NID DAT Aptitude

Sample Paper – 10

Duration: 45 Minutes **Maximum Marks: 30**

Instructions

- This paper contains **22 Multiple Choice Questions** (Single Correct Answer), modelled on the Aptitude (Part A) section of the **NID DAT** entrance examination.
- **Questions 1–14** carry **+1 mark** each; **Questions 15–22** carry **+2 marks** each.
- There is **no negative marking** for incorrect or unattempted answers.
- Only **one** option is correct per question.
- Syllabus: Visual Reasoning, Logical Reasoning, Design Awareness & GK, Design Theory & Principles.
- Use of mobile phones, calculators, or electronic gadgets is strictly prohibited.

SECTION A — Visual Reasoning (Q1–Q8) [1 Mark Each]

Q1. A sequence of shapes repeats in the pattern shown below. What is the **17th shape** in this sequence?

Positions 1, 2, 3, 4, 5, 6, 7, 8, . . .

(A) Square

(B) Circle

(C) **Triangle**

(D) Pentagon

Q2. A clock shows the time **3:45**. When the clock face is held up to a **mirror** (reflected along a vertical axis), the reflected time appears to show:

(A) 6:15

(B) 9:15

(C) 7:45

(D) **8:15**

Q3. A **regular hexagon** (all sides equal, all interior angles equal) has how many **lines of symmetry**?

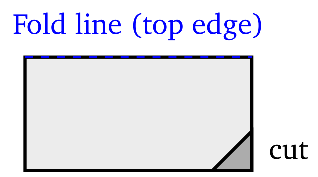
(A) **6**

(B) 3

(C) 4

(D) 8

Q4. A square sheet of paper is folded in half **horizontally** (the top half folds down onto the bottom half). A small right-triangle notch is then cut from the **bottom-right corner** of the folded sheet. When the sheet is completely **unfolded**, what pattern appears?



Folded sheet (half height of original)

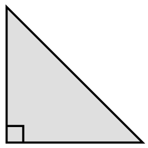
(A) A single triangular notch at the bottom-right corner only

(B) **Two symmetric triangular notches — one at the top-right and one at the bottom-right corner**

(C) A triangular notch in the centre of the right edge

(D) Two notches on opposite horizontal edges (left side and right side)

Q5. The right-angled triangle shown below has its **right angle at the bottom-left** corner. After a rotation of **180°** about its centre, the right angle will be located at:



Original: right angle at bottom-left

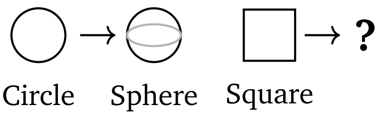
(A) Top-left corner

(B) Bottom-right corner

(C) Bottom-left corner (unchanged)

(D) **Top-right corner**

Q6. Complete the analogy: **Circle** is to **Sphere** as **Square** is to:



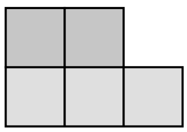
(A) Rectangle

(B) Cylinder

(C) **Cube**

(D) Pyramid

Q7. The figure below shows a structure built from unit cubes viewed from the front. Each column is **one cube deep**. How many unit cubes make up this structure in total?



Front view (each column 1 cube deep)

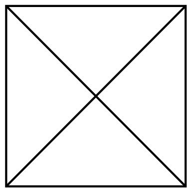
(A) **5**

(B) 6

(C) 7

(D) 8

Q8. The figure below shows a square with **both diagonals** drawn. How many **triangles of all sizes** are there in total?



