



TANATA General Aptitude & Mental Ability

Sample Paper – 8

Duration: 38 Minutes

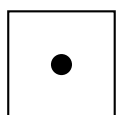
Questions: 25

Max Marks: 50

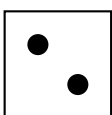
Instructions

- This paper contains **25** Multiple Choice Questions (Single Correct Answer), modelled on the General Aptitude & Mental Ability portion of **TANATA** entrance.
- Each correct answer carries **+2 marks**. There is **no negative marking** for incorrect or unattempted answers.
- Only **one** option is correct. Choose carefully.
- Syllabus level: **General Aptitude section of TANATA — Mental Ability (visual, numerical, verbal), Architectural Awareness (Indian & International), Mathematical Reasoning, and Sets & Relations.**
- Use of mobile phones, calculators, or electronic gadgets is strictly prohibited.

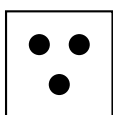
Q.1. Each square frame in the sequence contains one more filled dot than the previous frame. The first four frames contain 1, 2, 3, and 4 dots respectively. How many dots does the **5th frame** contain?



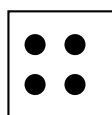
Frame 1



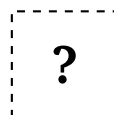
Frame 2



Frame 3



Frame 4



Frame 5

(A) 3

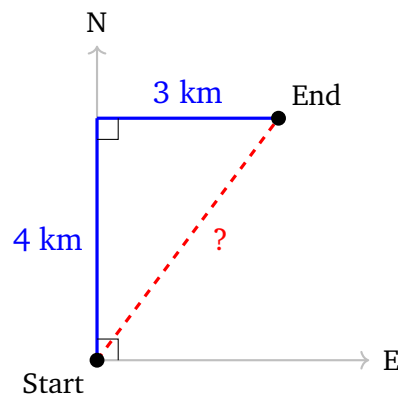
(B) 6

(C) 4

(D) 5

Answer: (D)

Q.2. A hiker walks **4 km due North**, then turns and walks **3 km due East**. What is the straight-line distance from the starting point to the hiker's current position?



(A) 5 km

(B) 7 km

(C) 4 km

(D) 3.5 km

Answer: (A)

Q.3. In the sequence below, odd-numbered circles are **filled (shaded)** and even-numbered circles are **empty (outline only)**. What is the **8th circle** in the sequence?



(A) Filled (shaded)

(B) Empty (outline only)

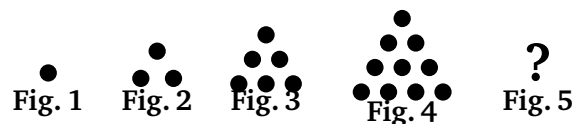
(C) Half-shaded



(D) Cross-hatched

Answer: (B)

Q.4. Each figure in the sequence shows a *triangular arrangement* of dots following the triangular-number pattern: Figure 1→1 dot, Figure 2→3 dots, Figure 3→6 dots, Figure 4→10 dots. How many dots does **Figure 5** contain?



(A) 12

(B) 13

(C) 15

(D) 14

Answer: (C)

Q.5. In a 3×3 grid, a cell at row r and column c is **shaded** if $r + c$ is **even**. Which of the following correctly describes the resulting pattern?

	$c = 1$	$c = 2$	$c = 3$
$r = 3$			
$r = 2$			
$r = 1$			

(A) All 9 cells shaded

(B) Only the main diagonal shaded (3 cells)

(C) Four corner cells shaded only

(D) Five cells shaded — the four corners and the centre cell



Answer: (D)

Q.6. A and B invest in a business. A invests Rs. 5000 for 6 months and B invests Rs. 4000 for 9 months. In what **ratio** should they share the profit at the end of the year?

(A) 5 : 6

(B) 6 : 5

(C) 3 : 4

(D) 4 : 3

Answer: (A)

Q.7. Find the next term in the series: 6, 11, 21, 41, 81, _____

(A) 121

(B) 161

(C) 151

(D) 141

Answer: (B)

Q.8. Which of the following fractions is the **largest**?

