NID DAT

Complete Sample Paper – 8

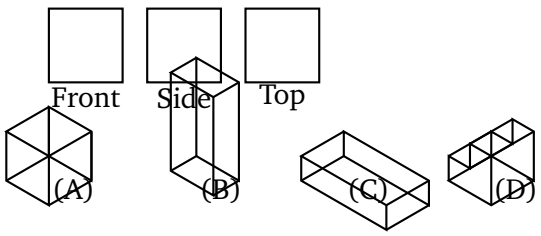
Duration: 150 Minutes **Maximum Marks: 100**

Instructions

- This paper contains **50 Visual MCQs (Part A)** and **5 Drawing Tasks (Part B)**, modelled on NID DAT 2026 Prelims.
- **Part A:** Each correct answer carries **+1 mark**. There is **no negative marking**.
- **Part B:** Each drawing task carries **10 marks**; marks are awarded for design thinking, form, composition, and visual communication.
- **Total: 100 marks | Duration: 150 minutes**
- For Part A only one option is correct per question; for Part B all answers are open-ended sketches.
- Drawing tools (pencils, sketch pens, scale, colours) are allowed for Part B only. No electronic gadgets.

Part A: Visual MCQs — 50 Marks

Q1. Three orthographic views of a 3-D object are given below (front, side, top). Which of the four isometric sketches (A–D) correctly represents this object?



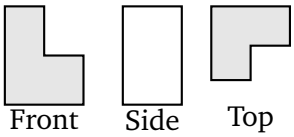
(A) Option A — a cube-like rectangular box with equal height and depth

(B) Option B — a tall, narrow box with height twice the width

(C) Option C — a wide, flat slab with large footprint and low height

(D) Option D — an L-shaped block missing one corner

Q2. The front view is an **L-shape** and the top view is also an **L-shape**; the side view is a plain rectangle. Which isometric matches?



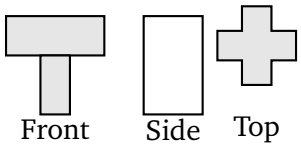
(A) A rectangular block with a notch cut from the top-right corner

(B) A flat slab with a raised central column

(C) A stepped block with three equal risers

(D) An L-shaped prism — a tall rectangular block with one rear quadrant removed

Q3. Front view: **T-shape**; side view: rectangle; top view: **plus/cross shape**. Which isometric is correct?



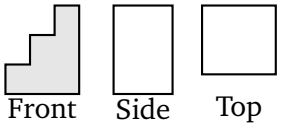
(A) A rectangular block with a diagonal cut on one face

(B) A cross-shaped prism — a central vertical column with two horizontal arms projecting forward and back

(C) A circular cylinder with a flat base

(D) A pyramid with a square base

Q4. Front view: a **3-step staircase** ascending left to right; side view and top view are both plain rectangles. Which isometric is correct?



(A) A smooth inclined wedge (ramp) with no steps

(B) A flat rectangular slab

(C) A 3-step staircase block ascending from left to right in isometric view

(D) A pyramid with 3 levels

Q5. An object has an arch (semicircle on top of a rectangle) as the front view, and plain rectangles as both the side and top views. Which isometric view is closest to this object?

(A) A rectangular prism with a half-cylindrical arch running along its top (like a tunnel portal)

(B) A full sphere sitting on a flat rectangular base

(C) A cone mounted on a rectangular block

(D) A rectangular box with a triangular roof (prism on top)

Q6. Which set of three orthographic views (front, side, top) correctly corresponds to a **perfect sphere**?

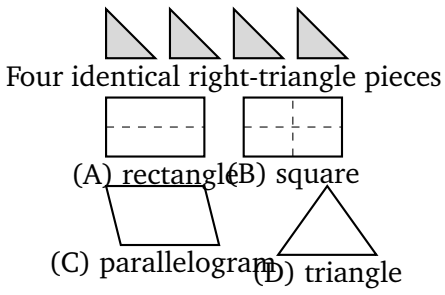
(A) Front: circle; side: square; top: circle

(B) Front: ellipse; side: circle; top: ellipse

(C) Front: circle; side: rectangle; top: circle

(D) Front: circle; side: circle; top: circle

Q7. The four right-triangle pieces shown below are to be arranged without overlap or gap. Which option shows the only arrangement that forms a perfect square?



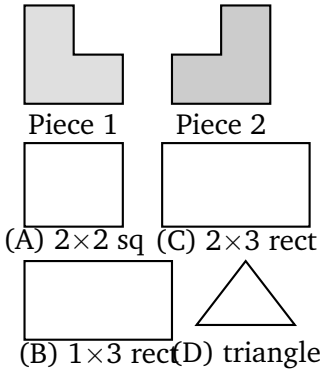
(A) Option A — a rectangle (2:1 ratio)

(B) Option B — a square (all sides equal)

(C) Option C — a parallelogram

(D) Option D — a large triangle

Q8. The two L-shaped pieces below are congruent (mirror images of each other). Placed together correctly, they form which complete shape?



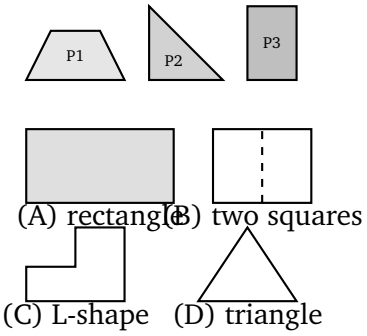
(A) A 2×2 square

(B) A 1×3 thin rectangle

(C) A 2×3 rectangle

(D) A large triangle

Q9. Three irregular pieces are shown. When correctly assembled without rotation or flip, which option shows the complete shape?



(A) A solid rectangle formed by all three pieces fitting together

(B) Two equal squares placed side by side

(C) An L-shaped outline

(D) A large triangle

Q10. Five pentomino-style pieces (each made of unit squares) are given. Together they make up a single flat 2-D shape with no holes. Which of the following shapes has the correct total area ($5 \times 5 = 25$ unit squares) to match all five pieces?

(A) A 4×6 rectangle (24 squares)

(B) A 3×8 rectangle (24 squares)

(C) A 5×4 rectangle (20 squares)

(D) A 5×5 square (25 squares)

Q11. A complex irregular shape is cut into exactly 6 pieces. Which of the four options below shows the uncut original, i.e. the shape that contains all 6 pieces without any leftover area?

(A) A large circle with one quadrant removed

(B) A rectangle with a triangular notch cut from one side (so the 6 pieces fill it exactly)

(C) A regular hexagon

(D) An ellipse

Q12. Two congruent trapezoids are placed together along their longer parallel sides. What single shape do they form?

(A) A triangle

(B) A pentagon

(C) A rectangle (or parallelogram)

(D) A hexagon

Q13. In **space planning**, the term **"circulation space"** refers to:

(A) The paths and areas reserved for movement of people through a space (corridors, aisles, entry zones)

(B) The area occupied by furniture and fixtures

(C) The ventilation ducts and air-circulation shafts in a building

(D) The decorative border pattern that "circulates" around the perimeter of a room

Q14. Which principle of interior design states that all elements — colours, textures, forms, and patterns — should visually relate to one another to create a unified, harmonious whole?

(A) Emphasis

(B) Rhythm

(C) Scale and proportion

(D) Unity (or Harmony)

Q15. In **acoustic design** for an interior, "**reverberation time**" (RT60) measures:

(A) The maximum decibel level a room can sustain before structural damage

(B) The time (in seconds) for a sound to decay by 60 dB after the source stops

(C) The frequency range that a room's walls can absorb

(D) The delay between a sound and its first reflection off a wall

Q16. A **"planogram"** in retail interior design is:

(A) A floor plan showing customer seating areas

(B) An elevation drawing of the store facade

(C) A detailed diagram specifying exactly where each product should be placed on a shelf or display unit

(D) A colour scheme plan for retail signage

Q17. Which of these spatial conditions most effectively creates a sense of **"compression and release"** in interior design?

