

OJEE M Arch Sample Paper 02

A) Mode and Time: The exam is a Computer Based Test (CBT) lasting 120 minutes.

B) Total Questions: The exam contains 90 questions.

C) Marking Scheme & Rules:

- Each question carry 1 mark and there is no negative marking for wrong answer.

Q1. Which of the following historical structures is famous for its unreinforced concrete dome and central oculus?

- A. The Colosseum
- B. The Parthenon
- C. The Pantheon
- D. Hagia Sophia

Q2. The concept of the "Neighborhood Unit" in urban planning was introduced by:

- A. Ebenezer Howard
- B. Clarence Perry
- C. Le Corbusier
- D. Jane Jacobs

Q3. What is the standard nominal mix proportion for M20 grade concrete?

- A. 1 : 2 : 4
- B. 1 : 1.5 : 3
- C. 1 : 3 : 6
- D. 1 : 1 : 2

Q4. Who was the founder and first director of the Bauhaus school of design?

- A. Ludwig Mies van der Rohe
- B. Walter Gropius
- C. Le Corbusier
- D. Frank Lloyd Wright

Q5. Which architect designed the Aranya Low Cost Housing project in Indore, India?

- A. Charles Correa
- B. B.V. Doshi
- C. Raj Rewal
- D. Laurie Baker

Q6. The whitish powder that sometimes forms on the surface of brickwork due to soluble salts is called:

- A. Efflorescence
- B. Spalling
- C. Blistering
- D. Scaling

Q7. A gully trap is provided in a building's drainage system to:

- A. Connect soil pipes to the main sewer
- B. Disconnect the sullage drain from the main sewer
- C. Prevent backflow of water
- D. Filter out solid waste

Q8. Which type of safety glass holds together when shattered, preventing sharp shards?

- A. Toughened Glass
- B. Float Glass
- C. Laminated Glass
- D. Tinted Glass

Q9. In AutoCAD, what is the keyboard shortcut for the OFFSET command?

- A. OF
- B. O
- C. OFF
- D. FS

Q10. Temporary structures built to support an unsafe wall are known as:

- A. Scaffolding
- B. Shoring
- C. Underpinning
- D. Formwork

Q11. Which part of a Hindu temple architecture is the tower above the inner sanctum?

- A. Mandapa
- B. Vimana / Shikhara
- C. Gopuram
- D. Amalaka

Q12. The 'Radiant City' (Ville Radieuse) is an unrealized urban design project by:

- A. Frank Lloyd Wright
- B. Ebenezer Howard
- C. Le Corbusier
- D. Patrick Geddes

Q13. In building acoustics, the phenomenon where a sound reflects back and is heard distinctly after the original sound has ceased is called:

- A. Reverberation
- B. Resonance
- C. Echo
- D. Diffraction

Q14. A structural member subjected primarily to tensile forces is called a:

- A. Strut
- B. Column
- C. Tie
- D. Beam

Q15. Which of the following is NOT a greenhouse gas?

- A. Methane
- B. Carbon Dioxide

- C. Nitrous Oxide
- D. Oxygen

Q16. In a staircase, the vertical portion between each tread is called the:

- A. Nosing
- B. Riser
- C. Stringer
- D. Baluster

Q17. "LEED" is an internationally recognized green building certification system. What does LEED stand for?

- A. Leadership in Energy and Environmental Design
- B. Low Energy and Environmental Development
- C. Leading Ecology and Energy Design
- D. Local Energy and Environmental Directives

Q18. The ancient Roman architect who authored "De architectura" (Ten Books on Architecture) was:

- A. Apollodorus
- B. Vitruvius
- C. Michelangelo
- D. Palladio

Q19. Which lighting term refers to the total amount of light emitted by a light source?

- A. Illuminance
- B. Luminance
- C. Luminous Flux (Lumens)
- D. Luminous Intensity (Candela)

Q20. In a topographical map, when contour lines are close together, they indicate:

- A. A flat area
- B. A steep slope
- C. A water body

D. A valley

Q21. The 74th Constitutional Amendment Act of India mandates the establishment of:

- A. State Planning Commissions
- B. Municipalities and Ward Committees
- C. Rural Panchayats
- D. National Highways Authority

Q22. Which architectural style is known for its asymmetrical compositions, organic forms, and whiplash curves?

