CUET PG 2024 Architecture and Planning Question Paper with Solutions

Time Allowed :1 hour 45 minutes	**Maximum Marks :**300	**Total questions :**75

General Instructions

Read the following instructions very carefully and strictly follow them:

(i) This question paper comprises 75 questions. All questions are compulsory.

(ii) Each question carries 04 (four) marks.

(iii) For each correct response, candidate will get 04 (four) marks.

(iv) For each incorrect response, 01 (one) mark will be deducted from the total score.

(v) Un-answered/un-attempted response will be given no marks.

(vi) To answer a question, the candidate needs to choose one option as correct option.

(vii) However, after the process of Challenges of the Answer Key, in case there are multiple correct options or change in key, only those candidates who have attempted it correctly as per the revised Final Answer Key will be awarded marks.

(viii) In case a Question is dropped due to some technical error, full marks shall be given to all the candidates irrespective of the fact who have attempted it or not

1. The regular pentagon's interior angle is _____ degrees.

(1) 82

(2) 108

(3) 120

(4) 160

Correct Answer: (2) 108

Solution:

To calculate the interior angle of a regular polygon, we use the following formula:

$$\text{Interior Angle} = \frac{(n-2) \times 180^\circ}{n}$$

where n is the number of sides. For a pentagon, $n = 5$:

$$\text{Interior Angle} = \frac{(5-2) \times 180^\circ}{5} = \frac{3 \times 180^\circ}{5} = 108^\circ$$

Thus, the interior angle of a regular pentagon is 108 degrees.

Quick Tip

For a regular polygon, the interior angle depends on the number of sides. Use the formula to calculate it.

---

2. This type of solid has two bases that are parallel equal polygons.

(1) Cone

(2) Torus

(3) Prism

(4) Pyramid

Correct Answer: (3) Prism

Solution:

A prism is a 3D solid that has two parallel bases, each of which is a polygon. The sides of the prism are parallelograms connecting corresponding sides of the two bases. This means that in a prism, the bases are congruent and parallel, while the lateral faces are parallelograms, typically rectangles. The defining feature of a prism is that its cross-section is the same throughout the length of the solid.

For example, a rectangular prism has two rectangular bases, and a triangular prism has two triangular bases.

Quick Tip

A prism always has two identical, parallel polygonal bases. The other faces are parallelograms.

---

3. Nakagin Capsule Tower by Kisho Kurokawa, comes under which type of form composition?

(1) Grid Form

(2) Linear Form

(3) Radial Form

(4) Circular Form

Correct Answer: (1) Grid Form

Solution:

The Nakagin Capsule Tower, designed by Kisho Kurokawa, is an iconic example of modular architecture. It is composed of individual capsules arranged in a grid pattern, where each capsule is a self-contained unit. These capsules are connected to a central core in a grid form, which allows for easy assembly, disassembly, and reconfiguration of the units. This design reflects the principles of modularity and flexibility, typical of the Metabolism movement in architecture.

The ”grid form” composition refers to the arrangement of elements in a regular, structured, and aligned manner, which is evident in the Nakagin Capsule Tower’s layout.

Quick Tip

Grid form compositions are often seen in modular architecture, where components are arranged in a structured pattern.

---

4. Shortcut key for Multileader in AutoCAD 2023 is

(1) MLN

(2) ML

(3) MULTI

(4) MLEADER

Correct Answer: (4) MLEADER

Solution:

In AutoCAD, the shortcut key for activating the Multileader tool is ”MLEADER.” This tool is used to add multiple leader lines to a drawing, and it simplifies the process of annotating your drawings with reference information. By typing ”MLEADER” in the command line or using the shortcut key, you can quickly insert and customize multiple leader lines attached to text or symbols, improving the clarity and readability of technical drawings.

The Multileader tool allows for more efficient annotation in AutoCAD, especially when multiple references or notes are needed.

Quick Tip

For quick access, you can always customize shortcut keys in AutoCAD to suit your workflow.

---

5. Which of the following is ’Golden Mean Ratio’?

(1) 1.50:1

(2) 1:1.618

(3) 1.618:1

(4) 1.148:1

Correct Answer: (3) 1.618:1

Solution:

The Golden Mean Ratio, also known as the Golden Ratio, is a mathematical constant approximately equal to $1.618 : 1$. It is often denoted by the Greek letter ϕ (phi). The ratio is derived from the quadratic equation:

$$\phi = \frac{1 + \sqrt{5}}{2} \approx 1.61803398875$$

Among the given options:

- (1) $1.50 : 1$ is not the Golden Ratio.
- (2) $1 : 1.618$ is the inverse of the Golden Ratio.
- (3) $1.618 : 1$ is the correct Golden Ratio.
- (4) $1.148 : 1$ is not the Golden Ratio.

$\boxed{(3)\ 1.618 : 1}$

Quick Tip

The Golden Ratio is widely used in design, as it creates harmonious proportions that are visually appealing.

---

6. Match List I with List II

LIST I		**LIST II**	
(Architectural styles)		**(components/characteristics)**	
A.	Egyptian	I.	New bonding materials
B.	Greek	II.	Building skeleton and skin
C.	Roman	III.	Trabeation
D.	Gothic	IV.	Optical corrections

Choose the correct answer from the options given below:

(1) (A) - (II), (B) - (I), (C) - (III), (D) - (IV)

(2) (A) - (III), (B) - (IV), (C) - (I), (D) - (II)

(3) (A) - (I), (B) - (II), (C) - (III), (D) - (IV)

(4) (A) - (IV), (B) - (II), (C) - (I), (D) - (III)

Correct Answer: (2) (A) - (III), (B) - (IV), (C) - (I), (D) - (II)

Solution:

A. Egyptian architecture is known for its trabeation (post and lintel system).

B. Greek architecture is known for its optical corrections (like entasis).

C. Roman architecture is known for its new bonding materials (like concrete).

D. Gothic architecture is known for its building skeleton and skin (ribbed vaults and flying buttresses).

Therefore, the correct match is: A - III B - IV C - I D - II

Quick Tip

Understanding the key characteristics of each architectural style helps in matching them correctly.

---

7. Which of the following civilization comes under Indus Valley Civilization?

(A) Aryan civilization

(B) Harappan civilization

(C) Vedic civilization

(D) Mohenjo-daro civilization

Choose the correct answer from the options given below:

(1) (A) and (B) only

(2) (A), (B) and (D) only

(3) (B) and (D) only

(4) (B), (C) and (D) only

Correct Answer: (3) (B) and (D) only

Solution:

The Harappan civilization (also known as the Indus Valley Civilization) includes the ancient cities of Harappa and Mohenjo-daro. The Aryan civilization and the Vedic civilization emerged later and are not part of the Indus Valley Civilization.

Thus, the correct answer is (B) and (D) only: Harappan civilization and Mohenjo-daro civilization.

Quick Tip

The Indus Valley Civilization, also called the Harappan Civilization, includes cities such as Mohenjo-daro, Harappa, and others.

---

8. The finest illustration of the fusion of Dravidian and Indo-Aryan style elements in a temple can be seen in

(1) Madurai

(2) Konark

(3) Dilwara

(4) Hoysaleshwar

Correct Answer: (4) Hoysaleshwar

Solution:

To answer this question, we need to consider the architectural styles associated with each location:

Madurai: Known for the Meenakshi Amman Temple, which is a prime example of Dravidian architecture.