(A) A low-ceilinged entry passage that opens suddenly into a tall, light-filled atrium

(B) A single large room with uniform ceiling height throughout

(C) Identical room sizes repeated in a row

(D) A room painted entirely in one dark colour

Q18. In residential interior design, the standard minimum clearance between the **edge of a dining table** and a wall (to allow a chair to be pulled out comfortably) is approximately:

(A) 300 mm (30 cm)

(B) 450 mm (45 cm)

(C) 600 mm (60 cm)

(D) 900 mm (90 cm)

Q19. Don Norman's term **"affordance"** in interaction design refers to:

(A) The cost of developing a user interface

(B) A perceived or actual property of an object that suggests how it should be used (e.g. a button that looks pressable)

(C) The colour scheme chosen for a digital product

(D) The loading speed of a web page

Q20. **Fitts' Law** in UX design states that the time to move to and select a target is a function of:

(A) The colour contrast of the target button

(B) The number of menu items on the screen

(C) The distance to the target and the size of the target (larger and closer = faster)

(D) The user's internet connection speed

Q21. In interaction design, **"feedback"** means:

(A) A signal sent back to the user confirming that their action has been received and processed (e.g. a button changing colour when clicked)

(B) User reviews posted on an app store

(C) The error messages shown when a system crashes

(D) The background music played in a mobile app

Q22. **Hick's Law** in UX design relates decision time to:

(A) Screen resolution and pixel density

(B) The weight of a mobile device

(C) The brightness of the display

(D) The number of choices presented to the user (more choices = longer decision time)

Q23. A **"Norman Door"** is a term used to describe:

(A) A revolving door found in large hotels

(B) A door (or by extension any interface element) whose design gives confusing or incorrect signals about how it should be used

(C) A door made of tempered glass in modern offices

(D) A fire-exit door with a panic bar

Q24. In UX design, a **"mental model"** is:

(A) A 3-D rendering of a product prototype

(B) The brand colour palette used across a product

(C) A user's internal understanding or expectation of how a system works, based on their prior experience

(D) The technical architecture diagram of a software system

Q25. The **Ajanta cave paintings** (approximately 2nd century BCE – 6th century CE) depict primarily:

(A) Scenes from the life of the Buddha and Jataka tales (stories of the Buddha's past lives), painted in rich earth pigments

(B) Battle scenes from the Mahabharata war

(C) Portraits of Mughal emperors and their courts

(D) Abstract geometric patterns derived from Vedic fire rituals

Q26. Which Mughal emperor commissioned the **Hamzanama** — one of the earliest and largest Mughal illustrated manuscript projects (c. 1558–1573)?

(A) Babur

(B) Shah Jahan

(C) Aurangzeb

(D) Akbar

Q27. The **Bengal School of Art** (early 20th century), led by Abanindranath Tagore, was primarily a reaction against:

(A) The folk traditions of rural Bengal

(B) The dominance of European academic realism promoted by colonial art schools in India

(C) The abstract tendencies of European Cubism

(D) The rigid iconographic rules of traditional Tanjore painting

Q28. Abanindranath Tagore's famous painting **"Bharat Mata"** (c. 1905) represents:

(A) A realistic portrait of a rural woman working in the fields

(B) The goddess Durga slaying the demon Mahishasura

(C) India as a four-armed goddess holding symbols of learning, food, clothing, and spiritual liberation — painted in the style of traditional Indian miniature

(D) A Mughal-style hunting scene in a royal garden

Q29. The **Company School** (or Patna School) paintings of the 18th–19th centuries were distinctive because:

(A) They blended Indian painting conventions (flat perspective, pure colour) with European techniques (shading, naturalistic detail) to appeal to British East India Company patrons

(B) They exclusively depicted Hindu mythological subjects in a purely traditional style

(C) They were painted on silk using Chinese ink-wash techniques brought via the Silk Road

(D) They used only natural pigments and rejected any foreign influence

Q30. Which style of painting used a "squirrel-hair brush" technique and gold leaf on **palm leaf manuscripts** in Kerala?

(A) Madhubani (Mithila) painting

(B) Warli painting

(C) Pattachitra (Odisha)

(D) Kerala mural / Granthavari manuscript painting tradition

Q31. Among the following, which material has the **highest embodied carbon** per kilogram of material produced?

(A) Timber (kiln-dried softwood)

(B) Aluminium (primary, from bauxite smelting)

(C) Recycled glass

(D) Rammed earth

Q32. **"Compostable"** plastic differs from **"biodegradable"** plastic in that compostable plastic:

(A) Never breaks down in any environment

(B) Breaks down only in seawater

(C) Breaks down into non-toxic, natural compounds within a defined time frame under specific composting conditions (heat, moisture, microbes)

(D) Is made from petroleum but decomposes faster than regular plastic

Q33. The **"circular economy"** model in product design aims to:

(A) Eliminate waste by keeping materials in use as long as possible through reuse, repair, remanufacturing, and recycling — closing the resource loop

(B) Maximise the speed of production to reduce unit costs

(C) Design products with a planned short lifespan to stimulate repeat purchases

(D) Centralise all manufacturing in a single geographic location

Q34. **Fast fashion's** environmental impact is primarily driven by:

(A) The use of natural linen fibres

(B) Slow, hand-crafted production methods

(C) The use of solar power in garment factories

(D) Rapid overproduction of low-quality garments leading to textile waste, excessive water use, and chemical pollution from dyeing

Q35. Which of the following packaging materials has the **highest recycled-content rate globally** (by weight percentage of material recycled)?

(A) Single-use plastic film

(B) Steel / tinplate (ferrous metal)

(C) Multi-layer flexible packaging (plastic-foil laminate)

(D) Expanded polystyrene (EPS foam)

Q36. **"Lifecycle thinking"** in material selection considers which of these factors most comprehensively?

(A) Only the manufacturing cost of the material

(B) Only the recyclability at end of life

(C) Environmental, social, and economic impacts from raw material extraction through production, use, and end-of-life disposal or recovery

(D) Only the visual aesthetic qualities of the material

Q37. The **Volkswagen Beetle**, designed under Ferdinand Porsche in the 1930s and popularised globally in the 1960s, became a cultural icon primarily because:

(A) Its rounded, friendly form, affordability, and association with the counter-culture movement made it a symbol of individuality and anti-establishment values

(B) It was the first car to feature an automatic gearbox

(C) It was the fastest production car of its era

(D) It was designed exclusively for racing circuits

Q38. The **Coca-Cola contour bottle** (1915, designed by Earl R. Dean) was specifically designed so that consumers could:

(A) Stack multiple bottles without packaging

(B) Refill the bottle easily at home

(C) Identify the brand by the bottle's silhouette when seen from a distance, and even recognise it by feel in the dark or when broken

(D) Measure exact serving quantities using the embossed lines

Q39. The **Anglepoise lamp** (1933, designed by George Carwardine) was revolutionary in product design because it:

(A) Was the first lamp to use an LED light source

(B) Used a system of springs that balanced the arm in any position, mimicking the properties of the human limb and allowing effortless repositioning

(C) Operated entirely on solar power

(D) Folded flat for storage, making it the first portable desk lamp

Q40. **UNESCO World Heritage** status can be granted to which of the following?

(A) Only natural landscapes and ecosystems

(B) Only man-made structures built before 1500 CE

(C) Both natural sites (Outstanding Universal Natural Value) and cultural sites (Outstanding Universal Cultural Value) — including living traditions and mixed sites

(D) Only sites located within UNESCO member states that contributed to the World Heritage Fund

Q41. The **Eames Lounge Chair** (1956, designed by Charles and Ray Eames for Herman Miller) uses which primary materials in its seat shell and upholstery?