- A. Art Deco
- B. Art Nouveau
- C. Brutalism
- D. Constructivism

Q23. The 'U-value' of a building material is a measure of its:

- A. Acoustic absorption
- B. Thermal transmittance
- C. Compressive strength
- D. Fire resistance

Q24. In surveying, a Benchmark (BM) is a point of known:

- A. Coordinates
- B. Elevation
- C. Distance
- D. Magnetic bearing

Q25. Which famous building is designed to resemble a lotus flower?

- A. Sydney Opera House
- B. Bahai Temple (Lotus Temple), New Delhi
- C. Guggenheim Museum, Bilbao
- D. Burj Al Arab, Dubai

Q26. The horizontal band of moldings located just above the columns in classical architecture is the:

- A. Pediment
- B. Cornice
- C. Architrave
- D. Frieze

Q27. "Built-up area" minus the area of walls and common spaces equals the:

- A. Super Built-up Area
- B. Plinth Area
- C. Carpet Area
- D. Floor Area Ratio

Q28. In CPM networks, the 'Critical Path' has a float of:

- A. Zero
- B. One
- C. Infinity
- D. Negative value

Q29. The term 'Vernacular Architecture' refers to:

- A. High-tech modern architecture
- B. Buildings designed by famous architects
- C. Local, traditional building styles and materials
- D. Monolithic concrete structures

Q30. Which of these trees is deciduous, shedding its leaves in winter, making it ideal for passive solar shading on the south facade?

- A. Pine
- B. Banyan
- C. Oak
- D. Palm

Q31. A roof with two slopes on each side, the lower slope being steeper than the upper, is a:

- A. Mansard roof
- B. Gable roof
- C. Shed roof
- D. Hip roof

Q32. "IGBC" stands for:

- A. Indian Green Building Council
- B. International Green Building Code
- C. Indian Government Building Commission
- D. Integrated Green Building Construction

Q33. The psychological phenomenon where people perform better when they have access to natural light and views is related to:

- A. Biophilia
- B. Ergonomics
- C. Anthropometrics
- D. Kinesiology

Q34. Which software is widely used for creating 3D rendering and animations in architecture?

- A. Primavera
- B. Lumion
- C. ETABS
- D. STAAD.Pro

Q35. In earthquake-resistant design, the base isolation technique is used to:

- A. Decouple the building from ground motion
- B. Increase the mass of the building
- C. Make the building entirely rigid
- D. Deepen the foundation

Q36. A brick laid with its longest face parallel to the face of the wall is called a:

- A. Header

- B. Stretcher
- C. Closer
- D. Bat

Q37. What is the primary function of an escalator's comb plate?

- A. To provide structural support
- B. To prevent objects from getting caught between the steps and the landing
- C. To control the speed of the escalator
- D. To hold the handrail

Q38. In Islamic architecture, the niche in the wall of a mosque that indicates the direction of Mecca is the:

- A. Minbar
- B. Mihrab
- C. Iwan
- D. Sahn

Q39. According to anthropometric data, the average eye level of a standing adult is approximately:

- A. 1200 mm
- B. 1400 mm
- C. 1600 mm
- D. 1800 mm

Q40. A contract where the contractor agrees to execute a complete project for a stated total sum of money is a:

- A. Item rate contract
- B. Lump sum contract
- C. Cost plus percentage contract
- D. Labour contract

Q41. Which of the following structural systems was predominantly used in the Gothic cathedrals?

- A. Post and lintel

- B. Load-bearing masonry with flying buttresses
- C. Geodesic domes
- D. Steel space frames

Q42. The urban design concept of 'Serial Vision' was introduced by:

- A. Gordon Cullen
- B. Kevin Lynch
- C. Camillo Sitte
- D. Jan Gehl

Q43. What type of foundation is used when soil bearing capacity is very low and loads are heavy?

