christopher Alexander’s ideas have shaped much of contemporary architectural thought regarding user experience and spatial design.

Quick Tip

”The Pattern Language” by Christopher Alexander offers a comprehensive system for creating spaces that enhance the human experience.

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70. Post-Facto Explications diagram illustrates

(A) Abstract notions and contains scaled comparison of volumes

(B) Elements in relation to building form after the design is completed

(C) Relation to Sensorial or Experiential aspects of the design concept

(D) The details of Sequence of steps in a design development process

Correct Answer: (B) Elements in relation to building form after the design is completed

Solution:

The Post-Facto Explications diagram is a method of documenting and illustrating how various elements of a design relate to the overall building form after the design has been completed. It provides insights into the logic behind the final design choices.

This diagram is used to explain the relationships between different components and the thought process behind their integration into the final form of the building.

It does not focus on the sequence of steps or the sensory experiences during the design process, but rather the final arrangement and interrelationship of elements in the completed design.

Quick Tip

The Post-Facto Explications diagram helps clarify the design logic and relationships of elements within a completed building form.

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71. The Visionary diagram named “Plug-in City” is done by

(A) Cedric Price

(B) Peter Cook

(C) Yona Freidmann

(D) Arato Isazaki

Correct Answer: (B) Peter Cook

Solution:

The ”Plug-in City” was a visionary concept designed by architect Peter Cook in 1969. It is an architectural proposal that focuses on flexibility and adaptability, with a focus on modularity and the ability to ”plug in” various components or services into a pre-existing infrastructure. The concept imagined a futuristic city where components could be added or removed, much like plugging in electrical devices. This radical idea was a part of the Archigram group’s exploration of modern, flexible urban designs, which emphasized mobility and adaptability. Cedric Price and Yona Freidmann are also notable visionary architects, but the ”Plug-in City” specifically belongs to Peter Cook.

Quick Tip

”Plug-in City” by Peter Cook was an early exploration of modular, flexible city designs, emphasizing adaptability and changeability.

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72. Which of the following will not produce echo?

(A) Mirror

(B) Rock

(C) Marble

(D) Porous materials

Correct Answer: (D) Porous materials

Solution:

An echo is a reflection of sound that arrives at the listener after a delay. For an echo to occur, the surface must be hard and smooth to reflect sound waves effectively.

Porous materials, such as fabric, foam, and certain types of wood, absorb sound waves rather than reflect them, thus preventing echoes from forming.

On the other hand, hard surfaces like mirrors, rocks, and marble reflect sound, which can lead to the creation of an echo.

Quick Tip

Porous materials absorb sound waves and are effective in preventing echoes, making them ideal for acoustically sensitive environments.

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73. Bulking of sand is highest in

(A) Coarse sand

(B) Fine Sand

(C) Medium sand

(D) Coarse and medium sand

Correct Answer: (B) Fine Sand

Solution:

Bulking refers to the increase in the volume of sand when it is moist. This is because water creates a film around the particles, causing them to separate and occupy more space.

Fine sand, with its smaller particles, exhibits the highest bulking effect because the particles have a larger surface area to hold water, causing a greater increase in volume when wet.

Coarse sand and medium sand have larger particles with less surface area, so they experience less bulking compared to fine sand.

Quick Tip

Bulking is most pronounced in fine sand due to its small particle size and larger surface area for water absorption.

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74. One of the fractal types, Koch Snowflake starts with the basic shape is

(A) Dodecahedron

(B) Circle

(C) Square

(D) Equilateral triangle

Correct Answer: (D) Equilateral triangle

Solution:

The Koch Snowflake is one of the most famous examples of a fractal curve, first described by Swedish mathematician Helge von Koch. It starts with an equilateral triangle and repeatedly adds smaller triangles to each side.

The fractal is created by iterating the process of dividing each side of the triangle into three equal parts and then constructing a smaller equilateral triangle that points outward. This creates a snowflake-like shape.

Dodecahedron, circle, and square are not the starting shapes for the Koch Snowflake fractal.

Quick Tip

The Koch Snowflake begins with an equilateral triangle and evolves into a self-similar fractal through repeated subdivisions.