Square with both diagonals

(A) 4

(B) **8**

(C) 10

(D) 12

SECTION B — Logical Reasoning (Q9–Q13) [1 Mark Each]

Q9. What is the next number in the series? $2,\ 5,\ 10,\ 17,\ 26,\ \_\_\_\_$

(A) 35

(B) **37**

(C) 39

(D) 41

Q10. In a certain code, each letter is replaced by its position number in the alphabet (A=1, B=2, . . . , Z=26) and the numbers are **concatenated**. For example, **CAT** $= 3\,1\,20 = 3120$ and **DOG** $= 4\,15\,7 = 4157$. Using this code, **BIG** is written as:

(A) 2196

(B) 2197

(C) **297**

(D) 2907

Q11. A non-leap year has **365 days**. If **January 1** falls on a **Thursday**, on what day does **December 31** of the same year fall?

(A) Friday

(B) Saturday

(C) **Thursday**

(D) Wednesday

Q12. Given the statement: **"All squares are rectangles."** Which of the following conclusions is **definitely true**?

(A) All rectangles are squares

(B) No squares are parallelograms

(C) Some rectangles are not quadrilaterals

(D) **Some squares are rectangles**

Q13. Two trains, each **100 m long**, are travelling towards each other on parallel tracks at **60 km/h** and **40 km/h** respectively. How long does it take for them to **completely pass each other**?

(A) 6 seconds

(B) 8 seconds

(C) **7.2 seconds**

(D) 10 seconds

SECTION C — Design Awareness / GK (Q14–Q18) [Q14: 1 Mark | Q15–18: 2 Marks Each]

Q14. The **Bauhaus** school was **originally founded** in which German city in 1919?

(A) **Weimar**

(B) Dessau

(C) Berlin

(D) Munich

Q15. The **Art Nouveau** movement — characterised by organic flowing lines inspired by natural forms such as plants, vines, and insects — flourished primarily between approximately:

(A) 1840–1870

(B) 1870–1890

(C) 1920–1940

(D) **1890–1910**

Q16. Charles and Ray Eames are celebrated for their pioneering mid-century chair designs. Their iconic chairs were made using which primary material combination?

(A) Teak wood and rattan

(B) **Fibreglass shell and moulded plywood**

(C) Polished stainless steel and concrete

(D) Cast aluminium and acrylic

Q17. The **Lotus Temple** in New Delhi (inaugurated 1986) — famous for its flower-like form with 27 free-standing marble-clad 'petals' arranged in clusters of three — was designed by:

(A) B. V. Doshi

(B) Charles Correa

(C) **Fariborz Sahba**

(D) Achyut Kanvinde

Q18. **Murano glass** — celebrated worldwide for its intricate blown-glass artworks, chandeliers, and decorative objects produced using centuries-old techniques — originates from:

(A) Czech Republic

(B) France

(C) Sweden

(D) **Italy**

SECTION D — Design Theory & Principles (Q19–Q22) [2 Marks Each]

Q19. The Gestalt principle of **'Prägnanz'** (also called the **Law of Good Form** or **Law of Simplicity**) states that:

(A) Elements placed close together are perceived as a related group

(B) **The mind tends to perceive ambiguous or complex images in their simplest, most regular, and most stable form**

(C) The eye follows smooth continuous lines and curves through a composition

(D) Elements that move in the same direction are perceived as belonging together

Q20. A colour scheme that uses **only one hue** in its various **tints** (with white added), **shades** (with black added), and **tones** (with grey added) is called:

(A) **Monochromatic**

(B) Analogous

(C) Complementary

(D) Tetradic

Q21. The **Golden Ratio** (approximately $1:1.618$, denoted φ) has been used in art, architecture, and design to create proportions considered aesthetically harmonious. It is most directly related to:

(A) The principle of symmetry and bilateral mirror reflection

(B) Euclidean right-angle geometry and the Pythagorean theorem

(C) The rule of thirds used in photographic composition

(D) **The Fibonacci sequence, in which each term is the sum of the two preceding terms, and whose successive ratios converge to φ**

Q22. In design, **'white space'** (also called 'negative space') primarily serves to:

(A) Save printing costs by reducing ink coverage

(B) Make the design look incomplete or unfinished

(C) **Improve readability, establish visual hierarchy, and give the composition room to breathe**

(D) Separate sections visually using explicit borders or dividing lines

Answer Key

Questions 1–10 (1 mark each):

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
C	D	A	B	D	C	A	B	B	C

Questions 11–14 (1 mark each):

Q11	Q12	Q13	Q14
C	D	C	A

Questions 15–22 (2 marks each):

Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22
D	B	C	D	B	A	D	C

Answer distribution: $A = 4 \quad B = 5 \quad C = 7 \quad D = 6$

Detailed Solutions

Sol. 1.