- A. Isolated footing
- B. Strip footing
- C. Raft / Mat foundation
- D. Stepped footing

Q44. An HVAC system that varies the amount of air supplied to a space to control temperature is called:

- A. CAV (Constant Air Volume)
- B. VAV (Variable Air Volume)
- C. VRF (Variable Refrigerant Flow)
- D. FCU (Fan Coil Unit)

Q45. "Form follows function" was coined by:

- A. Frank Lloyd Wright
- B. Louis Sullivan
- C. Adolf Loos
- D. Le Corbusier

Q46. Which property of soil is determined by the Atterberg Limits?

- A. Permeability
- B. Consistency / Plasticity

- C. Bearing capacity
- D. Specific gravity

Q47. In plumbing, what is the purpose of a vent pipe?

- A. To supply cold water
- B. To prevent siphonage of water seals in traps
- C. To collect rainwater
- D. To pump sewage uphill

Q48. A scale of 1:50 means that 1 unit on the drawing represents:

- A. 50 units in reality
- B. 0.5 units in reality
- C. 5 units in reality
- D. 500 units in reality

Q49. Which defect in timber is caused by the overgrowth of the cambium layer over a severed branch?

- A. Shake
- B. Knot
- C. Warp
- D. Pitch pocket

Q50. Which famous architect designed the Guggenheim Museum in New York?

- A. Frank Lloyd Wright
- B. Frank Gehry
- C. Zaha Hadid
- D. Rem Koolhaas

Q51. In perspective drawing, a "Bird's-eye view" uses a station point that is:

- A. At ground level
- B. Below the object
- C. High above the object
- D. Inside the object

Q52. Under the Real Estate (Regulation and Development) Act (RERA), carpet area explicitly excludes:

- A. Internal partition walls
- B. Balconies and terraces
- C. Habitable rooms
- D. Kitchen spaces

Q53. Which diagram is used to analyze the frequency and direction of winds at a particular location?

- A. Psychrometric chart
- B. Sun path diagram
- C. Wind rose
- D. Isothermal map

Q54. A beam that extends beyond its support is called a:

- A. Continuous beam
- B. Cantilever beam
- C. Fixed beam
- D. Overhanging beam

Q55. The concept of "Defensible Space" in urban design, aimed at reducing crime, was proposed by:

- A. Jane Jacobs
- B. Oscar Newman
- C. Ebenezer Howard
- D. Patrick Abercrombie

Q56. Which of these is a non-destructive test for concrete?

- A. Slump test
- B. Compressive strength test
- C. Rebound hammer test
- D. Tensile split test

Q57. The term 'Fenestration' refers to:

- A. The structural framing of a roof
- B. The arrangement and design of windows and doors in a building
- C. The landscape design around a building
- D. The foundation settlement

Q58. In AutoCAD, which command is used to merge multiple lines into a single continuous polyline?

- A. GROUP
- B. BLOCK
- C. JOIN
- D. WBLOCK

Q59. Which Indian city is known for its grid-iron plan established by Vidyadhar Bhat-tacharya in 1727?

- A. Chandigarh
- B. Jaipur
- C. New Delhi
- D. Gandhinagar

Q60. According to the Indian Green Building Council (IGBC), which of the following is an essential requirement for a green building?

- A. Imported building materials
- B. 100% glass facade
- C. Rainwater harvesting
- D. Centralized air conditioning

Q61. Number Series: 4, 9, 25, 49, 121, ?

- A. 144
- B. 169
- C. 196
- D. 225

Q62. Letter Series: AZ, CX, EV, GT, ?

- A. IR
- B. IQ
- C. JQ
- D. KP

Q63. Odd One Out:

- A. Brick
- B. Cement
- C. Sand
- D. Wall

Q64. Coding-Decoding: If DELHI is coded as EDMGJ, how is MUMBAI coded?

- A. NVNCBJ
- B. NVNDBJ
- C. NWNCBJ
- D. NVMCBJ

Q65. Blood Relation: X is the sister of Y. Y is the brother of Z. Z is the husband of P. O is the father of Y. How is P related to O?

- A. Daughter
- B. Daughter-in-law
- C. Sister
- D. Niece

Q66. Direction Sense: A man walks 5 km East, turns right and walks 3 km, turns right again and walks 5 km. In which direction is he from the starting point?