Konark: Famous for the Sun Temple, which is a significant example of Kalinga architecture, a sub-style of Indo-Aryan architecture.

Dilwara: Renowned for the Dilwara Temples, which are Jain temples and are prominent examples of the Māru-Gurjara style, a style associated with Western Indian architecture.

Hoysaleshwar: Famous for the Hoysaleswara Temple in Halebidu, which is a prominent example of Hoysala architecture, a distinct style that represents a fusion of Dravidian and Indo-Aryan elements.

Hoysala architecture is specifically known for its fusion of Dravidian and Indo-Aryan styles. This is evident in the intricate carvings, the star-shaped ground plans (a Dravidian influence), and the overall decorative style (influenced by Indo-Aryan).

Thus, the correct answer is (4) Hoysaleshwar

.

Quick Tip

The Meenakshi Temple in Madurai is a prime example of the blend between Dravidian and Indo-Aryan architectural styles.

---

9. The principles of Universal Design include:

(A) Flexibility in use

(B) Low physical efforts

(C) Energy efficiency

(D) Tolerance for error

Choose the correct answer from the options given below:

(1) (A), (B) and (D) only

(2) (A), (C) and (D) only

(3) (A), (B), (C) and (D)

(4) (B), (C) and (D) only

Correct Answer: (1) (A), (B) and (D) only

Solution:

Universal Design principles focus on creating environments and products that are accessible and usable by all people, regardless of their abilities or age. The main principles include:

Flexibility in use: Accommodates a wide range of preferences and abilities.

Low physical efforts: Minimizes the physical effort required to use it.

Tolerance for error: Minimizes hazards and the negative consequences of accidental actions.

Energy efficiency, while important in design, is not a core principle of Universal Design.

Thus, the correct answer is (A), (B) and (D) only.

Quick Tip

Universal Design principles ensure accessibility and usability for all individuals, including those with disabilities.

---

10. The plan period taken into account in a ”Perspective plan” is determined by the Urban and Regional Development Plan Formulation and Implementation (URDPFI) standards:

(1) 8 - 10 years

(2) 11 - 15 years

(3) 20 - 30 years

(4) 10 - 15 years

Correct Answer: (3) 20 - 30 years

Solution:

A ”Perspective plan” is a long-term planning tool that guides the development of urban and

regional areas over an extended period. According to the URDPFI standards, the plan period for a Perspective plan is generally 20 - 30 years. This extended time frame allows for the consideration of future population growth, economic development, and infrastructure needs. Thus, the correct answer is 20 - 30 years (Option 3).

Quick Tip

Perspective plans are designed to guide long-term development and are typically set for 20 to 30 years to ensure that future needs are met.

---

11. Which of the following Principle of Design is used to bring attention to a particular space/object?

(1) Rhythm

(2) Emphasis

(3) Harmony

(4) Balance

Correct Answer: (2) Emphasis

Solution:

Emphasis is the principle of design used to draw attention to a specific area or object within a design. It is often achieved through contrast, color, scale, and placement. By creating focal points, designers can lead the viewer's eye toward the most important elements of the design. For example, a bright color or a unique shape can create emphasis in a space. This principle is crucial in both architecture and interior design to highlight particular features.

Quick Tip

Use emphasis in design to guide the viewer's attention to the most important areas of a space or object.

---

12. Determine the optimum design criteria for buildings in Arid and Hot climates.

(A) Low ceiling

(B) Small openings

(C) High building density

(D) Thick walls

Choose the correct answer from the options given below:

(1) (A), (C) and (D) only.

(2) (A), (B) and (D) only.

(3) (A), (B), (C) and (D).

(4) (B), (C) and (D) only.

Correct Answer: (2) (A), (B) and (D) only.

Solution:

In arid and hot climates, the primary goal of building design is to minimize heat gain and maximize cooling.

(A) Low ceilings have some advantages but can hinder natural ventilation, which is important in hot and arid climates.

(B) Small openings minimize direct solar radiation and heat gain.

(C) High building density, when planned appropriately, provides shading and reduces overall exposure to sunlight.

(D) Thick walls provide thermal mass, slowing down heat transfer into the building during the day.

Considering the importance of ventilation and the more consistent acceptance of the other criteria, the most accurate answer is (B), (C), and (D).

Correct Answer: (4) (B), (C) and (D) only.

Quick Tip

In arid climates, buildings should minimize direct sunlight and heat exposure through insulation and ventilation strategies.

---

13. Which of these does not constitute a significant greenhouse gas?

(1) Water Vapour

(2) Calcium carbonate

(3) Methane

(4) Carbon dioxide

Correct Answer: (2) Calcium carbonate

Solution:

Water vapor, methane, and carbon dioxide are all significant greenhouse gases because they trap heat in the Earth's atmosphere. Calcium carbonate, however, is not a greenhouse gas. It is a compound commonly found in limestone and marble, and it does not contribute to the greenhouse effect. Water vapor is a natural greenhouse gas, while methane and carbon dioxide are major contributors to global warming.

Quick Tip

Greenhouse gases trap heat in the Earth's atmosphere, and include water vapor, methane, and carbon dioxide.

---

14. Trickling filter is used for

(1) Treatment of drinking water

(2) Treatment of wastewater

(3) Oxidation of water

(4) Air conditioning plant

Correct Answer: (2) Treatment of wastewater

Solution:

A trickling filter is a method used in wastewater treatment. It is a biological filtration process in which wastewater flows over a bed of microorganisms, typically consisting of a medium such as rocks or plastic. These microorganisms break down organic matter in the wastewater, effectively treating it. This process is an efficient and widely used method in municipal water treatment plants to reduce pollutants.

Quick Tip

Trickling filters use biological processes to treat wastewater by breaking down organic matter with the help of microorganisms.

---

15. The sun protection system outside a building facade in front of apertures that consists of permanent slats or grids is called:

(1) Solarium

(2) Solar Panel

(3) Trombe wall

(4) Brise-soleil

Correct Answer: (4) Brise-soleil

Solution:

A Brise-soleil is an architectural element that provides shade to windows or openings in buildings. It consists of a set of fixed or adjustable slats or grids that block direct sunlight while allowing natural light to penetrate. This design helps in controlling the internal temperature by reducing the amount of heat gain from the sun. The Brise-soleil is often used as a passive solar design strategy to improve energy efficiency and occupant comfort in buildings.

Quick Tip

A Brise-soleil is an effective sun shading system used to reduce solar heat gain while allowing daylight to enter the building.

---

16. What is ”Agenda 21”?

(1) It maintains a dynamic balance of water resources by reducing water consumption for every unit of gross development product growth and agricultural value added.

(2) Agenda 21 is a non-binding, voluntarily implemented action plan of the United Nations with regard to sustainable development.

(3) It is a free trade agreement between 7 developed countries of the world.

(4) It is an agreement between 20 developing countries of the world on climate change.

Correct Answer: (2) Agenda 21 is a non-binding, voluntarily implemented action plan of the United Nations with regard to sustainable development.

Solution:

Agenda 21 is a comprehensive plan of action to be taken globally, nationally and locally by

organizations of the United Nations System, Governments, and Major Groups in every area in which human impacts on the environment. It was adopted by more than 178 Governments at the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro, Brazil, from 3 to 14 June 1992.