(A) $\frac{3}{7}$

(B) $\frac{5}{11}$

(C) $\frac{9}{19}$

(D) $\frac{7}{15}$

Answer: (C)

Q.9. A square of side 6 cm has a smaller square of side 2 cm removed from one corner. What is the area of the remaining figure (in cm²)?



- (A) 34
- (B) 30
- (C) 28
- (D) 32

Answer: (D)

Q.10. Dairy : Milk :: Bakery : _____

- (A) Bread
- (B) Flour
- (C) Cake
- (D) Sugar

Answer: (A)

Q.11. Which of the following is **NOT** a structural building material?

- (A) Steel
- (B) Sound
- (C) Timber
- (D) Brick

Answer: (B)

Q.12. Good : Better : Best :: Bad : Worse : _____

- (A) More bad
- (B) Badder
- (C) Worst
- (D) More worse

Answer: (C)



Q.13. Firing : Pottery :: Weaving : _____

- (A) Cotton
- (B) Thread
- (C) Loom
- (D) Fabric

Answer: (D)

Q.14. The Harmandir Sahib (Golden Temple) in Amritsar, Punjab, is the holiest shrine of which faith?

- (A) Sikhism
- (B) Jainism
- (C) Buddhism
- (D) Hinduism

Answer: (A)

Q.15. The Meenakshi Amman Temple in Madurai, Tamil Nadu, with its towering *gopurams* covered in colourful sculptures, is an outstanding example of which architectural style?

- (A) Nagara
- (B) Dravidian
- (C) Indo-Islamic
- (D) Colonial

Answer: (B)

Q.16. Agra Fort, a UNESCO World Heritage Site, was primarily rebuilt in red sandstone by which Mughal emperor?

- (A) Babur



- (B) Humayun
- (C) Akbar
- (D) Aurangzeb

Answer: (C)

Q.17. The Victoria Memorial in Kolkata, built to commemorate Queen Victoria's reign and now a museum, exemplifies which architectural style?

- (A) Gothic Revival
- (B) Baroque
- (C) Mughal
- (D) Indo-Saracenic Revival

Answer: (D)

Q.18. The large glass-and-steel pyramid in the main courtyard of the Louvre Museum in Paris, added in 1989, was designed by which architect?

- (A) I.M. Pei
- (B) Jean Nouvel
- (C) Christian de Portzamparc
- (D) Renzo Piano

Answer: (A)

Q.19. The Chrysler Building in New York City (1930), famous for its gleaming eagle gargoyles and stainless steel sunburst crown, is an iconic example of which architectural style?

- (A) Brutalism
- (B) Art Deco
- (C) International Style
- (D) Postmodern



Answer: (B)

Q.20. Habitat 67 in Montreal, Canada, built for Expo 67, consists of 354 prefabricated concrete boxes arranged in a stepped, modular residential complex. Its architect was:

- (A) Richard Buckminster Fuller
- (B) Louis Kahn
- (C) Moshe Safdie
- (D) Paul Rudolph

Answer: (C)

Q.21. The statement “ p is a **sufficient condition** for q ” is logically expressed as:

- (A) $q \rightarrow p$
- (B) $p \wedge q$
- (C) $\sim p \rightarrow q$
- (D) $p \rightarrow q$

Answer: (D)

Q.22. Consider the argument: “All swans are white. This bird is white. Therefore, this bird is a swan.”

This argument commits which logical error?

- (A) Fallacy of affirming the consequent
- (B) Valid modus ponens
- (C) Valid modus tollens
- (D) Valid hypothetical syllogism

Answer: (A)

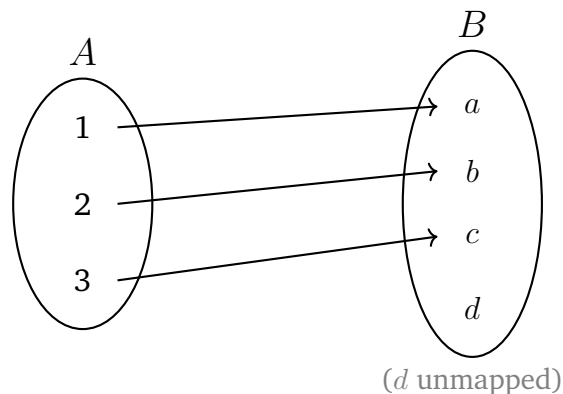


Q.23. “If a number is divisible by 4, then it is divisible by 2” is logically **equiv-
alent** to:

- (A) If divisible by 2, then divisible by 4
- (B) Either the number is *not* divisible by 4, or it is divisible by 2
- (C) The number is divisible by both 4 and 2
- (D) The number is not divisible by 4 and not by 2

Answer: (B)

Q.24. The relation $R = \{(1, a), (2, b), (3, c)\}$ is defined from set $A = \{1, 2, 3\}$ to set $B = \{a, b, c, d\}$. What is the *range* of R ?



- (A) $\{1, 2, 3\}$
- (B) $\{a, b, c, d\}$
- (C) $\{a, b, c\}$
- (D) $\{d\}$

Answer: (C)

Q.25. A function $f : A \rightarrow B$ in which every element of the codomain B is the image of **at least one** element of A is called:

- (A) Injective (one-one)
- (B) Bijective



(C) Constant

(D) Surjective (onto)

Answer: (D)



Solutions

Solution

Concept & Chapter: Figure Dot Sequence — Visual Reasoning. Each frame's dot count equals its frame number; Frame 5 contains 5 dots. Answer: **(D)**.

Visual — Figure Dot Sequence.

The pattern is straightforward: each frame contains exactly as many filled dots as its frame number.

Q.1.

Frame	1	2	3	4	5
Dots	1	2	3	4	5

The 5th frame adds one more dot to the 4 dots in the 4th frame, giving 5 dots.

Option (D) is correct.

[Go Back to Q 1](#)

Q.2.

Solution

Concept & Chapter: Direction and Distance (Pythagoras) — Visual Reasoning. Apply the 3-4-5 Pythagorean triple: $\sqrt{4^2 + 3^2} = 5$ km straight-line distance. Answer: **(A)**.

Visual — Direction and Distance (Pythagoras).

The hiker's path forms a right angle: 4 km northward and 3 km eastward. The straight-line distance is the hypotenuse of a right-angled triangle:

$$d = \sqrt{4^2 + 3^2} = \sqrt{16 + 9} = \sqrt{25} = 5 \text{ km.}$$

This is the classic 3-4-5 Pythagorean triple.

Option (A) is correct.

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Solution

Concept & Chapter: Alternating Circle Series — Visual Reasoning. Odd positions are filled, even positions are empty; position 8 is even, so the 8th circle is empty (outline only). Answer: **(B)**.

Visual — Alternating Shaded Circle Series.

The rule is: **odd-numbered** circles are filled (shaded); **even-numbered** circles are empty (outline only).

Q.3.

Position	1	2	3	4	5	6	7	8
Type	Filled	Empty	Filled	Empty	Filled	Empty	Filled	Empty



Position 8 is even $\Rightarrow$ the 8th circle is **empty (outline only)**.

Option (B) is correct.

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Q.4.

Solution

Concept & Chapter: Triangular Number Pattern — Visual Reasoning. $T(n) = \frac{n(n+1)}{2}$; Figure 5 has $T(5) = 15$ dots arranged in 5 rows. Answer: **(C)**.

Visual — Triangular Number Pattern.

The sequence follows the triangular numbers $T(n) = \frac{n(n+1)}{2}$:

$$T(1) = 1, \quad T(2) = 3, \quad T(3) = 6, \quad T(4) = 10, \quad T(5) = \frac{5 \times 6}{2} = 15.$$

Figure 5 contains 15 dots (a triangular arrangement of 5 rows with 1, 2, 3, 4, 5 dots per row).

Option (C) is correct.

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Solution

Concept & Chapter: Matrix Shading Pattern — Visual Reasoning. Shade cell (r, c) when $r + c$ is even; exactly 5 cells qualify — four corners plus the centre. Answer: **(D)**.

Visual — Matrix Shading Pattern.