Solution

Concept — Repeating Sequence (Cycle of 3): When a sequence repeats with a fixed period, divide the position number by the period; the remainder identifies the element.

Step 1 — Identify the cycle: The sequence is Square(1), Triangle(2), Circle(3) — period = 3.

Step 2 — Find position 17:

$$17 \div 3 = 5 \text{ remainder } 2$$

Remainder 2 corresponds to position 2 in the cycle = **Triangle**.

Why other options are wrong:

- A (Square): occupies positions with remainder 1 (e.g. 1st, 4th, 7th, 10th, 13th, 16th, 19th).
- B (Circle): occupies positions with remainder 0 (i.e. multiples of 3: 3rd, 6th, 9th, 12th, 15th, 18th).
- D (Pentagon): does not appear in this sequence at all.

Final Answer: Triangle $\Rightarrow \boxed{\text{C}}$

Answer: (C) Go Back to Q1

Sol. 2.

Solution

Concept — Clock Mirror Reflection: A vertical mirror reflection of a clock face reverses the left–right positions of the hands. The formula for the mirrored time is:

$$\text{Mirror time} = 11 \text{ h } 60 \text{ min} - \text{original time}$$

Step 1 — Apply the formula:

$$11 \text{ h } 60 \text{ min} - 3 \text{ h } 45 \text{ min} = 8 \text{ h } 15 \text{ min} = \mathbf{8:15}$$

Step 2 — Intuitive check: At 3:45 the minute hand points to the **9** (left side). Reflected left–right, it points to the **3** (right side) = 15 minutes. The hour hand near 3 reflects to near 9 (the opposite side), consistent with **8:xx**. So the mirror reads 8:15. ✓

Why other options are wrong:

- A (6:15): $12:00 - 3:45 = 8:15$, not 6:15; this comes from an incorrect formula.
- B (9:15): the hour hand reflects to near 8–9, but the minute hand (9 o'clock position reflecting to 3) gives 15 min, not allowing 9:15.
- C (7:45): does not follow from the mirror formula.

Final Answer: 8:15 $\Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q2

Sol. 3.

Solution

Concept — Lines of Symmetry in Regular Polygons: A regular n-gon has exactly n lines of symmetry.

Step 1 — Apply to a regular hexagon ($n = 6$):

$$\text{Lines of symmetry} = 6$$

These are: 3 lines connecting opposite vertices (vertex–to–vertex) and 3 lines connecting midpoints of opposite sides (edge–to–edge midpoint).

Why other options are wrong:

- B (3): the number of vertex-to-vertex axes alone — missing the 3 edge-midpoint axes.
- C (4): corresponds to a square (4-sided regular polygon), not a hexagon.
- D (8): corresponds to a regular octagon, not a hexagon.

Final Answer: 6 lines of symmetry $\Rightarrow \boxed{\text{A}}$

Answer: (A) Go Back to Q3

Sol. 4.

Solution

Concept — Paper Folding and Corner Cuts: Each layer cut reveals a mirrored copy when unfolded.

Step 1 — Understand the fold: The square is folded horizontally — the top half folds down onto the bottom half. The fold line runs along the horizontal midline of the original square.

Step 2 — Locate the cut: The triangular notch is at the **bottom-right corner** of the **folded sheet**. Since the top half is now stacked on the bottom, this corner corresponds to two points on the original sheet:

- The **bottom-right corner** of the original sheet (bottom layer).
- The **top-right corner** of the original sheet (top layer, which was folded down to coincide with the bottom-right).