Quick Tip

Agenda 21 is a broad-based, non-binding plan focused on global sustainable development.

---

17. Match List I with List II

LIST I (Characteristic)		LIST II (Climate Elements)	
A.	High humidity accelerates rusting and rotting.	I.	Composite or Monsoon
B.	High day time temperature and rapid cooling	II.	Hot dry desert at night causes crack to materials
C.	Seasonal change in relative humidity cause	III.	Hot dry maritime
		IV.	Tropical upland rapid weakening of building material
		V.	Warm humid

Choose the correct answer from the options given below:

(1) (A)-(IV), (B)-(III), (C)-(V)

(2) (A)-(V), (B)-(II), (C)-(I)

(3) (A)-(IV), (B)-(V), (C)-(III)

(4) (A)-(IV), (B)-(I), (C)-(II)

Correct Answer: (3) (A)-(IV), (B)-(V), (C)-(III)

Solution:

Let's analyze each characteristic and match it with the appropriate climate element:

A. High humidity accelerates rusting and rotting. This is a characteristic of a **warm humid** climate (V).

B. High day time temperature and rapid cooling at night causes crack to materials. This is a hallmark of a **hot dry desert** climate (II).

C. Seasonal change in relative humidity causes rapid weakening of building material. This aligns with the **composite of monsoon** climate (I), where there are significant seasonal

variations in humidity.

Therefore, the correct matching is:

A - V B - II C - I

Correct Answer: (2) (A)-(V), (B)-(II), (C)-(I)

Quick Tip

In matching questions, carefully analyze the characteristics and link them with the corresponding climate elements based on known environmental factors.

---

18. Transportation, Land use, and Road network plans are

(1) Not linked

(2) Intra linked

(3) Inter linked

(4) Depends on the area and road network

Correct Answer: (3) Inter linked

Solution:

Transportation, land use, and road network plans are interconnected and interlinked because changes or developments in one plan often affect the others. For example, better transportation networks can influence land use, and land development can require adjustments to road networks.

Thus, the correct answer is ”Inter linked” (Option 3).

Quick Tip

Successful urban planning requires integrating transportation, land use, and road network plans to ensure efficient and sustainable development.

---

19. Which of the following design elements is provided to ensure the safety of vehicles traveling on a road at a specified design speed along the curved segment of a highway?

(1) Shoulder

(2) Median

(3) Footpath

(4) Super-elevation

Correct Answer: (4) Super-elevation

Solution:

Super-elevation is the banking of the roadway at curves to counteract the centrifugal force acting on vehicles, thereby allowing them to maintain a safe speed while navigating curves. This design feature ensures vehicle safety by reducing the likelihood of accidents caused by skidding.

Thus, the correct answer is ”Super-elevation” (Option 4).

Quick Tip

Super-elevation is an important highway design element to ensure vehicle stability when moving at higher speeds around curves.

---

20. Vogel’s approximation method is connected with

(1) CPM

(2) PERT

(3) Transportation problem

(4) Inventory problem

Correct Answer: (3) Transportation problem

Solution:

Vogel’s Approximation Method (VAM) is used in the transportation problem to find an initial feasible solution. It is a heuristic method that provides a good solution by minimizing the total transportation cost. VAM is not used in CPM, PERT, or inventory problems.

Thus, the correct answer is ”Transportation problem” (Option 3).

Quick Tip

Vogel’s Approximation Method is a common technique used in solving transportation problems to find an initial feasible solution efficiently.

---

21. The correct sequence in the four stage model used for transportation planning is:

(A) Trip Assignment

(B) Modal Split

(C) Trip Generation

(D) Trip Distribution

Choose the correct answer from the options given below:

(1) (A), (B), (C), (D).

(2) (C), (D), (B), (A).

(3) (D), (A), (B), (C).

(4) (C), (B), (D), (A).

Correct Answer: (4) (C), (B), (D), (A).

Solution:

The correct sequence of the four-stage transportation planning model is:

1. Trip Generation (C): This is the first stage, where the number of trips originating from or destined for each zone is estimated.

2. Modal Split (B): The second stage determines the proportion of trips made by different modes of transport.

3. Trip Distribution (D): In this stage, the trips are distributed to specific destinations based on travel demand.

4. Trip Assignment (A): The final stage assigns the trips to the transportation network, determining the specific routes.

Quick Tip

The four-stage transportation model is a widely used method for forecasting travel demand and planning transport systems.

---

22. A compact, pedestrian-oriented development with a mixed use of users, traditions and streets, convenient services, and well-defined public spaces in an urban area is

(1) TOD (Transit Oriented Development)

(2) PUD (Planned Unit Development)

(3) TND (Traditional Neighborhood Development)

(4) URP (Urban Regional Planning)

Correct Answer: (3) TND (Traditional Neighborhood Development)

Solution:

Traditional Neighborhood Development (TND) is a planning model that emphasizes walkable, mixed-use communities with a variety of housing types and easy access to services. It focuses on creating a human-scale environment with clear streets, public spaces, and diverse residential and commercial areas. TND aims to foster a sense of community and reduce dependence on cars by promoting walking and cycling.

Quick Tip

TND aims to combine modern convenience with traditional neighborhood planning to create a livable and sustainable urban environment.

---

23. The NHDP are being undertaken by private companies on the basis of

(1) Profit

(2) BOT

(3) Revenue

(4) Commission Basis

Correct Answer: (2) BOT

Solution:

The National Highways Development Project (NHDP) in India is being executed under the Build-Operate-Transfer (BOT) model. Under this model, private companies are given the responsibility to build, operate, and maintain highways for a specific period, after which the project is transferred back to the government. This helps in mobilizing private investment while improving the road infrastructure.

Quick Tip

The BOT model is commonly used in infrastructure projects to ensure quality construction and maintenance with private sector involvement.

24. Which is divided into two typologies: Coarse and Fine

(1) Urban Form

(2) Urban Grain

(3) Urban Pattern

(4) Urban Fabric

Correct Answer: (2) Urban Grain

Solution:

Urban grain refers to the texture or density of the urban fabric. It is categorized into two types: coarse grain and fine grain. Coarse grain refers to large blocks of development with less density and more open spaces, while fine grain involves smaller, denser development, often with smaller streets and closer buildings. The grain of an urban area influences its walkability, density, and overall character.

Quick Tip

Urban grain is a key factor in determining the level of pedestrian activity and the overall urban experience.

---

25. Match List I with List II

LIST I (Book)		LIST II (Author)	
A.	The image of city	I.	Gorden Cullen
B.	The concise townscape	II.	Aldo Rossi
C.	The Architecture of the city	III.	William Whyte
D.	The last landscape	IV.	Kevin Lynch

Choose the correct answer from the options given below:

(1) (A) - (IV), (B) - (I), (C) - (II), (D) - (III)

(2) (A) - (II), (B) - (I), (C) - (III), (D) - (IV)

(3) (A) - (I), (B) - (III), (C) - (IV), (D) - (II)

(4) (A) - (III), (B) - (IV), (C) - (I), (D) - (II)

Correct Answer: (1) (A) - (IV), (B) - (I), (C) - (II), (D) - (III)

Solution:

A. The Image of the City is written by Kevin Lynch.

B. The Concise Townscape is written by Gorden Cullen.

C. The Architecture of the City is written by Aldo Rossi.

D. The Last Landscape is written by William Whyte.

Therefore, the correct match is:

A - IV

B - I

C - II

D - III

Quick Tip

Remembering key works of influential urban theorists and authors can help in matching book titles with their authors.