For a 3×3 grid with rows $r \in \{1, 2, 3\}$ and columns $c \in \{1, 2, 3\}$, we shade cell (r, c) when $r + c$ is even:

	$c = 1$	$c = 2$	$c = 3$
Q.5. $r = 1$	$1 + 1 = 2 \checkmark$	$1 + 2 = 3$	$1 + 3 = 4 \checkmark$
$r = 2$	$2 + 1 = 3$	$2 + 2 = 4 \checkmark$	$2 + 3 = 5$
$r = 3$	$3 + 1 = 4 \checkmark$	$3 + 2 = 5$	$3 + 3 = 6 \checkmark$

Shaded cells: $(1, 1)$, $(1, 3)$, $(2, 2)$, $(3, 1)$, $(3, 3)$ — exactly **5 cells** forming a checker-board pattern: the four corners plus the centre.

Option (D) is correct.

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Q.6.



Solution

Concept & Chapter: Partnership Profit — Numerical Ability. Share profit proportional to capital $\times$ time: $5000 \times 6 : 4000 \times 9 = 30000 : 36000 = 5 : 6$. Answer: **(A)**.

Numerical — Partnership Profit.

Profit is shared in proportion to capital $\times$ time:

$$\text{A's share} = 5000 \times 6 = 30,000.$$

$$\text{B's share} = 4000 \times 9 = 36,000.$$

$$\text{Ratio} = 30,000 : 36,000 = 5 : 6.$$

Option (A) is correct.

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Q.7.

Solution

Concept & Chapter: Double-and-Subtract Series — Numerical Ability. Each term $= 2 \times \text{previous} - 1$; next term after 81 is $2 \times 81 - 1 = 161$. Answer: **(B)**.

Numerical — Double-and-Subtract Series.

The rule is: *next term* $= 2 \times \text{current term} - 1$.

$$6, \quad 2 \times 6 - 1 = 11, \quad 2 \times 11 - 1 = 21, \quad 2 \times 21 - 1 = 41, \quad 2 \times 41 - 1 = 81, \quad 2 \times 81 - 1 = 161.$$

$$\text{Verification: } 2 \times 81 - 1 = 162 - 1 = 161.$$

Option (B) is correct.

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Q.8.

Solution

Concept & Chapter: Fraction Comparison — Numerical Ability. Convert fractions to decimals; $9/19 \approx 0.4737$ is the largest among the four given fractions. Answer: **(C)**.

Numerical — Fraction Comparison.

Converting each fraction to a decimal:

$$\frac{3}{7} \approx 0.4286, \quad \frac{5}{11} \approx 0.4545, \quad \frac{7}{15} \approx 0.4667, \quad \frac{9}{19} \approx 0.4737.$$

$$\text{Arranging in ascending order: } \frac{3}{7} < \frac{5}{11} < \frac{7}{15} < \frac{9}{19}.$$



The largest fraction is $\frac{9}{19}$.
Option (C) is correct.

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Q.9.

Solution

Concept & Chapter: Area of Composite Figure — Numerical Ability. Subtract the removed square: $6^2 - 2^2 = 36 - 4 = 32 \text{ cm}^2$ remaining. Answer: **(D)**.

Numerical — Area of Composite Figure.

$$\text{Area of large square} = 6^2 = 36 \text{ cm}^2.$$

$$\text{Area of removed square} = 2^2 = 4 \text{ cm}^2.$$

$$\text{Remaining area} = 36 - 4 = 32 \text{ cm}^2.$$

Option (D) is correct.

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Q.10.

Solution

Concept & Chapter: Producer–Product Analogy — Verbal Reasoning. A dairy produces milk; analogously a bakery produces bread (flour and sugar are inputs, not products). Answer: **(A)**.

Verbal — Producer–Product Analogy.

A *dairy* is a facility that produces/processes *milk*. Analogously, a *bakery* is a facility that bakes and produces *bread*.

Flour (B) is the raw ingredient used by a bakery; Cake (C) is one product but not the defining product; Sugar (D) is a raw ingredient.

Option (A) is correct.

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Q.11.