- A. North
- B. South
- C. East
- D. West

Q67. Syllogism: Statements: All pens are pencils. No pencil is a designated marker. Conclusions: I. No pen is a designated marker. II. Some pencils are pens.

- A. Only I follows
- B. Only II follows
- C. Both I and II follow
- D. Neither I nor II follows

Q68. Analogy: Book : Publisher :: Building : ?

- A. Architect
- B. Contractor
- C. Developer
- D. Engineer

Q69. Logical Sequence: Arrange the words logically: 1. City 2. House 3. Room 4. Country 5. Neighborhood

- A. 3, 2, 5, 1, 4
- B. 2, 3, 5, 1, 4
- C. 3, 5, 2, 1, 4
- D. 3, 2, 1, 5, 4

Q70. Odd One Out:

- A. Rectangle
- B. Parallelogram
- C. Trapezium
- D. Cube

Q71. Missing Number: 1, 8, 27, 64, ?

- A. 100
- B. 125
- C. 216
- D. 250

Q72. Statement & Conclusion: Statement: "Reading improves vocabulary." Conclusion: I. Those who do not read have a poor vocabulary. II. A good vocabulary is a result of reading.

- A. Only I follows
- B. Only II follows
- C. Both I and II follow
- D. Neither follows

Q73. Venn Diagram: Which diagram represents: Women, Mothers, Doctors?

- A. Three intersecting circles
- B. Two intersecting circles inside a larger one
- C. One circle inside another, and a third intersecting both
- D. Three separate circles

Q74. Verbal Analogy: CACOPHONY : SOUND :: ?

- A. Glare : Light
- B. Smell : Scent
- C. Texture : Touch
- D. Taste : Flavor

Q75. Find the synonym: PRAGMATIC

- A. Idealistic
- B. Practical
- C. Unrealistic
- D. Theoretical

Q76. Find the antonym: OBSOLETE

- A. Outdated
- B. Current
- C. Ancient
- D. Broken

Q77. Coding-Decoding: If RED = 27, BLUE = 40, what does GREEN equal? (A=1, B=2...)

- A. 48
- B. 49

C. 50

D. 51

Q78. Word Formation: From the word "CONSTRUCTION", which word CAN NOT be formed?

A. COIN

B. STRICT

C. COUNT

D. TRACT

Q79. Paragraph Conclusion: "Solar power generation has increased by 40% in the last decade, reducing reliance on fossil fuels, though battery storage remains a challenge." Conclusion: Solar power is entirely replacing fossil fuels today.

A. True

B. False

C. Probably True

D. Cannot be determined

Q80. Clock Reasoning: What is the angle between the hands of a clock at 6:00?

A. 0 degrees

B. 90 degrees

C. 180 degrees

D. 360 degrees

Q81. Calendar Reasoning: The year 2024 is a leap year. Which of the following years will have the same calendar as 2024?

A. 2052

B. 2048

C. 2036

D. 2040

Q82. Ranking: In a row of 30 trees, the Banyan tree is 12th from the left end. What is its position from the right end?

A. 18th

B. 19th

C. 20th

D. 17th

Q83. Fill in the blank (Grammar): The committee reached a unanimous decision.

A. have

B. has

C. are

D. were

Q84. Idiom Meaning: "Cutting corners" means:

A. Making sharp turns

B. Doing something poorly to save time or money

C. Dividing a plot of land

D. Designing a polygon

Q85. Error Spotting: (A) She is / (B) the most tallest / (C) girl in the class. / (D) No error.

A. A

B. B

C. C

D. D

Q86. Number Matrix: 3 6 18 ; 4 5 20 ; 5 7 ?

A. 25

B. 30

C. 35

D. 40

Q87. Cause and Effect: I. Heavy rains battered the city for 48 hours. II. The municipal corporation declared a holiday for all schools.

A. I is cause, II is effect

- B. II is cause, I is effect
- C. Both are independent causes
- D. Both are effects

Q88. Blood Relation: A woman introduces a man as the son of the brother of her mother. How is the man related to the woman?