Step 3 — Unfold: Two symmetric triangular notches appear: one at the **top-right** and one at the **bottom-right** corner of the original sheet.

Why other options are wrong:

- A (one notch): only one layer was cut; folding doubles the layers.
- C (notch at mid-right edge): would result from a corner cut near the fold line, not the far corner.
- D (notches on opposite horizontal sides): the fold is horizontal; the cut at the right corner reflects to the same right side, not to the left.

Final Answer: Two symmetric notches at top-right and bottom-right $\Rightarrow \boxed{B}$

Answer: (B) Go Back to Q4

Sol. 5.

Solution

Concept — 180° Rotation: A 180° rotation about the centre maps every point (x, y) to $(-x, -y)$ relative to the centre. Every corner travels to the diagonally opposite corner.

Step 1 — Original triangle vertices: Let the square bounding box have corners: bottom-left (BL), bottom-right (BR), top-left (TL), top-right (TR). The right angle is at **BL**, and the triangle's vertices are BL, BR, TL.

Step 2 — Apply 180° rotation:

$$\text{BL} \to \text{TR}, \qquad \text{BR} \to \text{TL}, \qquad \text{TL} \to \text{BR}$$

The right angle was at BL, which maps to **TR** (top-right).

Why other options are wrong:

- A (top-left): would result from a 90° clockwise rotation.
- B (bottom-right): would result from a reflection across the horizontal mid-line.
- C (bottom-left, unchanged): 180° always moves every corner to its opposite — nothing stays fixed except the centre.

Final Answer: Right angle at top-right $\Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q5

Sol. 6.

Solution

Concept — 2D to 3D Analogy: The analogy relates a 2-dimensional shape to its 3-dimensional counterpart (the solid generated by revolution or extrusion of that cross-section).

Step 1 — First pair: Circle (2D) $\to$ Sphere (3D). A sphere is the 3D solid bounded by a surface equidistant from its centre — analogous to a circle in 3D.

Step 2 — Apply to second pair: Square (2D) $\to$ **Cube** (3D). A cube is the 3D solid whose six faces are all squares — it is the direct 3D analogue of a square (equal-sided, right-angled in all three dimensions).

Why other options are wrong:

- A (Rectangle): still a 2D shape; the analogy requires a 3D solid.
- B (Cylinder): the 3D analogue of a circle (not a square) when extended along an axis.
- D (Pyramid): a square pyramid has a square base but triangular faces, so it is not the simple 3D extension of a square the way a cube is.

Final Answer: Cube $\Rightarrow \boxed{\text{C}}$

Answer: (C) Go Back to Q6

Sol. 7.

Solution

Concept — 3D Cube Counting (L-shaped Structure): Count cubes layer by layer.

Step 1 — Count by row (front view, each column 1 cube deep):

- Bottom row: 3 cubes (spanning full width).
- Top row: 2 cubes (left-aligned, not full width).

Step 2 — Total:

$$3 + 2 = \mathbf{5}$$

Why other options are wrong:

- B (6): mistakenly adds the full-width row on top.
- C (7): overcounts further.
- D (8): treats the structure as 2×4 or $2 \times 2 \times 2$.

Final Answer: 5 unit cubes $\Rightarrow \boxed{\text{A}}$

Answer: (A) Go Back to Q7

Sol. 8.

Solution

Concept — Counting Triangles in a Square with Both Diagonals: Diagonals of a square divide it into 4 congruent right triangles. Count all triangles formed by combining adjacent small triangles.

Step 1 — Label the four unit triangles: Let the diagonals intersect at centre O and the square corners be A (top-left), B (top-right), C (bottom-right), D (bottom-left). The four small triangles are AOB (top), BOC (right), COD (bottom), DOA (left).