Solution

Concept & Chapter: Odd One Out (Building Materials) — Verbal Reasoning. Steel, Timber, and Brick are structural materials; Sound is an acoustic wave, not a construction material. Answer: **(B)**.

Verbal — Odd One Out (Building Materials).



Steel (A), Timber (C), and Brick (D) are all well-established *structural* building materials used to carry loads in construction.

Sound (B) is an acoustic phenomenon — a mechanical wave that propagates through a medium. It has no structural, load-bearing, or material role in construction.

Option (B) is the odd one out.

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Q.12.

Solution

Concept & Chapter: Degrees of Comparison (Superlative) — Verbal Reasoning. Good/Better/Best; the superlative of Bad is Worst — “More bad” and “Badder” are grammatically incorrect. Answer: (C).

Verbal — Degrees of Comparison (Superlative).

The series follows the three degrees of comparison for adjectives: *positive* → *comparative* → *superlative*.

Positive	Comparative	Superlative
Good	Better	Best
Bad	Worse	Worst

Option (C) is correct. “More bad,” “Badder,” and “More worse” are all grammatically incorrect forms.

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Q.13.

Solution

Concept & Chapter: Process–Product Analogy — Verbal Reasoning. Firing produces pottery; weaving produces fabric (cotton/thread are inputs, loom is the tool). Answer: (D).

Verbal — Process–Product Analogy.

Firing (kiln firing) is the process that transforms raw clay into *pottery*. Analogously, *weaving* (interlacing threads on a loom) is the process that produces *fabric* (cloth).

Cotton (A) is the raw fibre (input, not output); Thread (B) is the input to weaving; Loom (C) is the tool/machine, not the product.

Option (D) is correct.

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Q.14.



Solution

Concept & Chapter: Indian Heritage Shrine — Architectural Awareness. Harmandir Sahib (Golden Temple), Amritsar, is the holiest Gurdwara and spiritual centre of Sikhism. Answer: (A).

Architectural Awareness — Indian (Heritage Shrine).

Harmandir Sahib (literally “Temple of God”), commonly known as the Golden Temple, is located in Amritsar, Punjab. It is the holiest Gurdwara and the spiritual centre of **Sikhism**. The complex was established by Guru Ram Das in the 16th century and the current structure, overlaid with gilded copper, was completed in the early 19th century under Maharaja Ranjit Singh.

Jainism (B), Buddhism (C), and Hinduism (D) all have their own distinct sacred sites; none of them is associated with Harmandir Sahib.

Option (A) is correct.

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Solution

Concept & Chapter: Indian Temple Architecture — Architectural Awareness. Meenakshi Amman Temple, Madurai, with its towering gopurams and polychrome sculptures, is a supreme Dravidian style example. Answer: (B).

Architectural Awareness — Indian (Temple Architecture).

The **Meenakshi Amman Temple** in Madurai, Tamil Nadu (principally rebuilt in the 17th century), is a supreme example of **Dravidian** temple architecture. Its hallmarks include:

- Q.15.
- Towering *gopurams* (pyramidal gateway towers) with multiple tiers
 - Surfaces densely covered with polychrome stucco sculptures of deities, mythological figures, and animals
 - Pillared *mandapas* (halls) and an enclosed sacred tank

Nagara (A) is the North Indian temple style with a curvilinear *shikhara*; Indo-Islamic (C) and Colonial (D) are architecturally unrelated.

Option (B) is correct.

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Q.16.

Solution

Concept & Chapter: Indian Mughal Heritage — Architectural Awareness. Agra Fort was primarily rebuilt in red sandstone by Emperor Akbar between 1565 and



1573; it is a UNESCO World Heritage Site. Answer: (C).

Architectural Awareness — Indian (Mughal Heritage).

Agra Fort (also called Lal Qila of Agra) was primarily rebuilt by Emperor **Akbar** between 1565 and 1573 using the distinctive red Agra sandstone. It became the main residence of the Mughal emperors until 1638. The fort was declared a UNESCO World Heritage Site in 1983.