(A) Moulded plywood (rosewood veneer) shell with leather upholstery and die-cast aluminium base

(B) Fibreglass shell with woven fabric upholstery and wooden legs

(C) Steel tube frame with PVC upholstery

(D) Solid walnut carved shell with sheepskin upholstery

Q42. Which **World Heritage Site in India** is a living or archaeological example of the **urban grid planning** concept dating to the Indus Valley Civilisation?

(A) Fatehpur Sikri, Uttar Pradesh

(B) Hampi, Karnataka

(C) Konark Sun Temple, Odisha

(D) Dholavira, Gujarat (Harappan city with a planned grid layout)

Q43. The **RGB colour model** is described as **"additive"** because:

(A) The colours are added to a physical surface using pigments

(B) Coloured light is added together — combining red, green, and blue light at full intensity produces white light

(C) The model adds more colours than any other model

(D) Mixing RGB colours always adds cost to the printing process

Q44. **WCAG 2.1 Level AA** accessibility guidelines require a minimum contrast ratio of how much between normal-size text and its background?

(A) 2.5:1

(B) 3:1

(C) 4.5:1

(D) 7:1

Q45. The **"gamut"** of a display device refers to:

(A) The complete range of colours that the device can reproduce or display

(B) The maximum brightness (nits) the screen can achieve

(C) The number of pixels per inch of the display

(D) The refresh rate of the display in Hertz

Q46. Which colour model is most directly used in **screen and projector** display technology?

(A) CMYK (Cyan, Magenta, Yellow, Key/Black)

(B) LAB (Lightness, A-axis, B-axis)

(C) Pantone (spot colour matching system)

(D) RGB (Red, Green, Blue)

Q47. In **HSL** colour notation, a Lightness (**L**) value of **100%** always produces:

(A) A fully saturated, vivid version of the chosen hue

(B) Pure white, regardless of the hue or saturation values

(C) Pure black

(D) A 50% grey

Q48. A digital designer uses **"out-of-gamut"** colours in their screen design. What does this mean when the design is sent to print (CMYK)?

(A) The design will print with higher-than-expected colour accuracy

(B) The printer will refuse to print the file

(C) The colours cannot be accurately reproduced in print and will be substituted with the nearest printable colour, often appearing duller or shifted

(D) The file size will be too large to process

Q49. The **DCI-P3** colour space is wider than **sRGB** primarily because it extends into:

(A) Deeper, more saturated greens and reds (particularly in the green-to-red region of the colour gamut triangle)

(B) The ultraviolet spectrum invisible to the human eye

(C) A wider range of very dark shadow tones

(D) A higher maximum brightness (white point)

Q50. **"Colour banding"** in digital images is caused by:

(A) Using too many colours in a single image

(B) Applying an incorrect ICC colour profile

(C) Overexposure during photography

(D) Insufficient bit depth, causing smooth colour gradients to appear as visible stepped bands of discrete tones

Part B: Drawing Tasks — 50 Marks

Q51. Smart Home App Dashboard — UI Wireframe

Sketch a **dashboard wireframe for a smart home control app** (design for a phone screen aspect ratio). Show at least **4 distinct control sections**: e.g. Lighting control, Temperature/AC, Security camera feed, and a daily energy usage graph. Use boxes, sketched icons, and clear labels for each section. Marks are awarded for functional clarity, inclusion of all 4 sections, layout logic and hierarchy, and sketch quality.

Marks: functional clarity (3) + inclusion of 4 sections (2) + layout logic and hierarchy (3) + sketch quality (2). Total: 10 marks.

Q52. Traditional Potter at Work

Illustrate a **traditional Indian potter seated at the wheel**, at work in their workshop. Capture: the potter's hands shaping wet clay, the spinning wheel, nearby finished pots on shelves, tools on the floor, and the texture of clay and dust in the air. Use **no colour** — line and tone only (pencil or ink).

Marks: figure gesture and hands (3) + workshop atmosphere and detail (3) + tonal range (2) + quality (2). Total: 10 marks.

Q53. Modular Bookshelf in 3 Configurations

Design a **modular bookshelf system** that adapts to three room sizes. Show all three on one page as quick sketches:

- **Config A — Compact** (2 modules, fits a corridor)
- **Config B — Medium** (4 modules, fits a studio)
- **Config C — Full** (6 modules, fills a living-room wall)

Label the modular unit clearly in at least one configuration.

Marks: modularity concept clarity (3) + adaptability across 3 sizes (3) + labelling (2) + sketch quality (2). Total: 10 marks.

Q54. Traditional Wedding Invitation Border

Design a **decorative border pattern** for a traditional Indian wedding invitation. The border must run along **all four sides** of an A5 card. Draw inspiration from Mehndi/Henna motifs, Mughal floral jali patterns, or temple frieze carvings. Show: (a) the complete A5 card outline with the border in place, and (b) an enlarged corner detail. The border should feel celebratory and ornate.

Marks: cultural reference and motif richness (3) + rhythmic pattern quality (3) + corner detail (2) + presentation (2). Total: 10 marks.

Q55. Lighthouse at Dawn — Atmospheric Rendering

Sketch a **lighthouse at dawn**: the lighthouse stands on a rocky promontory; dramatic rays of early light fan outward from behind or through clouds, falling across the water below. Convey the scene using **value contrast** — deep dark foreground rocks, light mid-tones in the water, bright sky glow. No human figures required.

Marks: atmospheric light and drama (3) + compositional balance (3) + tonal range and rendering (2) + line quality (2). Total: 10 marks.

Detailed Solutions

Part A — Visual MCQ Solutions

Q1.

Solution

Concept: Reading orthographic views to identify the correct isometric. When the front view is a rectangle, the side view is a rectangle, and the top view is a square, the object is a rectangular prism where the footprint is square (equal width and depth) and the height may differ.

Step 1 — Front view: A rectangle tells us the object has a flat vertical face with some height and width.

Step 2 — Top view: A square means the object's footprint (plan view) is equal in both horizontal dimensions — so width = depth.

Step 3 — Side view: Also a rectangle, consistent with a box shape.

Conclusion: Option (A) shows a cube-like box where the footprint is square — this matches all three views.

Why other options are wrong:

- (B) Tall narrow box — would give a tall narrow front view with a rectangular (non-square) top view.
- (C) Wide flat slab — top view would be a wide rectangle, not a square.
- (D) L-shaped block — would give an L-shaped front or top view, not a plain rectangle.

Answer: (A) Go Back to Q1

Q2.

Solution

Concept: An L-shaped front view and L-shaped top view, combined with a rectangular side view, indicates a 3-D L-shaped prism. The object is like a full rectangular block with one rear quadrant (corner column) removed.

Step 1: Front view L-shape means the vertical cross-section is L-shaped.

Step 2: Top view L-shape means the horizontal cross-section (plan) is also L-shaped.

Step 3: Side view is a plain rectangle, confirming uniform depth along the viewing

direction.

Conclusion: Option (D) — an L-shaped prism with one rear quadrant removed from a rectangular block.

Why other options are wrong:

- (A) Notch from top-right — this would give a stepped front view, not a clean L.
- (B) Central raised column — would give a T-shaped front view.
- (C) Three-riser staircase — would give a staircase front view, not an L.

Answer: (D) Go Back to Q2

Q3.

Solution

Concept: A T-shaped front view, rectangular side view, and cross/plus-shaped top view correspond to a cross-shaped prism: a central vertical column with two horizontal arms projecting forward and backward (which gives the T when seen from the front, and the cross when seen from the top).