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75. Which of the following characteristics is NOT related to fractal?

(A) Deterministic

(B) Evolutionary

(C) Self-Similar

(D) Recursive

Correct Answer: (B) Evolutionary

Solution:

Fractals are complex patterns that exhibit self-similarity at various scales. They are deterministic, meaning that they follow a specific, predictable set of rules for their generation.

Fractals are also recursive, meaning that they are generated by repeating the same process at smaller and smaller scales.

The term ”evolutionary” is not typically associated with fractals. Evolutionary processes involve changes over time, whereas fractals are static mathematical shapes that remain consistent as they repeat.

Quick Tip

Fractals are deterministic, self-similar, and recursive, but they are not generally described as evolutionary.

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76. Who said the statement, “Liquid Architecture is an architecture, whose form is contingent on the interest of the beholder”?

(A) Greg Lynn

(B) Marcos Novak

(C) Peter Eisenmann

(D) Bernard Tschumi

Correct Answer: (A) Greg Lynn

Solution:

The statement ”Liquid Architecture is an architecture, whose form is contingent on the interest of the beholder” was made by Greg Lynn, a prominent architect known for his work in the field of digital and parametric design.

Greg Lynn’s concept of ”Liquid Architecture” explores the idea that architecture can be dynamic and responsive, changing in form based on the interaction with its users or the environment. This contrasts with traditional static forms.

Marcos Novak, Peter Eisenmann, and Bernard Tschumi have also made significant contributions to architectural theory, but this specific idea is attributed to Greg Lynn.

Quick Tip

”Liquid Architecture” is a concept introduced by Greg Lynn, which focuses on dynamic, responsive designs influenced by the beholder’s perception.

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77. The use of dimming systems for street lighting is recommended when the supply voltage exceeds

(A) 220 V

(B) 240 V

(C) 440 V

(D) 415 V

Correct Answer: (D) 415 V

Solution:

Dimming systems for street lighting are often used in areas where the supply voltage is high. The use of these systems is recommended when the supply voltage exceeds 415 V, as they help reduce energy consumption by lowering the intensity of light during non-peak hours. Dimming can be used in modern street lighting to improve energy efficiency while maintaining safety and visibility, especially in areas with higher voltage systems like 415 V. While lower voltages such as 220 V and 240 V may not typically require dimming systems for street lighting, the use of such systems becomes more important when the voltage exceeds 415 V.

Quick Tip

Dimming systems for street lighting help optimize energy consumption, especially when dealing with higher voltage supplies like 415 V.

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78. Through solids, sound travels as

(A) Longitudinal waves

(B) Transverse waves

(C) Transverse and Longitudinal waves

(D) Compression waves

Correct Answer: (A) Longitudinal waves

Solution:

Sound waves travel through different mediums, including solids, in the form of longitudinal waves. In longitudinal waves, particles of the medium move in the same direction as the wave, creating compressions and rarefactions.

These waves travel by the vibration of particles along the direction of the wave propagation, allowing sound to move through solids, liquids, and gases.

While transverse waves are common in water or light waves, sound in solids is primarily transmitted as longitudinal waves.

Quick Tip

Sound travels through solids as longitudinal waves, where the vibration of particles occurs along the direction of the wave.

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79. An anechoic chamber is a room designed to

(A) Completely absorb reflections of either sound or electromagnetic waves

(B) Reflect sound or electromagnetic waves

(C) Absorb electromagnetic waves

(D) Transmit electromagnetic waves

Correct Answer: (A) Completely absorb reflections of either sound or electromagnetic waves

Solution:

An anechoic chamber is a specially designed room that absorbs all sound reflections and electromagnetic waves to create an environment with no echoes or reverberations. The walls

and ceiling are lined with sound-absorbing materials to prevent any sound from bouncing back.

These chambers are used for experiments and testing in acoustics and electromagnetic wave studies, where the absence of any external noise or reflections is required.

The chamber does not reflect sound or electromagnetic waves, nor does it transmit them. Its primary function is to absorb them completely.

Quick Tip

Anechoic chambers are designed to absorb sound and electromagnetic waves, providing a noise-free environment for testing and research.