Step 2 — Small triangles (size 1):

$$\text{AOB, BOC, COD, DOA} \quad \to \quad \text{4 triangles}$$

Step 3 — Medium triangles (combining 2 adjacent):

AOB+BOC $= \triangle ABC$, BOC+COD $= \triangle BCD$, COD+DOA $= \triangle CDA$, DOA+AOB $= \triangle DA$

Step 4 — Larger combinations: Any set of 3 adjacent small triangles forms a quadrilateral (not a triangle). Combining all 4 gives the square, also not a triangle. No more triangles.

Grand total: $4 + 4 =$ **8**.

Why other options are wrong:

- A (4): counts only the small unit triangles; misses the medium ones.
- C (10), D (12): arise from overcounting or adding invalid combinations.

Final Answer: 8 triangles $\Rightarrow \boxed{\text{B}}$

Answer: (B) Go Back to Q8

Sol. 9.

Solution

Concept — Number Series with Increasing Odd Differences: Compute the first differences; if they form an arithmetic sequence, identify the next difference.

Step 1 — First differences:

$$5 - 2 = 3, \quad 10 - 5 = 5, \quad 17 - 10 = 7, \quad 26 - 17 = 9$$

Differences: $3, 5, 7, 9, \ldots$ — consecutive odd numbers (increasing by 2).

Step 2 — Next difference: $9 + 2 = 11$.

Step 3 — Next term: $26 + 11 =$ **37**.

Why other options are wrong:

- A (35): uses difference of 9 (repeating the last known difference instead of incrementing).
- C (39): uses difference of 13 (skips 11).
- D (41): uses difference of 15 (skips two steps).

Final Answer: 37 $\Rightarrow \boxed{\text{B}}$

Answer: (B) Go Back to Q9

Sol. 10.

Solution

Concept — Letter-Position Concatenation Code: Each letter is replaced by its alphabet position number (A=1, B=2, . . . , Z=26) and the numbers are written consecutively.

Step 1 — Verify with given examples:

- CAT: C(3), A(1), T(20) $\rightarrow$ "3", "1", "20" $\rightarrow 3120$. ✓
- DOG: D(4), O(15), G(7) $\rightarrow$ "4", "15", "7" $\rightarrow 4157$. ✓

Step 2 — Encode BIG:

$$\mathrm{B}(2),\ \mathrm{I}(9),\ \mathrm{G}(7)\ \rightarrow\ \text{“2”, “9”, “7”}\ \rightarrow\ \mathbf{297}$$

Why other options are wrong:

- A (2196): uses I=19+6 or some garbled assignment.
- B (2197): uses G=17 incorrectly (G is the 7th letter).
- D (2907): inserts a zero between I and G for no reason.

Final Answer: 297 $\Rightarrow \boxed{\text{C}}$

Answer: (C) Go Back to Q10

Sol. 11.

Solution

Concept — Day of the Week Calculation: Count the number of elapsed days between Jan 1 and Dec 31; divide by 7 to find the weekday shift.

Step 1 — Elapsed days from Jan 1 to Dec 31: Jan 1 is Day 1; Dec 31 is Day 365. Days *elapsed* between them $= 365 - 1 = 364$.

Step 2 — Weekday shift:

$$364 \div 7 = 52 \text{ weeks exactly, remainder } 0$$

A remainder of 0 means **no shift** — Dec 31 falls on the same day of the week as Jan 1.

Step 3 — Conclusion: Jan 1 = Thursday $\Rightarrow$ Dec 31 = **Thursday**.

Note: Jan 1 of the *next* year would be one day later (Friday), because 365 = 52 weeks + 1 day shifts the calendar forward by 1. But Dec 31 is the day *before* that, so it remains Thursday.

Why other options are wrong:

- A (Friday): confuses Dec 31 with Jan 1 of the next year.
- B (Saturday): off by two days.
- D (Wednesday): shifts backward, which has no basis here.

Final Answer: Thursday $\Rightarrow \boxed{\text{C}}$

Answer: (C) Go Back to Q11

Sol. 12.