Step 1 — Front view T-shape: The wide horizontal top and narrow vertical stem of the T come from the central column and one arm of the cross.

Step 2 — Top view cross-shape: Looking down, you see the column plus both arms projecting in two directions.

Step 3 — Side view rectangle: The arm projecting toward you fills the full width from this angle.

Conclusion: Option (B) — a cross-shaped prism.

Why other options are wrong:

- (A) Diagonal cut — would produce a parallelogram or trapezoidal view, not a T.
- (C) Circular cylinder — would give circular views, not T or cross shapes.
- (D) Pyramid — would give triangular views.

Answer: (B) Go Back to Q3

Q4.

Solution

Concept: A 3-step staircase front view with rectangular side and top views corresponds to a block that has been stepped on one face, forming three equal risers and treads. In isometric view, this appears as a staircase block ascending from left to right.

Step 1 — Front view: The staircase profile is clearly visible — three ascending steps.

Step 2 — Side and top views: Both are plain rectangles, meaning the staircase runs uniformly across the full depth and width.

Step 3: Option (C) shows the 3-step staircase block in isometric view.

Why other options are wrong:

- (A) Smooth ramp — would give a triangular/trapezoidal front view, not a stepped one.
- (B) Flat slab — would give only a thin rectangular front view.
- (D) 3-level pyramid — would have a different side and top view (triangular or stepped differently).

Answer: (C) Go Back to Q4

Q5.

Solution

Concept: An arch (semicircle on top of a rectangle) in the front view with rectangular side and top views indicates a half-cylinder running along the top of a rectangular prism — like the profile of a tunnel portal or barrel vault.

Step 1: The semicircle in the front view is the circular cross-section of a half-cylinder.

Step 2: The rectangular side view confirms the object has a uniform depth (no tapering).

Step 3: The rectangular top view is the plan of the base rectangle — the half-cylinder's curvature shows as a straight edge from above.

Conclusion: Option (A) — a rectangular prism with a half-cylindrical arch running along its top.

Why other options are wrong:

- (B) Sphere — all three views of a sphere are circles, not rectangles.
- (C) Cone — front view would be a triangle, not an arch.
- (D) Triangular roof prism — front view would show a triangle, not a semi-circle.

Answer: (A) Go Back to Q5

Q6.

Solution

Concept: A perfect sphere looks the same from every direction — all orthographic views (front, side, top) produce a perfect circle of the same diameter.

Step 1: No matter which direction you view a sphere, you see a circular outline.

Step 2: Therefore: front = circle, side = circle, top = circle.

Conclusion: Option (D).

Why other options are wrong:

- (A) Side view = square — impossible for a sphere; a square indicates a cube-like shape.
- (B) Ellipses — a sphere in orthographic projection always gives true circles, not ellipses (ellipses appear in perspective projection).
- (C) Side = rectangle — a rectangle side view means flat parallel sides, not a sphere.

Answer: (D) Go Back to Q6

Q7.

Solution

Concept: Four identical right-angled isoceles triangles (each with legs of 1 unit) can be arranged into a square by placing two pairs: one pair forms a rectangle, and flipping / rotating one triangle to meet the hypotenuse of another creates a square. The correct arrangement pairs them in a 2×2 pattern.

Step 1: Each right triangle has area $= \frac{1}{2} \times 1 \times 1 = 0.5$ sq. units. Four triangles total area $= 2$ sq. units.

Step 2: A square of area 2 has side $= \sqrt{2}$. Place two triangles hypotenuse-to-

hypotenuse to form a 1×1 square, then two more the same way — four in total form a $\sqrt{2} \times \sqrt{2}$ square, but more intuitively: two triangles form a 1×1 square; four form a 1×2 rectangle OR a $\sqrt{2} \times \sqrt{2}$ tilted square. In the figure, Option (B) — the 2×2 sub-grid — shows four right triangles arranged correctly to form a square.

Conclusion: Option (B) — a square with dashed interior diagonals showing the four triangle joins.

Why other options are wrong:

- (A) Rectangle — a 2:1 rectangle can be formed but is not a square.
- (C) Parallelogram — pieces cannot form this without overlap.
- (D) Large triangle — four right triangles can form a larger triangle, but the question requires a square.

Answer: (B) Go Back to Q7

Q8.

Solution

Concept: Two congruent L-shaped pieces that are mirror images of each other fit together perfectly along their matching stepped edges to form a rectangle. Piece 1 is a 2×1 column plus a 1×1 base (total $2 \times 1 + 1 \times 1 = 3$ unit squares). Together, both pieces cover $3 \times 2 = 6$ unit squares in a 2×3 rectangle.

Step 1: Count area of each L-piece: 3 unit squares. Total = 6 unit squares.

Step 2: A 2×3 rectangle = 6 unit squares. It fits. A 2×2 square = only 4 — too small.

Step 3: The mirror-image L pieces slide together to fill a 2×3 rectangle without any gap or overlap.

Conclusion: Option (C) — a 2×3 rectangle.

Why other options are wrong:

- (A) 2×2 square — only 4 squares; the two L-pieces have 6 squares total.
- (B) 1×3 thin rectangle — only 3 squares; can't fit both pieces.
- (D) Triangle — L-pieces have right angles and cannot form a triangle.

Answer: (C) Go Back to Q8

Q9.

Solution

Concept: When irregular pieces assemble without rotation or flip, the outline of the assembled shape must match one of the given options exactly. The three pieces (trapezoid P1, right triangle P2, rectangle P3) fit edge-to-edge to form a solid rectangle.

Step 1 — Total area estimation: P1 (trapezoid, approx. $1.5 \times 1 = 1.5$ sq. units) + P2 (right triangle, $\frac{1}{2} \times 1.5 \times 1.5 \approx 1.1$ sq. units) + P3 (rectangle, $1 \times 1.5 = 1.5$ sq. units) ≈ 4.1 sq. units. This matches a $\approx 3 \times 1.5$ rectangle.

Step 2: Option (A) shows a rectangle — the trapezoid's slanted edge mates with P2's hypotenuse, and P3 fills the remaining rectangular gap.

Conclusion: Option (A) — a solid rectangle formed by all three pieces.

Why other options are wrong:

- (B) Two equal squares with a dividing line — pieces do not naturally form this.
- (C) L-shape — there would be an unfilled notch; the pieces cover a convex rectangle.
- (D) Triangle — the pieces include a rectangle (P3), which cannot be part of a pure triangle.

Answer: (A) Go Back to Q9

Q10.

Solution

Concept: Five pentomino-style pieces, each made of 5 unit squares, have a combined area of $5 \times 5 = 25$ unit squares. The only option with area 25 is a 5×5 square.

Step 1: Each piece = 5 unit squares $\times$ 5 pieces = 25 unit squares total.

Step 2: Check options: (A) $4 \times 6 = 24$; (B) $3 \times 8 = 24$; (C) $5 \times 4 = 20$; (D) $5 \times 5 = 25$. Only (D) has the correct area.

Conclusion: Option (D) — a 5×5 square.

Why other options are wrong:

- (A) and (B) — 24 unit squares, one short of 25.
- (C) — only 20 unit squares; 5 pieces could not fill it (area mismatch).

Answer: (D) Go Back to Q10

Q11.

Solution

Concept: When a complex shape is cut into exactly 6 pieces, the uncut original must be the shape whose area equals the total area of all 6 pieces combined, and whose outline is a single closed shape without holes. The rectangle with a triangular notch cut from one side is the only option that describes an irregular but closed polygon matching typical puzzle-cut configurations.

Step 1: A circle with a removed quadrant is an open-looking shape and has an unusual outline — not typical for a 6-piece puzzle.

Step 2: A rectangle with a triangular notch is a convex-plus-one-concave shape that can be divided into 6 pieces easily (e.g. 5 rectangles and 2 triangles, or other combinations).