---

26. Which of the following is not a principle of architecture of Le Corbusier:

(1) Open planning

(2) Small windows

(3) Pilotis

(4) Terrace garden

Correct Answer: (2) Small windows

Solution:

Le Corbusier, a pioneering architect of the modern movement, emphasized principles such as open planning, pilotis (supports that elevate buildings), and the use of flat roofs that could be utilized as terrace gardens. The idea of ”small windows” is contrary to Le Corbusier’s philosophy. He advocated for large windows to allow for ample natural light and ventilation, which was a departure from traditional architecture’s small, closed windows.

Quick Tip

Le Corbusier's principles focus on creating functional, open, and airy spaces, rejecting traditional styles with closed-off rooms and small windows.

---

27. The original concept for Radburn was based on which city planning concept?

(1) Sector Planning

(2) Garden City Planning

(3) Satellite City Planning

(4) Neighbourhood Planning

Correct Answer: (4) Neighbourhood Planning

Solution:

The Radburn concept is based on the idea of neighbourhood planning. It emphasizes the separation of pedestrian and vehicular traffic, where pedestrian paths are placed away from roads and the neighbourhood is designed to encourage a sense of community. The layout was adopted by Radburn, New Jersey, as a model for creating residential neighbourhoods.

Thus, the correct answer is "Neighbourhood Planning" (Option 4).

Quick Tip

Radburn's neighbourhood planning concept focuses on separating pedestrians and vehicles for better safety and community building.

---

28. Development Authorities in India are established under the provision of:

(1) 73rd Constitutional Amendment Act

(2) Municipal Act

(3) Land Acquisition Act

(4) Town and Country Planning Act

Correct Answer: (4) Town and Country Planning Act

Solution:

Development Authorities in India are created under the Town and Country Planning Act,

which enables them to plan and oversee urban development activities, zoning regulations, and land use planning in cities and towns.

Thus, the correct answer is ”Town and Country Planning Act” (Option 4).

Quick Tip

Development Authorities in India function under the Town and Country Planning Act to manage urban development and land use planning.

---

29. The Medieval towns were surrounded by a moat and walls made of:

(1) Clay or Brick

(2) Stone or Clay

(3) Brick or Lime

(4) Stone or Brick

Correct Answer: (4) Stone or Brick

Solution:

Medieval towns were typically surrounded by fortified walls made of stone or brick. These walls, sometimes accompanied by a moat, were designed to protect the town from invaders and to control access.

Thus, the correct answer is ”Stone or Brick” (Option 4).

Quick Tip

Fortified medieval towns were protected by strong walls made of stone or brick, often with a surrounding moat for additional defense.

---

30. Match List I with List II

LIST I (Garden)		LIST II (Features)	
A.	Mughal Garden	I.	Moss, manicured trees, rocks and water
B.	Italian Garden	II.	Cycle tracks, meandering walkways and benches
C.	Japanese Garden	III.	Sculptures of pretty nymphs, angels and fountains
D.	City Forest	IV.	Geometric floral patterns, flowing water and stone shelters

Choose the correct answer from the options given below:

(1) (A)-(I), (B)-(IV), (C)-(III), (D)-(II)

(2) (A)-(III), (B)-(II), (C)-(IV), (D)-(I)

(3) (A)-(IV), (B)-(III), (C)-(I), (D)-(II)

(4) (A)-(II), (B)-(III), (C)-(IV), (D)-(I)

Correct Answer: (1) (A)-(I), (B)-(IV), (C)-(III), (D)-(II)

Solution:

A. Mughal Garden corresponds to I. Moss, manicured trees, rocks, and water. Mughal gardens were known for their symmetry, geometric patterns, and use of water features and manicured plants.

B. Italian Garden corresponds to IV. Geometric floral patterns, flowing water, and stone shelters. Italian gardens are famous for their geometric layouts, intricate floral designs, and fountains.

C. Japanese Garden corresponds to III. Sculptures of pretty nymphs, angels, and fountains. Japanese gardens typically feature peaceful scenery, sculptures, and water features, creating harmony.

D. City Forest corresponds to II. Cycle tracks, meandering walkways, and benches. City forests are designed for relaxation and recreation, with cycling paths and walkways.

Thus, the correct match is (A)-(I), (B)-(IV), (C)-(III), (D)-(II).

Quick Tip

Matching gardens with their features requires understanding the distinctive design elements like symmetry, water, and plants associated with each garden style.

---

31. The city's shape is recognized as having developed into a large circle with intense development radiating outward from the centre is:

(1) Ring

(2) Radial Concentric

(3) Curvilinear

(4) Constellation

Correct Answer: (2) Radial Concentric

Solution:

A city that develops with a large central area and intense development radiating outward from the center is typically referred to as having a ”Radial Concentric” pattern. This pattern involves multiple concentric rings of development, where the city grows outward from a central core, often seen in cities with historical urban planning or based on transport systems. The radial form focuses on the central hub and expands concentrically with development radiating outward.

Quick Tip

The radial concentric urban form is often seen in cities with a strong central core, typically influenced by historical or transport-based planning.

---

32. Match List I with List II

LIST I (Five year plans)		LIST II (Features)	
A.	First Five year plan	I.	Introduction of JNNURM
B.	Fourth five year plan	II.	Formation of HUDCO
C.	Seventh five year plan	III.	Establishment of TCPO
D.	Tenth five year plan	IV.	Announcement of National Housing Policy

Choose the correct answer from the options given below:

(1) (A) - (II), (B) - (III), (C) - (I), (D) - (IV)

(2) (A) - (III), (B) - (II), (C) - (IV), (D) - (I)

(3) (A) - (I), (B) - (II), (C) - (IV), (D) - (III)

(4) (A) - (III), (B) - (IV), (C) - (I), (D) - (II)

Correct Answer: (2) (A) - (III), (B) - (II), (C) - (IV), (D) - (I)

Solution:

The First Five Year Plan (A) is related to the Establishment of TCPO (III), which was focused on developing the Town and Country Planning Organization.

The Fourth Five Year Plan (B) dealt with the Formation of HUDCO (II), which aimed at housing development and urban infrastructure.

The Seventh Five Year Plan (C) was responsible for the Announcement of National Housing Policy (IV), which aimed to provide affordable housing.

The Tenth Five Year Plan (D) led to the Introduction of JNNURM (I), a major urban renewal program.

Quick Tip

Each five-year plan in India focuses on specific infrastructure or urban development goals, such as housing and urban renewal.

---

33. Find the correct order for Planned Housing?

(A) People

(B) Service

(C) House

(D) Land

Choose the correct answer from the options given below:

(1) (D), (B), (C), (A).

(2) (B), (C), (A), (D).

(3) (B), (A), (D), (C).

(4) (C), (B), (D), (A).

Correct Answer: (1) (D), (B), (C), (A).

Solution:

The correct sequence for planned housing is as follows:

Land (D) is the first requirement because before housing can be built, land must be available.

Service (B) follows, as the necessary infrastructure and services like water, electricity, roads, and sewage must be in place.

House (C) is the third step, where actual construction takes place.

Finally, People (A) move in once the land, services, and houses are ready.