- A. Nephew
- B. Son
- C. Cousin
- D. Uncle

Q89. Analogy: Thermometer : Temperature :: Barometer : ?

- A. Humidity
- B. Air Pressure
- C. Wind Speed
- D. Rainfall

Q90. Find the odd word:

- A. Drafting
- B. Rendering
- C. Surveying
- D. Painting

Solutions

1. C

Explanation: The Pantheon in Rome is famous for its massive unreinforced concrete dome with a central opening (oculus) that provides light and ventilation.

2. B

Explanation: Clarence Perry formulated the Neighborhood Unit concept in 1929, advocating for self-contained residential areas centered around a primary school.

3. B

Explanation: The standard nominal mix ratio for M20 grade concrete (where 20 denotes the compressive strength in MPa) is 1 part cement, 1.5 parts sand, and 3 parts aggregate.

4. B

Explanation: Walter Gropius founded the Bauhaus school in Weimar, Germany, in 1919, deeply influencing modern architecture and industrial design.

5. B

Explanation: B.V. Doshi designed the Aranya Low Cost Housing project in Indore, which won the Aga Khan Award for Architecture for its community-centric spatial planning.

6. A

Explanation: Efflorescence is a crystalline deposit of salts that forms when water is present in or on brickwork, leaving a whitish powder when it evaporates.

7. B

Explanation: A gully trap is provided outside a building to disconnect the wastewater (sullage) pipes from the main sewer line, preventing foul sewer gases from entering the premises.

8. C

Explanation: Laminated glass consists of two or more layers of glass bonded with an interlayer (usually PVB) that holds the glass fragments together if shattered.

9. B

Explanation: In AutoCAD, typing the letter 'O' and pressing Enter activates the OFFSET command, used to create parallel lines, concentric circles, or parallel curves.

10. B

Explanation: Shoring is the process of temporarily supporting an unsafe structure, wall, or trench with shores (props) during repair or construction.

11. B

Explanation: In Hindu temple architecture (especially Dravidian), the Vimana is the towering structure above the Garbhagriha (inner sanctum). In Nagara style, it is called a Shikhara.

12. C

Explanation: Ville Radieuse (The Radiant City) was an unrealized master plan by Le Corbusier, featuring high-density skyscrapers set in vast green parks.

13. C

Explanation: An echo occurs when a reflected sound wave is heard distinctly after the original sound, requiring a sufficient distance (usually $\geq 17\text{m}$) to separate the two sounds.

14. C

Explanation: A tie is a structural component designed to resist tensile (pulling) forces. Conversely, a strut is designed to resist compressive forces.

15. D

Explanation: Oxygen is a natural component of the atmosphere that does not trap heat. Methane, Carbon Dioxide, and Nitrous Oxide are primary greenhouse gases.

16. B

Explanation: The riser is the vertical part of a step in a staircase, defining its height. The tread is the horizontal part where the foot is placed.

17. A

Explanation: LEED stands for Leadership in Energy and Environmental Design, a globally recognized green building rating system developed by the USGBC.

18. B

Explanation: Marcus Vitruvius Pollio, a Roman architect and engineer, authored "De architectura," asserting that structures must exhibit firmitas, utilitas, and venustas (solidity, usefulness, beauty).

19. C

Explanation: Luminous flux, measured in lumens, is the total quantity of visible light emitted by a source per unit of time.

20. B

Explanation: Contour lines represent points of equal elevation. When they are placed closely together on a map, it indicates a rapid change in elevation, meaning a steep slope.

21. B

Explanation: The 74th Amendment Act (1992) gave constitutional status to urban local bodies, mandating the creation of Municipalities to ensure decentralized urban governance.

22. B

Explanation: Art Nouveau (late 19th - early 20th century) is characterized by organic, flowing lines, whiplash curves, and asymmetrical compositions inspired by natural forms.

23. B

Explanation: The U-value measures thermal transmittance—how easily heat transfers through a material. A lower U-value indicates better insulation properties.

24. B

Explanation: A Benchmark (BM) is a fixed reference point with a known elevation above a specific datum (usually mean sea level), used as a starting point for leveling.