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80. Which is the valve used to maintain constant water level and to prevent overflow in plumbing?

(A) Float valve and ball cock

(B) Gate Valve

(C) Globe Valve

(D) Butterfly Valve

Correct Answer: (A) Float valve and ball cock

Solution:

The float valve, often combined with a ball cock, is a device used in plumbing to maintain a constant water level in tanks and prevent overflow. The ball cock consists of a float that rises and falls with the water level, controlling the valve to open or close as needed.

When the water level in the tank rises, the float rises with it and eventually closes the valve to stop the flow of water, preventing overfilling.

Gate, globe, and butterfly valves are different types of valves used for regulating water flow, but they are not specifically designed for maintaining water levels or preventing overflow.

Quick Tip

Float valves with ball cocks are essential for maintaining water levels in tanks and preventing overflow in plumbing systems.

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81. Low pressure sodium vapor lamps have the following disadvantage compared to high pressure sodium vapor lamps

(A) Costly

(B) Poor color rendering

(C) Inefficient

(D) Can only be used for indoor applications

Correct Answer: (B) Poor color rendering

Solution:

Low-pressure sodium vapor lamps are known for their efficiency and long lifespan but have poor color rendering capabilities. They emit a monochromatic yellow light, which makes them unsuitable for applications requiring accurate color differentiation.

High-pressure sodium vapor lamps, on the other hand, provide better color rendering and are often preferred for outdoor lighting, street lighting, and applications requiring more natural light tones.

The poor color rendering is the primary disadvantage of low-pressure sodium vapor lamps compared to their high-pressure counterparts.

Quick Tip

Low-pressure sodium lamps are efficient but produce poor color rendering, making them less suitable for color-sensitive applications.

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82. What is the color code for single live wiring in India?

(A) Red

(B) Black

(C) Yellow

(D) Green

Correct Answer: (A) Red

Solution:

In India, the standard color code for electrical wiring follows international conventions. The color red is used for single live wires in electrical systems. This helps distinguish live wires from neutral and earth wires.

Other color codes in India include black for neutral wires and green for earth wires. Yellow may sometimes be used for live wiring in certain systems, but red is the most commonly recognized color for live wires.

Proper color coding in electrical wiring ensures safety and reduces the risk of electrical hazards during installation, maintenance, or repair.

Quick Tip

Red is the standard color for single live wires in India, helping to identify live circuits easily and safely.

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83. As per Indian Standards, the number of water closets for male personnel should be ———————— in office buildings.

(A) 1 for every 25 persons or part thereof

(B) 1 for every 30 persons or part thereof

(C) 1 for every 40 persons or part thereof

(D) 2 for every 40 persons or part thereof

Correct Answer: (A) 1 for every 25 persons or part thereof

Solution:

According to the Indian Standards (NBC), the number of water closets for male personnel in office buildings should be provided as 1 for every 25 persons or part thereof. This ensures adequate sanitation facilities for employees in the workplace.

This rule is part of building design and construction standards to promote health and hygiene in commercial spaces. It considers the comfort and convenience of the personnel working in the office.
Providing the required number of water closets helps prevent overcrowding in washrooms and ensures that hygiene standards are met.

Quick Tip

As per Indian standards, 1 water closet should be provided for every 25 male persons or part thereof in office buildings.

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84. Where Busbars are used in?

(A) Electrical systems

(B) Barrier free system

(C) Bus handles

(D) None of the above

Correct Answer: (A) Electrical systems

Solution:

Busbars are used in electrical systems to distribute electrical power. They are metallic bars that conduct electricity and serve as a central point for connecting various circuits.
Busbars are typically used in distribution boards, switchboards, and substations to facilitate the safe and efficient transmission of electrical energy.
They are not related to barrier-free systems or bus handles, which are components used for accessibility and transportation.

Quick Tip

Busbars are essential components in electrical systems for distributing power safely and efficiently across circuits.

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85. Which one of the following is a sound absorbing material?