Step 3: Options (C) and (D) — regular hexagon and ellipse — are smooth closed curves, but cannot be divided into 6 rectilinear pieces without remainder in a standard puzzle context.

Conclusion: Option (B) — the rectangle with a triangular notch.

Why other options are wrong:

- (A) Circle minus quadrant — unusual shape that is hard to fill with 6 standard pieces.
- (C) Regular hexagon — can be cut into 6 equilateral triangles, but the question's context (complex irregular shape) makes this a less likely intended answer.
- (D) Ellipse — curved boundaries make clean 6-piece cuts impractical.

Answer: (B) Go Back to Q11

Q12.

Solution

Concept: Two congruent trapezoids placed together along their longer parallel sides (the bases) form a rectangle or parallelogram. If the trapezoids are right-angled trapezoids, the result is a rectangle; if they are oblique trapezoids, the result is a parallelogram. Either way, the answer is Option (C).

Step 1: A trapezoid has one pair of parallel sides (the two bases). When two congruent trapezoids are placed base-to-base (longer base touching longer base), the non-parallel sides become the new top and bottom, and the combined shape is a parallelogram (or rectangle).

Step 2: The resulting shape has two pairs of parallel sides — it is a parallelogram (rectangle is a special case).

Conclusion: Option (C) — a rectangle (or parallelogram).

Why other options are wrong:

- (A) Triangle — you cannot form a triangle from two trapezoids placed base-to-base.
- (B) Pentagon — has 5 sides; joining two trapezoids gives 4 sides.
- (D) Hexagon — has 6 sides; two trapezoids placed together give only 4 sides.

Answer: (C) Go Back to Q12

Q13.

Solution

Concept: In interior design and space planning, **circulation space** refers to the areas and pathways through which people move within a space — corridors, aisles, lobbies, entry zones, and passages between furniture. It is a fundamental category in space planning distinct from "functional zones" occupied by furniture or equipment.

Step 1: Space planning divides a floor plan into: furniture/activity zones + circulation zones. Circulation zones ensure clear, unobstructed movement paths.

Step 2: A typical guideline: primary circulation paths should be at least 900–1200 mm wide; secondary paths at least 600–750 mm.

Conclusion: Option (A) — paths and areas reserved for movement of people.

Why other options are wrong:

- (B) Furniture area — that is the "activity zone" or "placed zone".
- (C) Ventilation ducts — "air circulation" is a building services term, not a space planning term.
- (D) Decorative border pattern — entirely unrelated to space planning.

Answer: (A) Go Back to Q13

Q14.

Solution

Concept: **Unity** (or Harmony) is the interior design principle that ensures all elements in a space — colours, textures, forms, patterns, and materials — relate visually and aesthetically to one another, creating a cohesive, unified whole rather than a disjointed collection of parts.

Step 1: Unity is achieved through repetition of a colour palette, consistent material choices, or a recurring geometric motif throughout the space.

Step 2: It is different from Emphasis (which creates a focal point), Rhythm (which creates movement through repetition), and Scale/Proportion (which deals with relative sizes).

Conclusion: Option (D) — Unity (or Harmony).

Why other options are wrong:

- (A) Emphasis — creates a focal point or dominant element, not overall coherence.
- (B) Rhythm — refers to visual movement and pattern repetition, not overall unity.
- (C) Scale and proportion — addresses size relationships between objects, not overall visual relatedness.

Answer: (D) Go Back to Q14

Q15.

Solution

Concept: Reverberation time (RT60) is a key metric in acoustic design. It measures how long (in seconds) it takes for a sound to decay by 60 decibels after the source is switched off. A large, hard-surfaced room (like a cathedral) has a long RT60; a heavily treated recording studio has a very short RT60.

Step 1: RT60 is defined as the time for sound pressure level to drop 60 dB below the original level.

Step 2: Typical values: concert hall $\approx$1.5–2.5 s; office $\approx$0.4–0.6 s; recording studio $<$0.3 s.

Conclusion: Option (B) — the time (in seconds) for a sound to decay by 60 dB after the source stops.

Why other options are wrong:

- (A) Maximum decibel level — that is a sound pressure level limit, not reverberation time.
- (C) Frequency range absorbed — that describes a material's absorption coefficient, not RT60.
- (D) Delay to first reflection — that is "initial time delay gap" or "first reflection time", a different acoustic parameter.

Answer: (B) Go Back to Q15

Q16.

Solution

Concept: A **planogram** (also written "plan-o-gram") is a retail display tool: a detailed schematic or diagram that specifies precisely how products should be arranged on shelves, gondolas, or display fixtures within a store. It is used by visual merchandisers to ensure consistent, strategic product placement that maximises sales and brand visibility.

Step 1: Planograms show the exact shelf position (row, column, facing) of every SKU (stock-keeping unit) on a fixture.

Step 2: They are distinct from floor plans (which show overall store layout) or elevations (which show the store facade).

Conclusion: Option (C) — a detailed diagram specifying where each product is placed on a shelf or display unit.

Why other options are wrong:

- (A) Customer seating floor plan — that is a space planning document, not a product-placement diagram.
- (B) Store facade elevation — a planogram is for interior display, not the building exterior.
- (D) Colour scheme plan — that is a brand identity or interior colour document.

Answer: (C) Go Back to Q16

Q17.

Solution

Concept: Compression and release is a spatial sequence strategy in architecture and interior design. A deliberately low, narrow, or dark space (compression) followed by a sudden transition to a tall, wide, or bright space (release) creates a powerful emotional impact — the contrast heightens the experience of the larger space.

Step 1: The classic example is Le Corbusier's pilgrimage chapel at Ronchamp, or the entry to the Pantheon in Rome — a low, dark vestibule opening into a soaring dome.

Step 2: Option (A) exactly describes this: a low-ceilinged entry passage that opens into a tall, light-filled atrium.

Conclusion: Option (A).

Why other options are wrong:

- (B) Uniform ceiling height throughout — no contrast, no compression or release.
- (C) Identical room sizes in a row — monotonous repetition, no compression/release sequence.
- (D) Room painted entirely dark — creates compression but no release.

Answer: (A) Go Back to Q17

Q18.

Solution

Concept: In residential interior design and ergonomics, standard clearance dimensions are defined by human body dimensions and movement requirements. The minimum clearance between a dining table edge and a wall must allow a person to pull out a chair, sit down, and stand up again.

Step 1: A chair seat is approximately 450–500 mm deep. A person needs additional space to move behind the chair. The total minimum from table edge to wall is 900 mm (90 cm) — this allows the chair to be pulled out (≈450 mm chair depth) plus 450 mm walking/standing space.

Step 2: The standard (per IS codes and international ergonomic guidelines) is **900 mm** minimum clearance.

Conclusion: Option (D) — 900 mm (90 cm).

Why other options are wrong:

- (A) 300 mm — far too narrow; barely wider than the chair leg.
- (B) 450 mm — enough for the chair itself but no space to stand.
- (C) 600 mm — marginal; would allow the chair to be pulled out but no comfortable passage.

Answer: (D) Go Back to Q18

Q19.

Solution

Concept: Don Norman introduced the design term **affordance** (borrowing from psychologist James J. Gibson) in his landmark book *The Design of Everyday Things* (1988). An affordance is a relationship between an object and a user: it is the perceived or actual property of an object that signals how it should be used. A button that looks raised and pressable affords pressing; a door handle affords gripping and pulling.

Step 1: Key distinction: a *real* affordance exists even if not perceived (e.g. glass affords breaking); a *perceived* affordance is what the user perceives — this is what designers control.

Step 2: Option (B) captures this definition exactly.

Conclusion: Option (B).