Solution

Concept — Logical Deduction from Universal Statements: "All A are B" means every member of set A is also a member of set B.

Step 1 — Analyse the given statement: "All squares are rectangles" means the set of squares is a subset of the set of rectangles. Every square is a rectangle.

Step 2 — Evaluate each option:

- A (All rectangles are squares): FALSE — rectangles can have unequal adjacent sides; the converse of "all A are B" does not hold in general.
- B (No squares are parallelograms): FALSE — squares *are* parallelograms (rectangles are parallelograms; squares are rectangles; therefore squares are parallelograms).
- C (Some rectangles are not quadrilaterals): FALSE — all rectangles are quadrilaterals by definition.
- **D (Some squares are rectangles): TRUE** — since ALL squares are rectangles, it certainly follows that *some* squares are rectangles.

Final Answer: Some squares are rectangles $\Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q12

Sol. 13.

Solution

Concept — Relative Speed and Time to Cross: When two objects move towards each other, their relative speed is the sum of their individual speeds. Total distance to cover = sum of their lengths.

Step 1 — Relative speed:

$$v_{\text{rel}} = 60 + 40 = 100 \text{ km/h} = \frac{100 \times 1000}{3600} \text{ m/s} = \frac{250}{9} \approx 27.78 \text{ m/s}$$

Step 2 — Total distance (both trains must completely clear each other):

$$d = 100 + 100 = 200 \text{ m}$$

Step 3 — Time:

$$t = \frac{200}{250/9} = \frac{200 \times 9}{250} = \frac{1800}{250} = \mathbf{7.2} \text{ s}$$

Why other options are wrong:

- A (6 s): uses only one train length ($100/27.78 \approx 3.6$ s $\times 2$ with wrong speed).
- B (8 s): off; perhaps uses relative speed of 50 km/h (wrong — speeds add for head-on approach).
- D (10 s): uses the speed of only one train.

Final Answer: 7.2 seconds $\Rightarrow \boxed{\text{C}}$

Answer: (C) **Go Back to Q13**

Sol. 14.

Solution

Concept — Design History (Bauhaus Founding City): The Bauhaus moved three times during its 14-year existence.

Step 1 — Bauhaus locations:

- **1919–1925**: **Weimar** (founded here by Walter Gropius in 1919).
- 1925–1932: Dessau (new purpose-built campus; most iconic building by Gropius).
- 1932–1933: Berlin (briefly, under Ludwig Mies van der Rohe, before clo-

sure).

Why other options are wrong:

- B (Dessau): the second location, not the founding city.
- C (Berlin): the third and final location.
- D (Munich): the Bauhaus never had a campus in Munich.

Final Answer: Weimar $\Rightarrow \boxed{A}$

Answer: (A) Go Back to Q14

Sol. 15.

Solution

Concept — Design History (Art Nouveau): Art Nouveau was a decorative art movement that swept across Europe and the Americas.

Step 1 — Historical period: Art Nouveau flourished from approximately **1890 to 1910** (sometimes extended to 1914). It was characterised by sinuous, organic lines inspired by natural forms — vines, flowers, insects, and women's hair. Key figures include Alphonse Mucha (illustration), Victor Horta (architecture, Belgium), Antoni Gaudí (architecture, Spain), and Louis Comfort Tiffany (glass, USA).

Step 2 — Why that period: Art Nouveau emerged in the 1880s–90s as a reaction against historicism and industrial mass production, and declined after World War I when its ornate style fell out of favour.

Why other options are wrong:

- A (1840–70): the era of Historicism and early Arts & Crafts movement; Art Nouveau had not emerged yet.
- B (1870–90): the Aesthetic Movement and early precursors; Art Nouveau proper began c. 1890.
- C (1920–40): the era of Art Deco and Modernism; Art Nouveau had already ended.

Final Answer: 1890–1910 $\Rightarrow \boxed{D}$

Answer: (D) Go Back to Q15

Sol. 16.