Quick Tip

Planned housing requires a well-organized sequence of development, starting from land acquisition to providing housing and services for the residents.

---

34. Bangalore city is a

(1) Ecological city

(2) Garden city

(3) Satellite city

(4) Social city

Correct Answer: (2) Garden city

Solution:

Bangalore, often referred to as the ”Garden City” of India, is known for its green spaces, parks, and trees. This nickname reflects the city’s early urban planning that prioritized greenery and open spaces in its design. It was historically recognized for its pleasant climate, wide avenues, and large gardens, making it one of the most liveable cities in India.

Quick Tip

The Garden City concept emphasizes the integration of green spaces with urban development to enhance the quality of life for residents.

---

35. While constructing soundproof cavity walls, the cavity width should be at least

(1) 8 cm

(2) 10 cm

(3) 3 cm

(4) 5 cm

Correct Answer: (2) 10 cm

Solution:

For soundproof cavity walls, the cavity between the two layers of the wall must be wide enough to absorb and prevent sound transmission. The recommended minimum width for a cavity wall designed for soundproofing is 10 cm. This width allows for proper insulation and dampening of sound waves, thereby reducing the transmission of noise between spaces.

Quick Tip

A wider cavity allows for better sound insulation and noise reduction between spaces, enhancing the acoustic performance of the wall.

---

35. Which of the following is not a Passive heating technique?

(1) Evaporative Cooling

(2) Trombe wall

(3) Sun space

(4) Thermosiphon

Correct Answer: (1) Evaporative Cooling

Solution:

Evaporative cooling is a passive cooling technique, not a heating technique. Trombe walls, sun spaces, and thermosiphons are all methods used in passive solar heating.

Quick Tip

Remember the difference between heating and cooling techniques in passive design.

---

37. Which of the Indian green buildings listed below is Platinum LEED certified?

(1) UniTech Commercial Tower, Chandigarh

(2) Dabur India, Chandigarh

(3) Logix cyber park, U.P.

(4) Suzlon One Earth, Pune

Correct Answer: (4) Suzlon One Earth, Pune

Solution:

Suzlon One Earth, located in Pune, is one of the first Platinum LEED certified green buildings in India. It stands as an example of sustainable architecture with high environmental standards for energy conservation, water use, and waste management.

Thus, the correct answer is ”Suzlon One Earth, Pune” (Option 4).

Quick Tip

Platinum LEED certification is awarded to buildings that meet the highest environmental and energy standards.

---

38. The Clean Water Act (CWA) is associated with:

(1) Discharge of pollutants into the water of the United Kingdom.

(2) Discharge of pollutants into the water of India.

(3) Discharge of pollutants into the water of the United States.

(4) Discharge of pollutants into the water of Australia.

Correct Answer: (3) Discharge of pollutants into the water of the United States.

Solution:

The Clean Water Act (CWA) was enacted in the United States to regulate the discharge of pollutants into water bodies. It aims to ensure the quality of water by reducing pollution from industrial, agricultural, and municipal sources.

Thus, the correct answer is ”Discharge of pollutants into the water of the United States” (Option 3).

Quick Tip

The Clean Water Act is a landmark U.S. environmental law that protects surface waters from contamination.

---

39. What is the size of a rainwater pipe?

(1) 150 mm

(2) 75 mm

(3) 50 mm

(4) 30 mm

Correct Answer: (1) 150 mm

Solution:

Rainwater pipes are typically sized according to the expected rainfall and area to be drained. A common size for rainwater pipes is 150 mm in diameter, which is large enough to handle

typical stormwater runoff for residential and small commercial buildings.

Thus, the correct answer is ”150 mm” (Option 1).

Quick Tip

A 150 mm diameter is a standard size for rainwater pipes in most urban drainage systems.

---

40. This type of escalators are connected side by side or with some distance between them. These are usually at metro stations.

(1) Parallel Type

(2) Linear Type

(3) Criss-Cross Type

(4) Circular type

Correct Answer: (1) Parallel Type

Solution:

Parallel type escalators are often used in metro stations where multiple escalators are positioned side by side or with a small gap in between. This layout facilitates the movement of passengers in both directions efficiently.

Thus, the correct answer is ”Parallel Type” (Option 1).

Quick Tip

Parallel type escalators are widely used in public transportation hubs like metro stations to maximize space and traffic flow.

---

41. Which one of the following Trap is used for a water closet?

(1) Anti-siphon Trap

(2) Gully Trap

(3) P-Trap

(4) Intercepting Trap

Correct Answer: (3) P-Trap

Solution:

The P-Trap is commonly used in water closets (toilets) to prevent the entry of sewer gases into the building. It works by trapping water in the pipe, which forms a seal that blocks gases from coming back into the room. The design of the P-trap, which resembles the letter 'P', effectively prevents odors and harmful gases from escaping the sewage system.

Quick Tip

P-traps are essential in preventing sewer gas from entering living spaces in plumbing systems.

---

42. The unit of Thermal Conductivity of a material is:

(1) W/(m^2 K)

(2) W/(m K)

(3) mK/W

(4) m^2 K/W

Correct Answer: (2) W/(m K)

Solution:

Thermal conductivity (k) is a material property that measures the ability of a material to conduct heat. The correct unit for thermal conductivity is W/(m K), where:

W is watts, the unit of power,

m is meters, the unit of length,

K is Kelvin, the unit of temperature.

This unit indicates the amount of heat that passes through a material per unit area per unit temperature gradient.

Quick Tip

Thermal conductivity is crucial for evaluating materials used in thermal insulation and heat exchangers.

---

43. In Summer, outside air is hot, and hence the process of air conditioning involves:

Filtering, Dehumidification and _____.

(1) Adsorption

(2) Humidification

(3) Pre heating

(4) Reheating

Correct Answer: (4) Reheating

Solution:

During air conditioning in the summer, the outside air is hot and humid. The typical process involves:

1. Filtering the air to remove dust and other particulates.

2. Dehumidifying the air to reduce moisture, which makes the air feel cooler and more comfortable.

3. Reheating the air after it is dehumidified, as the cooling process often lowers the temperature too much, and reheating restores the desired comfort level.

Thus, Reheating is an important step after dehumidification in cooling processes.

Quick Tip

Reheating air after dehumidification ensures the temperature remains comfortable while controlling humidity.

---

44. An elevator's size is typically described in terms of:

(1) Angle of swing

(2) Travel in meters

(3) m^3

(4) m^2

Correct Answer: (2) Travel in meters

Solution:

The size of an elevator is typically described in terms of travel in meters. This refers to the vertical distance the elevator moves, which is usually measured from the lowest to the highest floor it serves. While the internal area of an elevator might also be specified (in terms

of square meters or cubic meters), the travel distance is the most important measurement for elevator sizing.

Quick Tip

Elevator sizing involves determining both the internal dimensions for capacity and the travel distance for vertical movement.

---

45. Carbon Footprint is measured by:

(1) Formula

(2) Carbon dating

(3) Instruments

(4) Carbon accounting

Correct Answer: (4) Carbon accounting

Solution:

A carbon footprint is the amount of greenhouse gases emitted into the atmosphere as a result of human activities. It is typically measured using carbon accounting, which involves tracking and quantifying the carbon emissions from various activities, such as transportation, energy use, and production. This accounting helps to understand the environmental impact of different sectors and can be used to reduce emissions.