Why other options are wrong:

- (A) Development cost — a budget/project management term, not a UX design concept.
- (C) Colour scheme — a visual design choice, unrelated to affordance.
- (D) Loading speed — a performance/engineering metric.

Answer: (B) Go Back to Q19

Q20.

Solution

Concept: Fitts' Law (1954, Paul Fitts) is a predictive model of human movement: the time to rapidly move to a target area is a function of the ratio between the distance to the target and the width of the target. Mathematically: $T = a + b\log_2\left(1 + \frac{D}{W}\right)$. Larger targets that are closer are reached faster.

Step 1: Two variables: D (distance) and W (target size/width). Larger W and smaller D reduce movement time.

Step 2: In UX design, Fitts' Law justifies making important buttons large and placing them near the user's likely cursor/finger position (e.g. the macOS dock, corner-screen targets).

Conclusion: Option (C) — distance to the target and size of the target.

Why other options are wrong:

- (A) Colour contrast — affects perception, not movement time (covered by other UX principles).
- (B) Number of menu items — that is Hick's Law (decision time), not Fitts' Law.
- (D) Internet connection speed — a technical infrastructure factor, not related to Fitts' Law.

Answer: (C) Go Back to Q20

Q21.

Solution

Concept: In interaction design, **feedback** is one of Don Norman's six fundamental design principles. Feedback means sending back information about what action has been done and what result has been accomplished. It closes the action loop: the user acts $\rightarrow$ the system responds $\rightarrow$ the user understands the result.

Step 1: Examples of feedback: a button visually depresses or changes colour when clicked; a form field turns green with a checkmark when input is valid; a loading spinner tells the user the system is processing.

Step 2: Feedback must be immediate, informative, and appropriate in intensity (not too subtle, not overwhelming).

Conclusion: Option (A) — a signal sent back to the user confirming their action has been received and processed.

Why other options are wrong:

- (B) App store reviews — that is user-generated content, not in-product feedback.
- (C) Error messages when system crashes — crash messages are a form of feedback, but the question defines feedback broadly and (A) is the most accurate and complete definition.
- (D) Background music — ambient sound unrelated to user actions is not feedback.

Answer: (A) Go Back to Q21

Q22.

Solution

Concept: Hick's Law (1952, William Edmund Hick) states that the time it takes for a person to make a decision increases logarithmically with the number of choices available: $T = b\log_2(n+1)$. Reducing the number of menu options or choices a user faces reduces cognitive load and speeds up decision-making.

Step 1: More choices = longer decision time. This is why well-designed menus avoid overwhelming users with too many options.

Step 2: Application: progressive disclosure (showing only the most relevant options first), hamburger menus, and grouped navigation all apply Hick's Law.

Conclusion: Option (D) — the number of choices presented to the user.

Why other options are wrong:

- (A) Screen resolution — a display hardware specification.
- (B) Device weight — a physical product property.
- (C) Display brightness — an environmental/ergonomic factor, not a cognitive one.

Answer: (D) Go Back to Q22

Q23.

Solution

Concept: The term **Norman Door** was coined (somewhat in Don Norman's honour) to describe a door whose design gives confusing or wrong signals about how to use it — for example, a door with a flat push-plate that has a pull handle, causing users to instinctively pull when they should push. It has become a shorthand for any poorly designed product that fails to communicate its operation through its physical form.

Step 1: The concept extends beyond doors to any interface element that misleads users about how to interact with it.

Step 2: A Norman Door is a failure of affordance design: the perceived affordance contradicts the correct action.

Conclusion: Option (B) — a door (or interface element) whose design gives confusing or incorrect signals about how it should be used.

Why other options are wrong:

- (A) Revolving door — a specific door mechanism, not related to confusing design signals.
- (C) Tempered glass door — describes a material, not a design communication problem.
- (D) Fire-exit door with panic bar — a well-designed door (the bar clearly affords pushing); the opposite of a Norman Door.

Answer: (B) Go Back to Q23

Q24.

Solution

Concept: A **mental model** (in UX design) is a user's internal representation of how they *expect* a system to work, built from their prior experience with similar systems. If the system's actual behaviour (the "system model") matches the user's mental model closely, the product feels intuitive. If they diverge, users experience confusion and errors.

Step 1: Example: a user expects that pulling up on a smartphone's notification shade reveals notifications (learned from prior phone use) — this is their mental model. If a new phone works differently, it violates the mental model.

Step 2: Designing to match the target user's mental model is a core UX strategy.

Conclusion: Option (C) — a user's internal understanding or expectation of how a system works, based on prior experience.

Why other options are wrong:

- (A) 3-D rendering of a prototype — that is a physical or digital model, not a mental model.
- (B) Brand colour palette — a visual design element, not a cognitive representation.
- (D) Technical architecture diagram — a system design document for engineers, not a user's cognitive model.

Answer: (C) Go Back to Q24

Q25.

Solution

Concept: The **Ajanta Caves** (Maharashtra) are a UNESCO World Heritage Site containing some of the finest examples of ancient Indian painting and sculpture. The paintings, executed in tempera on plaster, depict **Buddhist subjects** — primarily scenes from the life of the historical Buddha (Siddhartha Gautama) and the **Jataka tales** (stories of the Buddha's previous lives in various animal and human forms).

Step 1: The caves were Buddhist monasteries and prayer halls (viharas and chaitya-grihas). All artwork served devotional Buddhist purposes.

Step 2: Pigments used were natural earth colours: red and yellow ochre, lapis lazuli (blue), lamp black. The style is fluid, expressive, and narrative.

Conclusion: Option (A) — scenes from the life of the Buddha and Jataka tales.

Why other options are wrong:

- (B) Mahabharata battle scenes — Ajanta has no Mahabharata content; that is found in later Hindu temple carvings.
- (C) Mughal emperor portraits — Mughal miniatures came over 1000 years after Ajanta's active period.
- (D) Vedic fire ritual geometric patterns — Vedic ritual art uses different contexts; Ajanta's art is purely Buddhist and figurative.

Answer: (A) Go Back to Q25

Q26.

Solution

Concept: The **Hamzanama** ("Tales of Hamza") is a monumental illustrated manuscript: 1400 paintings on cloth, each approximately 68×53 cm, narrating the adventures of Amir Hamza. It was commissioned by the **Emperor Akbar** around 1558 and completed c. 1573 under the supervision of Persian master painters Mir Sayyid Ali and Abd al-Samad. It is considered the founding project of the Mughal miniature painting tradition.

Step 1: Akbar was the patron of the Hamzanama — this is a well-documented historical fact.

Step 2: The project was remarkable for training Indian painters alongside Persian masters, establishing a distinctly Mughal fusion style.

Conclusion: Option (D) — Akbar.

Why other options are wrong:

- (A) Babur — the founder of the Mughal empire (r. 1526–1530); the Hamzanama project began after his death.
- (B) Shah Jahan — known for the Taj Mahal and later Mughal painting, but not the Hamzanama.
- (C) Aurangzeb — the last major Mughal emperor, who actually discouraged figurative painting.

Answer: (D) Go Back to Q26

Q27.

Solution

Concept: The **Bengal School of Art** (founded in Calcutta in the early 1900s by Abanindranath Tagore, with the intellectual support of E.B. Havell and later Ananda Coomaraswamy) was a **nationalist art movement**. It sought to revive Indian artistic traditions in direct reaction to the dominance of Western academic realism promoted by colonial-era Government Art Schools (such as the Calcutta School of Art).

Step 1: The Bengal School drew on Mughal miniature painting, Rajput painting, Japanese wash techniques (introduced by Yokohama artists), and ancient Indian aesthetics.

Step 2: Its defining rejection was of the oil-paint-on-canvas, anatomically correct realism of European academic art that colonial schools taught.