Solution

Concept — Design History (Charles and Ray Eames): The Eameses were among the most innovative designers of the 20th century.

Step 1 — Key material innovations: Charles and Ray Eames pioneered two primary materials in their iconic chair designs:

- **Moulded plywood**: developed during WWII (1940s) for splints and aircraft components, then adapted for furniture — yielding organically curved seats and backs (e.g. the DCW and LCW chairs, 1945–46).
- **Fibreglass-reinforced plastic**: used for the shell chairs (DAR, DAW, DSR, 1948–50) — the first mass-produced plastic chairs. The Eameses experimented with fibreglass after polyester resin became commercially available.

Why other options are wrong:

- A (Teak and rattan): associated with mid-century Scandinavian and colonial furniture, not the Eameses.
- C (Stainless steel and concrete): materials of Brutalist architecture, not Eames chair design.
- D (Cast aluminium and acrylic): cast aluminium is used in some later Eames office chairs, but not in the iconic shell/plywood series; acrylic was not a key Eames material.

Final Answer: Fibreglass and moulded plywood $\Rightarrow \boxed{\text{B}}$

Answer: (B) Go Back to Q16

Sol. 17.

Solution

Concept — Indian Architecture (Lotus Temple): The Lotus Temple is one of New Delhi's most visited landmarks.

Step 1 — Historical facts: The **Bahá'í House of Worship** (commonly called the Lotus Temple) was designed by **Fariborz Sahba** (born 1948), an Iranian-Canadian architect. Construction began in 1980 and the temple was inaugurated in **1986**. Its form consists of 27 free-standing **marble-clad 'petals'** arranged in nine groups of three, creating the appearance of a lotus flower. It is a place of worship open to all faiths.

Why other options are wrong:

- A (B. V. Doshi): Pritzker Prize–winning Indian architect; designed IIM Bangalore and Aranya Housing; not the Lotus Temple.
- B (Charles Correa): renowned Indian architect known for Jawahar Kala Kendra and the British Council building; not the Lotus Temple.
- D (Achyut Kanvinde): Indian Modernist architect who designed IIT Kanpur campus; not the Lotus Temple.

Final Answer: Fariborz Sahba $\Rightarrow \boxed{\text{C}}$

Answer: (C) Go Back to Q17

Sol. 18.

Solution

Concept — Craft and Design Geography (Murano Glass): NID DAT tests knowledge of internationally significant craft traditions.

Step 1 — Murano glass: Murano is a cluster of islands in the Venetian Lagoon, near Venice, **Italy**. Glassmaking has been practised there since 1291, when the Republic of Venice ordered all glass furnaces moved to Murano to protect Venice from fire risk and to safeguard the craft's secrets. Murano glassmakers developed landmark techniques including *millefiori* (thousand flowers), *filigrana* (glass threads), and *vetro calcedonio* (chalcedony glass).

Why other options are wrong:

- A (Czech Republic): famous for Bohemian crystal (cut glass), especially from regions like Karlovy Vary; not Murano glass.
- B (France): known for Baccarat crystal and Daum Art Nouveau glass; not Murano blown glass.
- C (Sweden): home to Orrefors and Kosta Boda studio glass; fine traditions but not Murano.

Final Answer: Italy $\Rightarrow \boxed{\text{D}}$

Answer: (D) Go Back to Q18

Sol. 19.

Solution

Concept — Gestalt Principles (Prägnanz / Law of Good Form): Prägnanz (German for "conciseness" or "precision") is considered the overarching Gestalt law.

Step 1 — Prägnanz defined: The principle states that the human mind spontaneously organises ambiguous or complex stimuli into the **simplest, most regular, most stable, and most symmetric** interpretation possible. For example, an overlapping circle and rectangle is perceived as two complete regular shapes (a circle and a rectangle) rather than two irregular interlocking fragments.