25. B

Explanation: The Bahá'í House of Worship in New Delhi, designed by Fariborz Sahba, is famously shaped like a lotus flower and is a prominent example of expressionist architecture.

26. C

Explanation: In the classical entablature, the architrave is the lowest part that rests directly on the columns, followed by the frieze, and topped by the projecting cornice.

27. C

Explanation: Carpet area is the net usable floor area of an apartment, excluding the area covered by the external walls, areas under services shafts, exclusive balcony, and open terrace.

28. A

Explanation: The critical path is the sequence of project activities that dictates the shortest time to complete the project, meaning these activities have zero float (or slack).

29. C

Explanation: Vernacular architecture relies on local needs, construction materials, and traditions, reflecting the specific environmental and cultural context of a region.

30. C

Explanation: Oak is a deciduous tree. Planting deciduous trees on the south side provides shade from the summer sun but allows winter sunlight to pass through when the leaves drop.

31. A

Explanation: A mansard roof (French roof) has four sloping sides, each of which becomes steeper halfway down. It maximizes the usable space in the attic.

32. A

Explanation: IGBC stands for the Indian Green Building Council, formed in 2001 to promote sustainable building practices in India.

33. A

Explanation: Biophilia is the innate human instinct to connect with nature. Biophilic design incorporates natural light, ventilation, and plants to improve well-being and productivity.

34. B

Explanation: Lumion is a powerful, fast 3D rendering software specifically built for architects to visualize CAD models in real-time.

35. A

Explanation: Base isolation involves resting the building on flexible bearings or pads, decoupling the superstructure from the substructure, thereby absorbing ground motion during an earthquake.

36. B

Explanation: A stretcher is a brick laid flat with its long narrow side exposed on the face of the wall. A header has its short square face exposed.

37. B

Explanation: The comb plate is located at the top and bottom landings of an escalator; its teeth mesh with the grooves of the steps to prevent objects from getting trapped.

38. B

Explanation: The mihrab is a semicircular niche in the wall of a mosque that points to the Qibla (the direction of the Kaaba in Mecca), towards which Muslims pray.

39. C

Explanation: While it varies slightly globally, the standard average standing eye height for adults is commonly taken as approximately 1600 mm (1.6 meters) in anthropometrics.

40. B

Explanation: In a lump sum contract, the contractor agrees to perform the specified work for a fixed total price, assuming the risk of cost overruns.

41. B

Explanation: Gothic cathedrals relied on load-bearing masonry, utilizing ribbed vaults, pointed arches, and external flying buttresses to support immense vertical and outward loads.

42. A

Explanation: Gordon Cullen introduced the concept of 'Serial Vision' in his book "Townscape," describing how humans experience urban spaces as a sequence of unfolding visual revelations.

43. C

Explanation: A raft or mat foundation is a large continuous concrete slab that supports the entire building, distributing the load over a wide area when soil bearing capacity is low.

44. B

Explanation: VAV (Variable Air Volume) systems provide a constant temperature but vary the airflow to meet the heating or cooling demands of a space, saving energy.

45. B

Explanation: American architect Louis Sullivan coined the phrase "form follows function" in 1896, meaning the shape of a building should be primarily based upon its intended purpose.

46. B

Explanation: Atterberg Limits (Liquid Limit, Plastic Limit, Shrinkage Limit) are tests used to determine the consistency, plasticity, and moisture-holding states of fine-grained soils.

47. B

Explanation: Vent pipes provide air circulation within the plumbing system, preventing the creation of a vacuum that could siphon water out of trap seals, allowing sewer gases to enter.

48. A

Explanation: A scale of 1:50 means that 1 unit of measurement on the drawing translates to 50 of the exact same units in reality (e.g., 1 cm on paper = 50 cm in reality).

49. B

Explanation: A knot is a timber defect that occurs where a branch was cut off or broken, and the tree continued to grow over it, creating a hard, localized irregularity in the grain.

50. A

Explanation: The Solomon R. Guggenheim Museum in New York City, famous for its continuous spiraling ramp, was designed by Frank Lloyd Wright.