Conclusion: Option (B) — the dominance of European academic realism promoted by colonial art schools.

Why other options are wrong:

- (A) Folk traditions of rural Bengal — the Bengal School actually sought to incorporate Indian traditions, not react against them.
- (C) Abstract tendencies of European Cubism — Cubism was contemporary (early 1900s) but not the primary target of the Bengal School's reaction.
- (D) Rigid Tanjore iconographic rules — Tanjore painting is South Indian and was not the Bengal School's specific concern.

Answer: (B) Go Back to Q27

Q28.

Solution

Concept: Abanindranath Tagore's **"Bharat Mata"** (c. 1905), painted during the Swadeshi movement at the time of the Partition of Bengal, depicts India as a **four-armed goddess** (in the manner of traditional Indian divine iconography). She holds: a book (learning/education), sheaves of grain (food/abundance), a white cloth (clothing), and a garland (spiritual liberation/moksha). The painting was executed in the style of an Indian miniature (wash technique, flat perspective), not Western oil painting.

Step 1: Four arms = divine status; four objects = four essential blessings for the nation's people.

Step 2: The style is the Bengal School wash technique on paper — soft, misty, distinctly non-European.

Conclusion: Option (C).

Why other options are wrong:

- (A) Realistic portrait of a rural woman — Bharat Mata is an allegorical goddess figure, not a realistic rural woman.
- (B) Durga slaying Mahishasura — a completely different subject; Bharat Mata is a peaceful allegorical figure.
- (D) Mughal-style hunting scene — an entirely different genre of Indian painting.

Answer: (C) Go Back to Q28

Q29.

Solution

Concept: The **Company School** (also called the **Patna School** or *Kalighat* variant) refers to Indian paintings produced from the late 18th to mid-19th centuries primarily for British East India Company patrons and visiting Europeans. Their most distinctive feature is a **synthesis of styles**: Indian pictorial conventions (flat areas of pure colour, lack of single-point perspective, pattern-based foliage) combined with European naturalism (shading to create volume, more realistic human proportions, spatial depth).

Step 1: The Company School artists adapted their work to suit the tastes of European collectors who wanted "exotic" but comprehensible images of India.

Step 2: The result was a hybrid style — neither purely traditional Indian nor purely European.

Conclusion: Option (A).

Why other options are wrong:

- (B) Exclusively Hindu mythological subjects in purely traditional style — Company School painters often depicted natural history (birds, plants), crafts, and customs — not exclusively mythological subjects.
- (C) Chinese ink-wash techniques — no documented Chinese ink influence on Company School painting.
- (D) Only natural pigments, rejected foreign influence — the opposite; Com-

pany School actively incorporated European influence.

Answer: (A) Go Back to Q29

Q30.

Solution

Concept: The Kerala tradition of illustrated **palm leaf manuscripts** (*Granthavari* or *Thaliyola* manuscripts) used extremely fine squirrel-hair brushes to incise and paint tiny, intricate figures on dried palm leaf strips. Gold leaf was applied for embellishment. This tradition produced illuminated texts of epics, puranas, and astrological treatises, and is distinct from the Kerala mural tradition (temple walls).

Step 1: The squirrel-hair brush technique is specifically associated with the delicate miniature work required for palm leaf manuscripts.

Step 2: Gold leaf was used sparingly to highlight divine figures or decorative borders on the palm leaf surface.

Conclusion: Option (D) — Kerala mural / Granthavari manuscript painting tradition.

Why other options are wrong:

- (A) Madhubani (Mithila) — painted on paper, walls, and cloth using natural dyes; not palm leaf or gold leaf.
- (B) Warli — tribal art from Maharashtra, using simple geometric forms in white on red/ochre; no gold leaf.
- (C) Pattachitra (Odisha) — painted on cloth or dried palm leaf using natural pigments; uses black outline and natural colours but is not primarily gold-leaf or squirrel-hair brush in the Kerala sense.

Answer: (D) Go Back to Q30

Q31.

Solution

Concept: **Embodied carbon** refers to the greenhouse gas emissions (primarily CO_2) released during the extraction, processing, manufacturing, and transport of a material. **Primary aluminium** (aluminium smelted from bauxite ore using electrolysis) is one of the most energy-intensive materials to produce, with an embodied carbon of approximately **8–12 kg CO_2 per kg** of aluminium. This is significantly higher than timber (≈0.3–1.5 kg CO_2/kg), recycled glass (≈0.5 kg CO_2/kg), or rammed earth (≈0.05–0.1 kg CO_2/kg).

Step 1: Aluminium production is extremely electricity-intensive; if that electricity comes from fossil fuels, the embodied carbon is very high.

Step 2: Recycled aluminium has ≈95% lower embodied carbon than primary aluminium — but the question specifies primary aluminium from bauxite smelting.

Conclusion: Option (B) — aluminium (primary, from bauxite smelting).

Why other options are wrong:

- (A) Kiln-dried softwood timber — timber stores carbon while growing; embodied carbon is low to moderate.
- (C) Recycled glass — recycling significantly reduces glass's embodied carbon.
- (D) Rammed earth — minimal processing; very low embodied carbon.

Answer: (B) Go Back to Q31

Q32.

Solution

Concept: Both "biodegradable" and "compostable" indicate that a material can break down, but they differ critically in *conditions* and *end products*:

- **Biodegradable:** breaks down eventually by biological action in *some* environment, but may leave toxic residues, take decades, and requires no specific conditions.
- **Compostable:** must break down into carbon dioxide, water, inorganic compounds, and biomass (no toxic residue) within a *specified time frame* (typically 90–180 days) under *defined conditions* (industrial composting: specific temperature 55–60C, moisture, and microbial activity).

Step 1: "Compostable" is a stricter, more controlled definition than "biodegradable".

Step 2: Home compostable is even stricter — it must break down at lower temperatures.

Conclusion: Option (C).

Why other options are wrong:

- (A) Never breaks down — opposite of compostable.
- (B) Breaks down only in seawater — a specific but separate category (marine biodegradable).
- (D) Petroleum-based but faster decomposition — this describes some "oxo-degradable" plastics, not compostable plastics.

Answer: (C) Go Back to Q32

Q33.

Solution

Concept: The **circular economy** is an economic model in contrast to the traditional **linear economy** ("take–make–dispose"). In a circular economy, the value of products, materials, and resources is maintained for as long as possible: products are designed for durability, repairability, reuse, remanufacturing, and ultimately recycling — so that materials never become waste but cycle back into the economy.

Step 1: Three key principles: (1) Eliminate waste and pollution by design; (2) Keep products and materials in use at their highest value; (3) Regenerate natural systems.

Step 2: For product designers, circular economy means designing for disassembly, using mono-materials, avoiding toxic adhesives, and providing repair guides.

Conclusion: Option (A).

Why other options are wrong:

- (B) Maximise production speed — a linear economy efficiency goal.
- (C) Planned short lifespan — "planned obsolescence", the antithesis of circular economy.
- (D) Centralise manufacturing — a supply chain strategy, not a sustainability model.

Answer: (A) Go Back to Q33

Q34.

Solution

Concept: Fast fashion refers to the rapid production of high volumes of low-cost clothing that mimics current fashion trends, with garments designed for a very short useful life. Its environmental impact is primarily driven by: **overproduction** (billions of garments made and discarded annually), excessive **water use** (cotton dyeing requires huge volumes of water; rivers in Bangladesh and China are heavily polluted by textile effluents), and **textile waste** (approximately 92 million tonnes per year globally goes to landfill or incineration).

Step 1: The fashion industry accounts for approximately 8–10% of global carbon emissions, consumes more energy than aviation and shipping combined, and is the second-largest consumer of the world's fresh water supply.