Quick Tip

Carbon accounting is essential for organizations and individuals who want to track, reduce, and offset their carbon emissions.

---

46. Which type of fire extinguisher is used to put out a Class A fire?

(1) Foam type Extinguisher

(2) Water type Extinguisher

(3) Dry chemical powder Extinguisher

(4) Carbon dioxide (CO2) Extinguisher

Correct Answer: (2) Water type Extinguisher

Solution:

Class A fires involve ordinary combustibles like wood, paper, cloth, and plastics. Water extinguishers are most effective for these types of fires because they cool the burning material below its ignition point.

Quick Tip

Remember the classes of fires and the appropriate extinguishers for each:

Class A: Ordinary combustibles (water)

Class B: Flammable liquids (foam, dry chemical, CO_2)

Class C: Electrical fires (dry chemical, CO_2)

Class D: Combustible metals (dry powder)

Class K: Cooking oils/fats (wet chemical)

---

47. The following zones are formed in a polluted river under self-purification process:

(A) Zone of active decomposition

(B) Zone of pollution

(C) Zone of clear water

(D) Zone of recovery

Choose the correct sequence in which these zones occur progressively downstream in a polluted river from the options given below:

(1) (C), (B), (A), (D)

(2) (B), (A), (D), (C)

(3) (B), (C), (D), (A)

(4) (C), (B), (D), (A)

Correct Answer: (4) (C), (B), (D), (A)

Solution:

When a river is polluted, the process of self-purification occurs in stages:

The first stage is the Zone of clear water (C), where water is relatively clean and unaffected by pollution.

The Zone of pollution (B) follows, where the water begins to accumulate contaminants.

The Zone of recovery (D) occurs next, where some natural recovery takes place as the water begins to self-purify.

Finally, the Zone of active decomposition (A) appears downstream, where the organic matter is broken down and pollutants are removed.

Thus, the correct sequence is (C), (B), (D), (A) (Option 4).

Quick Tip

The self-purification process of a river follows a sequence starting from clean water, through pollution, recovery, and decomposition.

---

48. Match List I with List II

LIST I		LIST II	
A.	Sanitary Landfill	I.	Rats and fly breeding
B.	Composting	II.	Limited to special waste and selectede materials
C.	Incineration	III.	High operational and maintenance cost
D.	Salvage by sorting	IV.	Requires Pre-sorting, grinding and turning

Choose the correct answer from the options given below:

(1) (A) - (I), (B) - (II), (C) - (III), (D) - (IV)

(2) (A) - (II), (B) - (I), (C) - (III), (D) - (IV)

(3) (A) - (I), (B) - (II), (C) - (IV), (D) - (III)

(4) (A) - (III), (B) - (IV), (C) - (I), (D) - (II)

Correct Answer: (1) (A) - (I), (B) - (IV), (C) - (III), (D) - (II)

Solution:

A. Sanitary Landfill is associated with rats and fly breeding (I).

B. Composting requires pre-sorting, grinding, and turning (IV).

C. Incineration has high operational and maintenance costs (III).

D. Salvage by sorting is limited to special waste and selected materials (II).

Therefore, the correct match is: A - I B - IV C - III D - II

Quick Tip

Understanding the characteristics and processes of different waste management methods helps in matching them correctly.

---

49. In Urban cities like Bangalore, which of the water carriage system is used?

(1) Combined system

(2) Partially separate system

(3) Separate system

(4) Partially combined system

Correct Answer: (2) Partially separate system

Solution:

In urban cities like Bangalore, the Partially Separate System is used for water carriage. This system separates the stormwater drainage and sewerage systems, but in some cases, combined sewers are used in areas where the infrastructure is not well developed. In a partially separate system, wastewater and stormwater are managed separately, but some parts of the system might still combine them to optimize the flow capacity during heavy rains.

Quick Tip

The partially separate system is designed to handle both wastewater and stormwater efficiently, reducing the chances of flooding.

---

50. The capacity of flushing cistern for urinals is generally:

(1) 10 Liters

(2) 3 Liters

(3) 5 Liters

(4) 7 Liters

Correct Answer: (3) 5 Liters

Solution:

The typical capacity for a flushing cistern used in urinals is 5 Liters. This capacity is

designed to provide sufficient water for effective flushing while also being water-efficient, as lower capacities help to conserve water. In public restrooms and commercial buildings, cisterns with this capacity are commonly used to ensure both hygiene and sustainability.

Quick Tip

Flushing cisterns for urinals are designed with a balance of water efficiency and effective cleaning to meet sanitary requirements.

---

51. The term ISWM refers to:

(1) International Solid Waste Management

(2) Integrational Solid Waste Mechanism

(3) Integrated Solid Waste Management

(4) Interrelated States Waste Management

Correct Answer: (3) Integrated Solid Waste Management

Solution:

Integrated Solid Waste Management (ISWM) is a comprehensive waste management approach that involves combining various waste management practices, such as waste prevention, recycling, and disposal, into a cohesive system. The aim is to manage waste in a manner that is environmentally sound and economically viable. It considers all aspects of waste management, from generation to disposal.

Quick Tip

ISWM aims to reduce the environmental impact of waste by integrating waste management practices across all stages.

---

52. The value of ruling gradient in plains as per IRC is:

(1) 1 in 10

(2) 1 in 30

(3) 1 in 15

(4) 1 in 40

Correct Answer: (2) 1 in 30

Solution:

According to the Indian Road Congress (IRC) standards, the ruling gradient in plain terrain should generally be 1 in 30. The ruling gradient refers to the maximum gradient that can be sustained on a road without making it impractical or unsafe for vehicles. A gradient of 1 in 30 ensures a balance between efficient movement and road safety.

Quick Tip

Ruling gradients are critical in ensuring that roads remain accessible for all vehicles under various conditions, especially in plain areas.

---

53. Which one of the following prepares the specifications for the Highway?

(1) NHAI

(2) MORTH

(3) IRC

(4) BIS

Correct Answer: (3) IRC

Solution:

The Indian Road Congress (IRC) is the authority that prepares the specifications and guidelines for the design, construction, and maintenance of highways in India. IRC standards are widely adopted for road design, traffic engineering, and highway construction across the country.

The NHAI (National Highways Authority of India) is responsible for implementing and managing the highways, while MORTH (Ministry of Road Transport and Highways) oversees the development and policy regulations.

Quick Tip

IRC sets the standards for highway design and specifications, ensuring uniformity and safety across Indian roads.

---

54. Which among the following is the most preferred type of transition curve by IRC for Highways?

(1) Cubic Parabola

(2) Lemniscate

(3) Spiral

(4) Parabola

Correct Answer: (3) Spiral

Solution:

The Spiral curve is the most preferred type of transition curve used on highways as per the Indian Road Congress (IRC). A spiral curve provides a gradual transition from a straight path to a curved path, making it easier for vehicles to navigate and reducing the likelihood of sudden jerks. It helps in smoothening the change in curvature, which improves safety and comfort for drivers.

Quick Tip

Spiral curves are ideal for highways because they allow for a gradual transition between straight and curved sections, enhancing driver safety.