Later, Shah Jahan added white marble structures within the fort (Diwan-i-Khas, Musamman Burj, Nagina Masjid), but the fundamental red-sandstone construction is credited to Akbar. Babur (A) and Humayun (B) preceded Akbar; Aurangzeb (D) came later and is not associated with the fort's primary construction.

Option (C) is correct.

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Q.17.

Solution

Concept & Chapter: Indian Colonial Architecture — Architectural Awareness. Victoria Memorial, Kolkata (1921), blends Italian Renaissance with Mughal elements — classified as Indo-Saracenic Revival style. Answer: (D).

Architectural Awareness — Indian (Colonial Architecture).

The **Victoria Memorial** in Kolkata (completed 1921), designed by Sir William Emerson, was built to commemorate the 25-year reign of Queen Victoria as Empress of India. It blends Italian Renaissance forms with Mughal architectural elements — domes, minarets, *chhatris* — a synthesis classified as the **Indo-Saracenic Revival** style.

Gothic Revival (A) is characterised by pointed arches and steeply pitched roofs (e.g., the Victoria Memorial Hall in Calcutta's courtroom area does not share these features); Baroque (B) is a European 17th-century style; Mughal (C) refers to the historical Mughal idiom, not a 20th-century British-built revival.

Option (D) is correct.

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Q.18.

Solution

Concept & Chapter: International Modern Architecture — Architectural Awareness. I.M. Pei designed the glass-and-steel Louvre Pyramid (1989) as part of France's Grands Travaux programme. Answer: (A).

Architectural Awareness — International (Modern).



I.M. Pei (Ieoh Ming Pei, 1917–2019) designed the **Louvre Pyramid**, a glass-and-steel structure inaugurated in 1989 in the Napoléon Courtyard of the Louvre Museum, Paris. The 21.6-metre-tall pyramid serves as the museum's main entrance and is flanked by three smaller triangular fountains. It was commissioned by President François Mitterrand as part of his *Grands Travaux* (Grand Works) programme. Jean Nouvel (B) designed the Institut du Monde Arabe; Christian de Portzamparc (C) designed the Cité de la Musique; Renzo Piano (D) co-designed the Centre Pompidou.

Option (A) is correct.

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Solution

Concept & Chapter: International Art Deco Architecture — Architectural Awareness. Chrysler Building (1930) by Van Alen is a landmark Art Deco skyscraper with a stainless-steel sunburst crown and eagle gargoyles. Answer: (B).

Architectural Awareness — International (Art Deco).

The **Chrysler Building** (completed 1930), designed by William Van Alen, is one of the finest examples of **Art Deco** skyscraper architecture. Its distinguishing features include:

- Q.19.
- Stainless-steel eagle gargoyles modelled on Chrysler automobile hood ornaments
 - A radiating sunburst crown of seven arched tiers clad in Nirosta steel
 - Terraced setbacks with geometric ornamentation
 - Zigzag and chevron patterns characteristic of the Art Deco vocabulary

Brutalism (A) uses raw exposed concrete; International Style (C) is characterised by flat roofs, smooth facades, and absence of ornament; Postmodern (D) employs historical references ironically.

Option (B) is correct.

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Q.20.

Solution

Concept & Chapter: International Modern Housing — Architectural Awareness. Habitat 67, Montreal (Expo 67), was designed by Moshe Safdie as modular pre-fabricated concrete residential housing. Answer: (C).

Architectural Awareness — International (Modern Housing).

Habitat 67 was designed by **Moshe Safdie** (born 1938) as his master's thesis at



McGill University and built for the 1967 World Exposition in Montreal, Canada. The complex consists of 354 prefabricated concrete boxes arranged in a modular, stepped configuration, providing each apartment with a private garden terrace — a pioneering attempt to bring the advantages of suburban housing to high-density urban living.

Richard Buckminster Fuller (A) is known for geodesic domes; Louis Kahn (B) for the Salk Institute and Kimbell Art Museum; Paul Rudolph (D) for Yale's Art and Architecture Building.

Option (C) is correct.