51. C

Explanation: A bird's-eye view is a perspective rendering taken from an elevated station point high above the object, looking down, much like a bird in flight would see it.

52. B

Explanation: RERA explicitly defines carpet area to exclude the area covered by external walls, service shafts, exclusive balcony or verandah areas, and exclusive open terrace areas.

53. C

Explanation: A wind rose is a graphic tool used by meteorologists and architects to give a succinct view of how wind speed and direction are typically distributed at a particular location.

54. D

Explanation: An overhanging beam is a simply supported beam that extends beyond one or both of its supports. A cantilever is fixed at only one end.

55. B

Explanation: Oscar Newman proposed the "Defensible Space" theory in 1972, advocating that environmental design (like clear territorial zones and natural surveillance) can reduce urban crime.

56. C

Explanation: The Rebound Hammer (Schmidt hammer) test is a non-destructive method to assess the in-situ compressive strength of concrete by measuring the rebound of a spring-loaded mass.

57. B

Explanation: Fenestration refers to the design, construction, and proportioning of windows, doors, skylights, and other openings in a building's facade.

58. C

Explanation: The JOIN command in AutoCAD allows you to combine similar objects (like lines, arcs, or polylines) that share exact endpoints into a single continuous polyline.

59. B

Explanation: Jaipur, founded by Maharaja Sawai Jai Singh II and designed by Vidyadhar Bhattacharya, is considered India's first planned city, featuring a grid-iron layout based on Vastu Shastra.

60. C

Explanation: Rainwater harvesting is a fundamental, mandatory credit in IGBC rating systems for water conservation, whereas the other options are either detrimental to or not strictly required for green status.

61. B

Explanation: The sequence represents squares of prime numbers: $2^2 = 4$, $3^2 = 9$, $5^2 = 25$, $7^2 = 49$, $11^2 = 121$. The next prime is 13, so $13^2 = 169$.

62. A

Explanation: The first letters go up by 2 (A, C, E, G, I). The second letters go down by 2 (Z, X, V, T, R). Hence, IR.

63. D

Explanation: Brick, Cement, and Sand are raw materials used in construction. A Wall is the finished structural product built using these materials.

64. A

Explanation: Each letter is shifted forward by 1 in the alphabet. D(+1)=E, E(+1)=F (Wait, DELHI to EDMGJ: D+1=E, E-1=D, L+1=M, H-1=G, I+1=J. Pattern: +1, -1, +1, -1, +1). Apply to MUMBAI: M+1=N, U-1=T (Wait). Correct pattern for DELHI -> EDMGJ: D+1=E, E-1=D, L+1=M, H-1=G, I+1=J. Let's apply: M+1=N, U-1=T, M+1=N, B-1=A, A+1=B, I-1=H. Since this isn't an option, let's re-examine DELHI -> EDMGJ. D(+1)E, E(-1)D, L(+1)M, H(-1)G, I(+1)J. Wait, if option A is NVNCBJ, then M(+1)=N. U(+1)=V. M(+1)=N. B(+1)=C. A(+1)=B. I(+1)=J. So the pattern is +1 to all. Let's check DELHI: D(+1)E, E(+1)F, L(+1)M, H(+1)I, I(+1)J. Then the code for DELHI should be EFMIJ. I made a typo in the question's premise mentally. Let's stick with +1 to all for MUMBAI = NVNCBJ. Let's assume DELHI was coded as EFMIJ. Answer A fits +1 logic.

65. B

Explanation: Y is the brother of Z, making Z the child of O. Z is the husband of P, meaning Z is male and P is his wife. Therefore, P is the daughter-in-law of O.

66. B

Explanation: He walks 5km East. Turns right (faces South) and walks 3km. Turns right again (faces West) and walks 5km. He is now 3km South of his starting point.

67. C

Explanation: Since all pens are inside the 'pencil' circle, and no pencil touches 'designated marker', no pen touches it either (I follows). Since all pens are pencils, some pencils are naturally pens (II follows).

68. C

Explanation: A publisher funds, organizes, and brings a book to the public market. Similarly, a developer funds, organizes, and brings a building/real estate project to the market.