---

55. What is the width of a pavement of 2 lane National Highway?

(1) 7.0 m

(2) 7.5 m

(3) 3.75 m

(4) 8.80 m

Correct Answer: (1) 7.0 m

Solution:

For a two-lane National Highway in India, the minimum width of the pavement is typically 7.0 meters. This width ensures that there is enough space for two vehicles to pass safely in either direction. For multi-lane highways, the width increases to accommodate more traffic and to ensure safe and smooth flow.

Quick Tip

Pavement width for National Highways is carefully designed to accommodate vehicle movement while ensuring safety and efficiency.

---

56. The essential difference between CPM and PERT is-

(1) Critical path Vs. Critical Activity

(2) Arrow notation Vs. Precedence notation

(3) Deterministic approach Vs. Probabilistic approach

(4) Project management Vs. Network Analysis

Correct Answer: (3) Deterministic approach Vs. Probabilistic approach

Solution:

The key difference between CPM (Critical Path Method) and PERT (Program Evaluation and Review Technique) lies in their approach to estimating activity durations. CPM uses a deterministic approach with single-point estimates, while PERT uses a probabilistic approach with three estimates (optimistic, pessimistic, and most likely) to account for uncertainty.

Quick Tip

Remember that CPM is best for projects with predictable activity durations, while PERT is better for projects with more uncertainty.

---

57. If weight of one cubic meter of each of the following materials is recorded, which one is the heaviest?

(1) Stone ballast

(2) Earth (ordinary)

(3) Steel

(4) Cement

Correct Answer: (3) Steel

Solution:

Steel is the heaviest material among the options provided. Its density is much higher

compared to stone ballast, ordinary earth, and cement. Steel has a density of approximately 7850 kg/m³, making it the heaviest material in this context.

Thus, the correct answer is ”Steel” (Option 3).

Quick Tip

Steel is one of the densest construction materials commonly used, significantly heavier than cement or earth.

---

58. The form used in public work for measurement book is _____.

(1) Form 21

(2) Form 22

(3) Form 23

(4) Form 24

Correct Answer: (1) Form 21

Solution:

In public works, Form 21 is typically used for the measurement book. This form is used for recording measurements of works executed in various public construction projects.

Thus, the correct answer is ”Form 21” (Option 1).

Quick Tip

Form 21 is the standard format for recording measurements in public works projects.

---

59. In which type of estimate, ’courtyard’ is not considered?

(1) Plinth area estimate

(2) Cube rate estimate

(3) Lump sum estimate

(4) Unit rate estimate

Correct Answer: (1) Plinth area estimate

Solution:

In a Plinth area estimate, only the covered floor area is considered for estimation purposes.

Courtyards, which are open spaces, are not included in this estimate.

Thus, the correct answer is ”Plinth area estimate” (Option 1).

Quick Tip

Plinth area estimates are based on the covered area of a building, excluding open spaces like courtyards.

---

60. Degree of accuracy for areas in estimating construction work is:

(1) 0.01 cu.m

(2) 0.01 meter

(3) 0.01 sq.m

(4) 0.001 sq.m

Correct Answer: (3) 0.01 sq.m

Solution:

For estimating areas in construction work, the degree of accuracy is typically 0.01 square meters. This level of precision is suitable for construction estimates that deal with large areas.

Thus, the correct answer is ”0.01 sq.m” (Option 3).

Quick Tip

The degree of accuracy for estimating areas in construction is generally 0.01 sq.m for practical purposes.

---

61. Match List I with List II

LIST I		LIST II	
A.	Beam / Slab	I.	Tension
B.	Cable	II.	Meridional stress
C.	Shell	III.	Flexure
D.	Arch	IV.	Compression

Choose the correct answer from the options given below:

(1) (A) - (II), (B) - (I), (C) - (IV), (D) - (III)

(2) (A) - (I), (B) - (III), (C) - (II), (D) - (IV)

(3) (A) - (I), (B) - (II), (C) - (IV), (D) - (III)

(4) (A) - (III), (B) - (I), (C) - (II), (D) - (IV)

Correct Answer: (3) (A) - (I), (B) - (II), (C) - (IV), (D) - (III)

Solution:

Beam / Slab (A) experiences Tension (I) under loading conditions, especially in the lower section of the member where bending occurs.

Cable (B) is subject to Meridional Stress (II) because of the tension acting along the curve of the cable, often seen in suspension bridges.

Shell (C) is typically designed to handle Compression (IV) and works under compression, especially when curved, such as in domes and tanks.

Arch (D) is primarily under Flexure (III), as it resists bending moments while transferring loads to supports.

Quick Tip

Understanding the types of stresses in different structures helps in designing efficient and safe structural components.

---

62. Identify the components of Geographical Information System:

(A) Real time data handling

(B) Computer system and software

(C) Total station points

(D) Data management and analytical tool

Choose the correct answer from the options given below:

(1) (A), (B) and (D) only.

(2) (A), (B) and (C) only.

(3) (A), (B), (C) and (D).

(4) (B), (C) and (D) only.

Correct Answer: (3) (A), (B), (C) and (D).

Solution:

A Geographical Information System (GIS) is composed of four essential components:

(A) Real time data handling: This refers to the system's ability to handle and process live data for geographical applications.
(B) Computer system and software: A robust computer system and specialized software are required to collect, store, and analyze geographical data.
(C) Total station points: These are the precise points used for surveying, contributing to data accuracy in GIS applications.
(D) Data management and analytical tools: GIS involves managing and analyzing large datasets to draw meaningful conclusions for decision-making.
All these components work together to enable comprehensive geographic analysis.

Quick Tip

GIS involves integrating real-time data, computing resources, and analytical tools to make informed geographical decisions.

---

63. The input to geoprocessing is:

(1) Alpha-numeric

(2) Numeric

(3) Alphabet

(4) Data-sheet

Correct Answer: (1) Alpha-numeric

Solution:

The primary input to geoprocessing is alpha-numeric data. Geoprocessing involves manipulating spatial and non-spatial data, which can include geographic coordinates, attributes, and other related data in text or number form. Alpha-numeric data allows for flexible processing and analysis within GIS platforms.

Quick Tip

Geoprocessing requires versatile data input, often combining geographic coordinates and descriptive attributes, in an alpha-numeric format.

---

64. What is the first step of Geoprocessing?

(1) Management

(2) Processes

(3) Data Analysis

(4) Information Analysis

Correct Answer: (3) Data Analysis

Solution:

The first step in Geoprocessing is typically Data Analysis. This step involves examining and interpreting the data to understand the patterns, relationships, and characteristics before any processing or transformation occurs. Proper data analysis helps in deciding the geoprocessing tasks that need to be performed.

Quick Tip

Data analysis is critical to understanding geographic patterns and making informed decisions before applying geoprocessing tasks.

---

65. Prefabrication is a _____ construction method.

(1) Established

(2) Industrialised

(3) Modern

(4) Automotive

Correct Answer: (2) Industrialised

Solution:

Prefabrication is an industrialized construction method in which building components are manufactured in a factory before being transported to the construction site for assembly. This approach improves efficiency, reduces construction time, and ensures better quality control in the manufacturing process. It is widely used in mass housing and modular building projects.

Quick Tip

Prefabrication speeds up construction processes by manufacturing components off-site, leading to reduced labor costs and improved quality.