Step 2 — Distinguish from other Gestalt principles:

- **Proximity**: elements close together perceived as a group (Option A).
- **Prägnanz**: simplest/most regular interpretation (Option B — **correct**).
- **Continuity**: eye follows smooth lines (Option C).
- **Common Fate**: elements moving together perceived as a group (Option D).

Final Answer: Simplest, most regular form perceived $\Rightarrow \boxed{\text{B}}$

Answer: (B) Go Back to Q19

Sol. 20.

Solution

Concept — Colour Theory (Monochromatic Scheme): A monochromatic scheme uses one hue as its foundation.

Step 1 — Definition: A **monochromatic** colour scheme uses a single hue and creates variation through:

- **Tints**: the hue + white (lighter versions, e.g. pastel blue from blue).
- **Shades**: the hue + black (darker versions, e.g. navy from blue).
- **Tones**: the hue + grey (muted, de-saturated versions).

Step 2 — Properties: Monochromatic schemes are inherently harmonious and easy on the eye, but can lack contrast — often balanced by varying value (lightness/darkness) across the tints and shades.

Why other options are wrong:

- B (Analogous): uses several hues *adjacent* on the colour wheel.

- C (Complementary): uses two hues *opposite* on the wheel.
- D (Tetradic): uses four hues in two complementary pairs (a rectangle on the colour wheel).

Final Answer: Monochromatic $\Rightarrow \boxed{A}$

Answer: (A) Go Back to Q20

Sol. 21.

Solution

Concept — Golden Ratio and Fibonacci Sequence: The Golden Ratio $\varphi \approx 1.618$ appears ubiquitously in mathematics, nature, and design.

Step 1 — Fibonacci connection: The **Fibonacci sequence** is: $1, 1, 2, 3, 5, 8, 13, 21, 34, 55, \ldots$ where each term is the sum of the two preceding. The ratio of consecutive Fibonacci numbers converges rapidly to φ:

$$\frac{5}{3} \approx 1.667, \quad \frac{8}{5} = 1.600, \quad \frac{13}{8} = 1.625, \quad \frac{21}{13} \approx 1.615, \quad \ldots \to \varphi = \frac{1+\sqrt{5}}{2} \approx 1.618$$

Step 2 — Appearance in nature: Fibonacci numbers govern the spiral arrangement of sunflower seeds, pine cone scales, leaf phyllotaxis, and nautilus shell growth — all of which approximate the Golden Spiral.

Why other options are wrong:

- A (Symmetry/mirror): symmetry is a separate geometric concept; φ does not arise from bilateral reflection.
- B (Pythagorean theorem): concerns right-triangle side ratios ($a^2 + b^2 = c^2$); unrelated to φ.
- C (Rule of thirds): a practical photography/composition guideline dividing the frame into thirds; an approximation of φ but not the direct mathematical relationship.

Final Answer: Fibonacci sequence and natural growth $\Rightarrow \boxed{D}$

Answer: (D) Go Back to Q21

Sol. 22.

Solution

Concept — White Space / Negative Space in Design: White space (also called negative space) is an active design element, not merely the absence of content.

Step 1 — Functions of white space:

- **Readability**: adequate spacing between text elements reduces cognitive load and prevents visual clutter.
- **Visual hierarchy**: larger amounts of white space around an element draw attention to it and signal its importance.
- **Breathing room**: space prevents compositions from feeling crowded, giving the eye natural resting points and allowing elements to be distinguished from one another.
- **Elegance**: luxury brands (Apple, Chanel, Rolex) use generous white space to signal quality and exclusivity.

Why other options are wrong:

- A (saves ink): printing costs are governed by ink coverage, not white space per se; moreover, white space is a *design* principle, not a cost-saving technique.
- B (looks unfinished): the opposite is true — skilled use of white space signals intentional, confident design.
- D (explicit borders): white space separates elements *without* visible lines; borders are a different device.

Final Answer: Improves readability and visual hierarchy $\Rightarrow \boxed{C}$

Answer: (C) Go Back to Q22