(A) Porous

(B) Solid

(C) Transparent

(D) None of the above

Correct Answer: (A) Porous

Solution:

Sound-absorbing materials typically have a porous structure that allows sound waves to be trapped within the material, thus reducing their reflection and preventing echoes.
Porous materials, such as foam, fabric, and insulation materials, are commonly used in acoustic applications to control noise levels in buildings.
Solid and transparent materials tend to reflect sound, while porous materials are ideal for absorbing sound waves and improving room acoustics.

Quick Tip

Porous materials are most effective at absorbing sound and are commonly used in acoustically treated spaces to reduce noise levels.

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86. Urban mountain at Copenhagen was designed by

(A) Bjarke Ingels

(B) Chris Precht

(C) Sir Norman Foster

(D) Daniel Libeskind

Correct Answer: (A) Bjarke Ingels

Solution:

The Urban Mountain in Copenhagen, a significant architectural project, was designed by Bjarke Ingels, a Danish architect known for his innovative and sustainable designs.

The project is part of a plan to transform Copenhagen into a green, sustainable city, with a focus on integrating nature into urban spaces. The design features a ”mountain” with green spaces, rooftops, and outdoor activities.
The other architects listed—Chris Precht, Norman Foster, and Daniel Libeskind—are renowned for their contributions to architecture, but the Urban Mountain was specifically designed by Bjarke Ingels.

Quick Tip

Bjarke Ingels is known for his sustainable and innovative architecture, as exemplified by the Urban Mountain project in Copenhagen.

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87. Where Biometrics is used in?

(A) Automation

(B) Smart buildings

(C) Security systems

(D) All of the above

Correct Answer: (D) All of the above

Solution:

Biometrics is increasingly used in automation, smart buildings, and security systems to provide identification and access control through physical traits such as fingerprints, facial recognition, or iris scans.
In automation, biometrics enables the automation of access control systems. In smart buildings, biometrics can be used for managing entry, controlling systems, and enhancing security features.
Security systems also rely heavily on biometric technologies to enhance the security and privacy of the building or space by ensuring that only authorized individuals have access.

Quick Tip

Biometrics is widely used in security, automation, and smart buildings to enhance access control and user convenience.

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88. Creep in concrete is defined as deformation of structure

(A) Due to increase in load

(B) Under sustained load

(C) Under acute shocks

(D) All of the above

Correct Answer: (B) Under sustained load

Solution:

Creep in concrete refers to the gradual deformation of concrete under sustained loads. It is a time-dependent strain that occurs when concrete is subjected to a constant load over an extended period.

Unlike immediate deformations from acute shocks or loads, creep occurs slowly and typically results in a permanent change in the shape of the concrete structure. This is important to consider when designing concrete structures that are subjected to long-term loads.

Creep can be mitigated by using high-quality concrete, proper reinforcement, and considering environmental factors during design.

Quick Tip

Creep is the long-term deformation of concrete under sustained load and must be accounted for in structural design.

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89. Neighbourhood unit concept was crystallized by

(A) John F C Turner

(B) C A Perry

(C) Doxiadis

(D) William Drummond

Correct Answer: (B) C A Perry

Solution:

The concept of the ”Neighbourhood Unit” was developed by Clarence Arthur Perry in the 1920s. This concept aimed to design urban neighborhoods that are self-contained, with easy access to essential services such as schools, parks, and shops.

The Neighbourhood Unit concept emphasizes the idea of designing communities where most needs can be met within walking distance, promoting a sense of community and reducing reliance on cars.

The concept has been influential in urban planning, particularly in the development of suburban areas and planned communities.

Quick Tip

Clarence A. Perry’s Neighbourhood Unit concept aimed to create self-sufficient, pedestrian-friendly communities with access to essential services.

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90. The Radburn planning in New Jersey constituted of

(A) Small walkable blocks

(B) Hierarchical transportation systems

(C) Parks as backbone

(D) All of the above

Correct Answer: (D) All of the above

Solution:

Radburn planning, developed in New Jersey in the 1920s by Clarence Stein and Henry Wright, is a comprehensive urban planning concept that includes a variety of features designed to improve the quality of urban living.

This planning model includes small, walkable blocks to encourage pedestrian movement, hierarchical transportation systems to facilitate efficient travel between areas, and parks as a backbone to provide green spaces and recreational areas for residents.
The Radburn plan emphasizes the integration of nature with urban spaces, making all the listed features essential components of the design.