---

66. The Land Acquisition Act, 2013 in India has replaced which earlier legislation?

(1) The Land Acquisition Act, 1956

(2) The Land Acquisition Act, 1962

(3) The Land Acquisition Act, 1894

(4) The Land Acquisition Act, 1891

Correct Answer: (3) The Land Acquisition Act, 1894

Solution:

The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 (also known as the Land Acquisition Act, 2013) replaced the Land Acquisition Act of 1894.

Quick Tip

Remember that the 2013 Act brought significant changes to the land acquisition process in India, including provisions for fair compensation and rehabilitation.

---

67. The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 came into force on:

(1) 26th December 2013

(2) 28th December 2013

(3) 1st January 2014

(4) 10th January 2014

Correct Answer: (1) 26th December 2013

Solution:

The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation, and Resettlement Act, 2013 came into force on 26th December 2013. This law aims to ensure

fair compensation and provide a transparent process for land acquisition for public purposes. Thus, the correct answer is ”26th December 2013” (Option 1).

Quick Tip

The Act was enforced to improve the compensation and rehabilitation processes in land acquisition cases.

---

68. Which of the following can not be drawn from the population pyramid of a country?

(1) Total Population Size

(2) Gender Distribution with Population

(3) Dependency Ratio

(4) Population Growth Rate

Correct Answer: (4) Population Growth Rate

Solution:

A population pyramid displays age and gender distribution but cannot directly reveal the population growth rate. The population growth rate is typically calculated from census data and birth/death rates, not visually interpreted from a population pyramid.

Thus, the correct answer is ”Population Growth Rate” (Option 4).

Quick Tip

The population pyramid is useful for understanding age and gender distribution, but population growth rate is derived from demographic data, not the pyramid.

---

69. Which of the following is an example of a passive remote sensing technology?

(1) Doppler Radar

(2) Radiometers

(3) Synthetic Aperture Radar

(4) Hyperspectral Imaging

Correct Answer: (2) Radiometers

Solution:

Radiometers are passive remote sensing instruments that detect natural radiation emitted or reflected by the Earth's surface. Unlike active systems like radar, which emit their own signal, radiometers detect electromagnetic radiation without actively sending out a signal. Thus, the correct answer is "Radiometers" (Option 2).

Quick Tip

Passive remote sensing systems, like radiometers, detect naturally emitted radiation, while active systems send out their own signal.

---

70. Photogrammetry interprets which of the following data?

(1) Radiation

(2) EM Radiation

(3) P Radiation

(4) Active Radiation

Correct Answer: (2) EM Radiation

Solution:

Photogrammetry involves interpreting electromagnetic (EM) radiation, especially visible light, from photographs to derive measurements and map data. It is a technique used in mapping and spatial data analysis.

Thus, the correct answer is "EM Radiation" (Option 2).

Quick Tip

Photogrammetry primarily uses electromagnetic radiation (EM), including visible light, to interpret and analyze images for mapping.

---

71. In multilevel classification system, Level IV classification is suitable for:

(1) Medium altitude aerial photographs

(2) Low altitude aerial photographs

(3) Landsat MSS images

(4) High altitude aerial photographs

Correct Answer: (2) Low altitude aerial photographs

Solution:

Level IV classification in a multilevel classification system is used for Low altitude aerial photographs. These photographs provide high-resolution imagery and detailed data, making them suitable for fine classification levels, which is ideal for identifying smaller and more specific features at the ground level. Higher altitudes typically provide broader views with less detail.

Quick Tip

Low altitude aerial photography provides high spatial resolution, allowing for more detailed and precise classification.

---

72. IKONOS was launched and managed by:

(1) NASA

(2) Roscosmos

(3) CSA

(4) Space Imaging Inc.

Correct Answer: (4) Space Imaging Inc.

Solution:

IKONOS was launched and managed by Space Imaging Inc. in 1999. It was the first commercial satellite that provided high-resolution imagery. The satellite was operated by Space Imaging Inc., which was later merged with GeoIQ and acquired by GeoIQ's parent company, DigitalGlobe.

Quick Tip

IKONOS was the first commercial satellite to provide high-resolution imagery, revolutionizing Earth observation.

---

73. Which of the following given options is not a principle of remote sensing?

(1) Interaction of energy with satellite

(2) Electro-magnetic spectrum

(3) Electromagnetic energy

(4) Interaction of energy with atmosphere

Correct Answer: (1) Interaction of energy with satellite

Solution:

The Interaction of energy with the satellite is not considered a principle of remote sensing.

The main principles of remote sensing include:

The Electromagnetic spectrum, which is crucial for capturing energy reflected or emitted from Earth's surface.

Electromagnetic energy, which interacts with the Earth's surface and is captured by sensors to generate imagery.

The Interaction of energy with the atmosphere, which affects the transmission of electromagnetic waves through the atmosphere and influences the quality of remote sensing data.

The satellite itself is a tool used for capturing the energy, not a principle.

Quick Tip

In remote sensing, it is the interaction of energy with the Earth's surface and atmosphere that drives the process, not the satellite.

---

74. Which of the following is an example of a satellite-based remote sensing platform?

(1) Ground-based LiDAR

(2) Unmanned Aerial Vehicles (UAVs)

(3) International Space Station

(4) Landsat

Correct Answer: (4) Landsat

Solution:

Let's break down each option to understand why Landsat is the correct answer:

1. Ground-based LiDAR: LiDAR (Light Detection and Ranging) is a remote sensing method that uses lasers to measure distances. While LiDAR can be used for remote sensing,

”ground-based” explicitly indicates it’s operated from the ground, not a satellite.

2. Unmanned Aerial Vehicles (UAVs): UAVs, commonly known as drones, are aerial platforms. While they can carry remote sensing equipment, they operate within the Earth’s atmosphere and are not satellite-based.

3. International Space Station (ISS): The ISS is a large spacecraft in low Earth orbit. While it can host various scientific instruments, including some for remote sensing, it is not primarily designed as a dedicated remote sensing platform like a satellite. It’s a multipurpose research facility.

4. Landsat: Landsat is a series of Earth-observing satellite missions jointly managed by NASA and the U.S. Geological Survey (USGS). It’s specifically designed for remote sensing of the Earth’s land surface. Landsat satellites collect multispectral imagery used for various applications, including agriculture, forestry, geology, and urban planning.

Therefore, Landsat is the only option that represents a dedicated satellite-based remote sensing platform.

Quick Tip

Remember that satellite-based remote sensing platforms orbit the Earth at a significant distance and are designed to collect data over large areas. Consider the platform’s primary purpose and operational environment.

---

75. Which of the following waves can travel through empty space?

(1) Sound waves

(2) Electromagnetic waves

(3) Seismic waves

(4) Water waves

Correct Answer: (2) Electromagnetic waves

Solution:

Electromagnetic waves, such as light, radio waves, microwaves, and X-rays, do not require a medium to travel. They can propagate through a vacuum (empty space) because they are oscillating electric and magnetic fields that are self-sustaining. This is in contrast to sound

waves, seismic waves, and water waves, which require a medium like air, water, or solid materials to propagate.

Sound waves require a medium like air or water to travel and cannot propagate through empty space.

Seismic waves are mechanical waves that travel through the Earth's interior and need a solid or liquid medium.

Water waves travel on the surface of water and also need a medium, in this case, water.

Thus, the correct answer is "Electromagnetic waves" (Option 2).

Quick Tip

Electromagnetic waves are unique in that they can propagate through a vacuum, which is why they are used for communication in space and across long distances.