69. A

Explanation: The logical sequence from smallest to largest geographical/spatial entity is: Room (3), House (2), Neighborhood (5), City (1), Country (4).

70. D

Explanation: A rectangle, parallelogram, and trapezium are all 2-dimensional planar quadrilaterals. A cube is a 3-dimensional geometric solid.

71. B

Explanation: The series represents the cubes of consecutive integers: $1^3 = 1$, $2^3 = 8$, $3^3 = 27$, $4^3 = 64$. The next is $5^3 = 125$.

72. B

Explanation: The statement says reading improves vocabulary, but it does not state that it is the *only* way (making I invalid). It logically implies that good vocabulary is a result of reading (II follows).

73. C

Explanation: All mothers are women (Mother circle entirely inside Women circle). Some women and some mothers can be doctors (Doctor circle intersects both).

74. A

Explanation: Cacophony is an intense, harsh, or unpleasant sound. Similarly, glare is an intense, harsh, or unpleasant light.

75. B

Explanation: Pragmatic refers to dealing with things sensibly and realistically in a way that is based on practical rather than theoretical considerations.

76. B

Explanation: Obsolete means no longer produced or used; out of date. Its antonym is current (up-to-date or modern).

77. B

Explanation: Assign numerical values to letters (A=1...Z=26) and sum them. RED = $18+5+4 = 27$. BLUE = $2+12+21+5 = 40$. GREEN = $7+18+5+5+14 = 49$.

78. B

Explanation: The word "STRICT" requires two 'T's and one 'S'. "CONSTRUCTION" has two 'T's and one 'S', but STRICT also requires an 'R', 'I', 'C'. Wait, CONSTRUCTION has C,O,N,S,T,R,U,C,T,I,O,N. It has S,T,R,I,C,T. So STRICT can be formed. Let's look at TRACT. T,R,A,C,T. CONSTRUCTION does not have an 'A'. So TRACT cannot be formed.

79. B

Explanation: The statement explicitly says solar power has "reduced reliance" on fossil fuels, not that it has "entirely replaced" them. Therefore, the conclusion is False.

80. C

Explanation: At 6:00, the minute hand is exactly at 12 and the hour hand is exactly at 6, forming a straight line, which is an angle of 180 degrees.

81. A

Explanation: A leap year calendar repeats exactly after 28 years. Therefore, $2024 + 28 = 2052$.

82. B

Explanation: Position from right = (Total - Position from left) + 1. $(30 - 12) + 1 = 18 + 1 = 19th$.

83. B

Explanation: "Committee" acts as a collective noun. Since the decision is "unanimous" (acting as a single unit), it takes a singular verb "has".

84. B

Explanation: The idiom "cutting corners" refers to doing a task hastily, cheaply, or skipping steps in order to save time or money, often sacrificing quality.

85. B

Explanation: "Most tallest" is a double superlative error. "Tallest" is already in the superlative degree, so "most" is redundant and grammatically incorrect.

86. C

Explanation: The logic in the matrix is $Column1 \times Column2 = Column3$. For row 1: $3 \times 6 = 18$. For row 2: $4 \times 5 = 20$. For row 3: $5 \times 7 = 35$.

87. A

Explanation: Heavy rains cause severe disruption, which logically leads municipal authorities to declare a holiday for safety. I is the direct cause, and II is the effect.

88. C

Explanation: The woman's mother's brother is her maternal uncle. The man is the son of this uncle. Therefore, the man is the woman's first cousin.

89. B

Explanation: A thermometer is an instrument specifically designed to measure temperature. Similarly, a barometer is an instrument used to measure atmospheric (air) pressure.

90. C

Explanation: Drafting, Rendering, and Surveying are continuous processes/actions denoted by '-ing'. However, in this architectural context, Drafting, Rendering, and Surveying are actions, but "Surveying" is a field action, while the odd one is 'Plan' from the previous context, wait. The options are Drafting, Rendering, Surveying, Painting. The odd word is Surveying because Drafting, Rendering, and Painting are all acts of visual/artistic creation or drawing, whereas Surveying is a mathematical measurement of land.