Quick Tip

Radburn planning integrates walkable blocks, parks, and efficient transportation systems to create well-organized, livable urban spaces.

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91. What is the aim of the National Slum Development Programme?

(A) Improve physical amenities like water supply and drainage in non-notified slums
(B) Improve community infrastructure such as Schools and Community Centers in notified slums
(C) Upgrade housing in non-notified slums
(D) All of the above

Correct Answer: (D) All of the above

Solution:

The National Slum Development Programme (NSDP) is a government initiative aimed at improving the living conditions in slums across India.
The NSDP focuses on enhancing the physical amenities, such as water supply, drainage, and sanitation in both notified and non-notified slums. It also works on upgrading the housing quality, improving community infrastructure like schools and community centers, and ensuring better living standards for slum dwellers.
Thus, all the options listed are key aspects of the NSDP, making (D) the correct answer.

Quick Tip

The NSDP aims to improve both physical amenities and community infrastructure to enhance the quality of life in slum areas.

92. The building sector accounts for ———— of global energy consumption

(A) 30 — 40 (B) 10 — 15 (C) 50 — 60 (D) 20 — 25

Correct Answer: (A) 30 — 40

Solution:

The building sector plays a significant role in global energy consumption, accounting for approximately 30-40

The building sector's energy consumption is driven by factors such as building materials, energy-efficient technologies, and the operational demands of buildings. Efforts to reduce energy consumption in buildings can help lower global energy use and contribute to sustainability.

Other sectors like transportation and industrial processes also contribute to global energy consumption, but the building sector remains one of the largest contributors.

Quick Tip

The building sector accounts for a substantial portion of global energy use, highlighting the importance of energy-efficient building designs.

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93. What is the core focus of Urban Housing and Habitat Policy 2007?

(A) Increased supply of service land

(B) Regional planning approach

(C) Affordable housing for all

(D) Slum redevelopment

Correct Answer: (C) Affordable housing for all

Solution:

The Urban Housing and Habitat Policy 2007 primarily focuses on providing affordable housing for all citizens, especially low-income groups and those living in slums or inadequate housing.

This policy aims to address the growing demand for housing in urban areas by promoting inclusive and sustainable urban development practices. It stresses the importance of creating affordable and accessible housing solutions for everyone.

While regional planning and slum redevelopment are important, the core focus of this policy is on ensuring that affordable housing is available for all, which is essential for promoting urban growth and reducing housing inequality.

Quick Tip

The Urban Housing and Habitat Policy 2007 prioritizes affordable housing as a key aspect of urban development and social equity.

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94. What is the name of the housing unit constructed under Pradhan Mantri Gramin Awas Yojana?

(A) Female of the household

(B) Male of the household

(C) Village administrative officer

(D) Community head

Correct Answer: (A) Female of the household

Solution:

Under the Pradhan Mantri Gramin Awas Yojana (PMAY), the focus is on providing affordable housing to the rural population, with a particular emphasis on empowering women.

As per the scheme's guidelines, the house constructed under PMAY is usually in the name of the female member of the household. This initiative aims to empower women by giving them ownership of property and ensuring better living conditions in rural areas.

The PMAY aims to achieve housing for all by the year 2022, and the focus on female ownership is one of the key features of the scheme.

Quick Tip

Under PMAY, housing units are typically constructed in the name of the female member of the household to promote women's empowerment.

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95. Prefabrication production was pioneered in India by

(A) Tata housing

(B) DTH manufacturing

(C) Hindustan Housing Factory

(D) Pressmach

Correct Answer: (C) Hindustan Housing Factory

Solution:

Hindustan Housing Factory (HHF) was the pioneer of prefabrication production in India. Established in the early 1950s, it aimed to address the growing housing needs in urban areas through prefabricated construction methods.

Prefabrication production involves the manufacture of building components in a factory setting, which are then transported and assembled on-site. This approach helps reduce construction time and costs while improving quality control.

Tata Housing, DTH manufacturing, and Pressmach are significant players in their respective industries but were not the pioneers in prefabrication in India.

Quick Tip

Hindustan Housing Factory played a key role in the development and implementation of prefabricated construction methods in India.