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Solution

Concept & Chapter: Sufficient Condition — Mathematical Reasoning. “ p is sufficient for q ” means $p \rightarrow q$; the converse $q \rightarrow p$ expresses necessity, not sufficiency. Answer: (D).

Mathematical Reasoning — Sufficient Condition.

In propositional logic:

- Q.21.**
- “ p is **sufficient** for q ” means: if p is true, then q must be true $\implies$ expressed as $p \rightarrow q$.
 - “ p is **necessary** for q ” means: if q is true, then p must be true $\implies$ expressed as $q \rightarrow p$.

Therefore “ p is sufficient for q ” $\iff p \rightarrow q$.

Option (D) is correct. Option (A) gives the *necessary* condition form; options (B) and (C) are unrelated.

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Q.22.

Solution

Concept & Chapter: Formal Fallacy — Mathematical Reasoning. Affirming the consequent: from $p \rightarrow q$ and q , one cannot conclude p ; many non-swans are also white. Answer: (A).

Mathematical Reasoning — Formal Fallacy.

The argument has the structure:

All swans are white $\equiv p \rightarrow q$, This bird is white $\equiv q$, $\therefore$ This bird is a swan $\equiv p$.

This is the **Fallacy of Affirming the Consequent**: $(p \rightarrow q) \wedge q \not\vdash p$. Knowing q is



true does *not* guarantee p is true; many non-swans are also white.

Valid Modus Ponens would be: $p \rightarrow q$; p ; $\therefore q$ — not this case. **Valid Modus Tollens** would be: $p \rightarrow q$; $\sim q$; $\therefore \sim p$.

Option (A) is correct.

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Q.23.

Solution

Concept & Chapter: Logical Equivalence of a Conditional — Mathematical Reasoning. $p \rightarrow q \equiv \neg p \vee q$; the conditional is equivalent to “not divisible by 4, or divisible by 2.” Answer: **(B)**.

Mathematical Reasoning — Logical Equivalence of a Conditional.

The standard logical equivalence is:

$$p \rightarrow q \equiv \neg p \vee q.$$

Applying this with p = “divisible by 4” and q = “divisible by 2”:

$$(\text{divisible by 4}) \rightarrow (\text{divisible by 2}) \equiv \neg(\text{divisible by 4}) \vee (\text{divisible by 2}).$$

In plain language: *Either the number is **not** divisible by 4, or it **is** divisible by 2* — which is option (B).

Option (A) gives the converse (not equivalent); option (C) is conjunction; option (D) gives a completely different statement.

Option (B) is correct.

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Q.24.

Solution

Concept & Chapter: Range of a Relation — Sets & Relations. The range is the set of all mapped second elements; R maps to $\{a, b, c\}$ while d is unmapped. Answer: **(C)**.

Sets — Range of a Relation.

$R = \{(1, a), (2, b), (3, c)\}$ defined from $A = \{1, 2, 3\}$ to $B = \{a, b, c, d\}$.

The **range** (also called the *image*) of a relation is the set of all *second elements* (values actually mapped to) in its ordered pairs:

$$\text{Range of } R = \{a, b, c\}.$$



Element $d \in B$ is *not* the image of any element in A , so d does not belong to the range. The full codomain $\{a, b, c, d\}$ is option (B), not the range.
Option (C) is correct.

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Solution

Concept & Chapter: Types of Functions — Sets & Relations. A surjective (onto) function maps every codomain element to at least one domain element; the range equals the codomain. Answer: **(D)**.

Sets — Types of Functions.

The three key types of functions $f : A \rightarrow B$ are:

- Q.25.
- **Injective (one-one):** distinct elements of A map to distinct elements of B (no two inputs share the same output).
 - **Surjective (onto):** *every* element of the codomain B is the image of *at least one* element of A (the range equals the codomain).
 - **Bijective:** both injective and surjective simultaneously.

The description in the question matches **Surjective (onto)**.

Option (D) is correct.

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Answer Key

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	D	2	A	3	B	4	C	5	D
6	A	7	B	8	C	9	D	10	A
11	B	12	C	13	D	14	A	15	B
16	C	17	D	18	A	19	B	20	C
21	D	22	A	23	B	24	C	25	D