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96. Tax incremental financing in Hyderabad model is to pay for

(A) Urban Infrastructure such as Storm water drains, parks and roads

(B) Education

(C) Land

(D) Institutions

Correct Answer: (A) Urban Infrastructure such as Storm water drains, parks and roads

Solution:

Tax Incremental Financing (TIF) is a financing method used to fund infrastructure development. In the Hyderabad model, it is primarily used for urban infrastructure projects, such as storm water drains, roads, and parks, by leveraging the future increase in property taxes generated by these infrastructure improvements.

The future property tax revenue resulting from the enhanced infrastructure is used to repay the investment made in the development of these facilities. This approach helps to raise funds without relying on immediate government budgets.

TIF is not typically used for funding education, land acquisition, or institutions, making option (A) the correct answer.

Quick Tip

Tax Incremental Financing is an effective way to fund urban infrastructure improvements by using the future increase in tax revenue generated by those improvements.

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97. Missing middle in housing describes

(A) Highrise housing

(B) Duplexes, town houses and small apartments

(C) Social, affordable housing

(D) Eco, sustainable housing

Correct Answer: (B) Duplexes, town houses and small apartments

Solution:

The ”missing middle” in housing refers to the gap in the housing market between high-rise apartment buildings and single-family detached homes. It focuses on providing medium-density housing options such as duplexes, townhouses, and small apartments.

This type of housing offers an affordable and sustainable alternative that can accommodate a larger portion of the population without requiring large land areas, addressing the needs of growing urban populations.

The missing middle is not specifically about high-rise housing, social housing, or eco-sustainable housing, although these types of housing can overlap with this concept.

Quick Tip

The missing middle housing concept fills the gap between high-rise apartments and single-family homes by providing medium-density options like townhouses and small apartments.

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98. Which of the following is organically developed?

(A) Old Delhi

(B) New Delhi

(C) Dwaraka sub-city

(D) Chandigarh

Correct Answer: (A) Old Delhi

Solution:

Old Delhi, with its narrow, winding streets, bustling markets, and historical urban fabric, developed organically over centuries. It was not designed according to any modern urban planning principles but evolved over time based on social and economic needs.

In contrast, New Delhi, Dwaraka sub-city, and Chandigarh were all planned cities, developed with the help of urban planners and architects, with defined layouts, infrastructure, and zoning systems.

Organic development refers to cities that grow and evolve over time without a formal planning structure, and Old Delhi is a prime example of this.

Quick Tip

Old Delhi is an organically developed area, characterized by its historical urban fabric and lack of modern planning features.

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99. Which of the following constitutes landslides due to geologic factors?

(A) Weak strength of material below ground surface

(B) Excavation of slope for construction

(C) Cutting/filling done near stream

(D) All of the above

Correct Answer: (A) Weak strength of material below ground surface

Solution:

Landslides caused by geologic factors typically result from the weak strength of materials beneath the surface, such as loose soil, clay, or unstable rock formations. This reduces the stability of the slope, causing it to fail and result in a landslide.

While excavation of slopes and cutting/filling near streams can trigger landslides, these factors are typically considered human activities or environmental disturbances rather than geologic causes.

Geologic factors related to landslides are primarily driven by the characteristics of the earth's materials, such as weak or loose soil layers.

Quick Tip

Weak materials beneath the surface are the primary geologic cause of landslides, leading to slope instability.

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100. To withstand flooding, shelters and settlement should be

(A) Sited above flood level

(B) Sited in low lying areas

(C) Of rectangular configuration

(D) Built on uncompacted ground

Correct Answer: (A) Sited above flood level

Solution:

To withstand flooding, shelters and settlements should be sited above the expected flood level. This ensures that the structures remain safe during flood events, preventing water from entering and causing damage.

Siting in low-lying areas or on uncompacted ground increases the risk of flooding and instability. Rectangular configurations may be useful for design, but the elevation above flood level is the most crucial factor.

Flood-resistant construction and proper site selection are key to minimizing the impacts of flooding on residential areas.

Quick Tip

To protect against flooding, buildings should be sited above the flood level to ensure safety and minimize water damage.