Step 2: Option (D) correctly identifies overproduction, waste, water use, and chemical pollution as the core drivers.

Conclusion: Option (D).

Why other options are wrong:

- (A) Use of natural linen fibres — natural fibres have lower impact than synthetic; fast fashion predominantly uses synthetic blends.
- (B) Slow, hand-crafted methods — the opposite of fast fashion.
- (C) Solar power in factories — would *reduce* impact, not drive it.

Answer: (D) Go Back to Q34

Q35.

Solution

Concept: Steel and tinplate (ferrous metal packaging such as tin cans, steel drums) consistently achieve among the highest global recycling rates of any packaging material — typically **70–90%** recycled globally by weight. Steel is infinitely recyclable without quality loss, and its magnetic properties make it easy to separate from waste streams.

Step 1: Steel recycling rate ≈70–85% globally. Aluminium ≈50–70% (also high). Glass ≈30–70% depending on region. Plastic overall ≈9% globally.

Step 2: Single-use plastic film and expanded polystyrene have extremely low recycling rates (often near 0% in practice). Multi-layer flexible packaging is nearly impossible to recycle.

Conclusion: Option (B) — steel/tinplate.

Why other options are wrong:

- (A) Single-use plastic film — one of the lowest-recycled materials globally.
- (C) Multi-layer flexible packaging — extremely difficult to recycle; usually goes to landfill.
- (D) Expanded polystyrene (EPS) — low density makes collection uneconomical; recycling rate very low.

Answer: (B) Go Back to Q35

Q36.

Solution

Concept: Lifecycle thinking (or Life Cycle Assessment, LCA) is a systematic approach to evaluating the environmental burdens of a product across all stages of its life: raw material extraction → material processing → manufacturing → distribution → use → end-of-life (disposal, recycling, or recovery). A full LCA also considers social impacts (labour conditions, community effects) and economic impacts (whole-life cost).

Step 1: LCA covers the full "cradle to grave" (or ideally "cradle to cradle") chain, not just one phase.

Step 2: This comprehensive scope is precisely what Option (C) describes.

Conclusion: Option (C).

Why other options are wrong:

- (A) Only manufacturing cost — a single economic metric, not lifecycle thinking.
- (B) Only recyclability at end of life — one of many lifecycle stages, not the whole picture.
- (D) Only visual/aesthetic qualities — aesthetics are not part of LCA.

Answer: (C) Go Back to Q36

Q37.

Solution

Concept: The **Volkswagen Beetle** (original design by Ferdinand Porsche, commissioned 1934, mass produced post-WWII) became a global cultural icon in the 1960s primarily in the USA and Europe. Its iconic status came from: its distinctively rounded, friendly, "anthropomorphic" form that contrasted with the era's sleek American cars; its affordability and reliability; and its association with the **counter-culture and hippie movement**, which embraced it as a rejection of corporate American values and conspicuous consumption. The 1960 Doyle Dane Bernbach advertising campaign ("Think Small") brilliantly leveraged its modest size as a virtue.

Step 1: The Beetle's form was emotionally accessible and non-threatening; its small size was economical.

Step 2: It became a symbol of individuality and anti-establishment sentiment precisely because it was *not* the big, chrome-laden American status car of the era.

Conclusion: Option (A).

Why other options are wrong:

- (B) First automatic gearbox — the Beetle had a manual gearbox; automatics were pioneered by American manufacturers.
- (C) Fastest production car — the Beetle was famously slow (initially 24 HP).
- (D) Designed for racing — it was designed as a people's car (*Volkswagen* = "people's car"), not for racing.

Answer: (A) Go Back to Q37

Q38.

Solution

Concept: The **Coca-Cola contour bottle** (1915, designed by Earl R. Dean at the Root Glass Company, inspired by a cocoa pod) was designed with a specific commercial intent: to be so distinctive in shape that it could be identified by touch in the dark, recognised by silhouette even when broken on the ground, and distinguished from competing cola bottles at a distance. The Coca-Cola Company's brief literally asked for a bottle that could be "recognised in the dark" or when "shattered on the ground."

Step 1: The tapering waist (hobble-skirt profile) makes the bottle instantly distinguishable by feel and silhouette.

Step 2: Option (D) captures all three design objectives accurately.

Conclusion: Option (D).

Why other options are wrong:

- (A) Stacking — the contour bottle's curved shape actually makes stacking *harder*; flat-sided bottles stack better.
- (B) Easy home refilling — glass bottles of this era were returned, not home-refilled.
- (C) Measuring serving quantities — the bottle has no measurement markings; it holds a fixed volume.

Answer: (D) Go Back to Q38

Q39.

Solution

Concept: The **Anglepoise lamp** (1933) was designed by automotive engineer George Carwardine, who applied his expertise in vehicle suspension systems to the problem of the adjustable desk lamp. Its innovation was a system of **springs and pivots** that kept the lamp arm in equilibrium at any angle, mimicking the constant-tension property of human limb muscles and tendons. The arm can be moved to any position with minimal effort and stays there without locks or clamps.

Step 1: The spring-balance mechanism is the key innovation — it is a mechanical analogue of a balanced human arm.

Step 2: This was revolutionary because all previous adjustable lamps required screw tightening or clamps to hold position.

Conclusion: Option (B).

Why other options are wrong:

- (A) First LED light source — LEDs were invented in the 1960s; the Anglepoise is from 1933 (used an incandescent bulb).
- (C) Operated on solar power — solar-powered desk lamps did not exist in 1933.
- (D) Folded flat for portability — the Anglepoise arm is articulated, not collapsible flat; portability was not its design intent.

Answer: (B) Go Back to Q39

Q40.

Solution

Concept: UNESCO World Heritage status is awarded under the 1972 World Heritage Convention to sites of **Outstanding Universal Value (OUV)**. The Convention recognises three categories: **Cultural Heritage** (monuments, groups of buildings, sites with historic/architectural/artistic/scientific value), **Natural Heritage** (natural features, geological/physiographical formations, habitats of threatened species), and **Mixed Heritage** (sites meeting both cultural and natural criteria). Living traditions, intangible heritage is covered separately by the 2003 Intangible Cultural Heritage Convention.

Step 1: World Heritage Sites include both natural landscapes (e.g. Sundarbans, Great Barrier Reef) and cultural monuments (e.g. Taj Mahal, Stonehenge).

Step 2: Option (C) correctly states both categories are eligible.

Conclusion: Option (C).

Why other options are wrong:

- (A) Only natural landscapes — incorrect; cultural sites are the majority of World Heritage Sites.
- (B) Only man-made structures before 1500 CE — no such date restriction exists; modern sites like the Sydney Opera House (1973) are inscribed.
- (D) Only from states that contributed to the fund — inscription is based on OUV, not financial contribution.

Answer: (C) Go Back to Q40

Q41.

Solution

Concept: The **Eames Lounge Chair and Ottoman** (Model 670/671, 1956) is one of the most celebrated pieces of 20th-century furniture design. Charles and Ray Eames designed it using their expertise in **moulded plywood** (developed during WWII for splints and gliders). The chair's three shell segments are made of **rosewood (or walnut) veneered moulded plywood**; the cushions are **leather-upholstered** down-filled; the base is **die-cast aluminium**.

Step 1: The moulded plywood technology allowed complex curvature impossible in flat-sawn wood.

Step 2: Rosewood veneer was used until sustainability concerns led to a switch to

walnut veneer in the 1990s.

Conclusion: Option (A) — moulded plywood (rosewood veneer) shell with leather upholstery and die-cast aluminium base.

Why other options are wrong:

- (B) Fibreglass shell with woven fabric — this describes the Eames Plastic Armchair (DAR/DAX, 1948), a different Eames design.
- (C) Steel tube with PVC — describes modernist tubular steel chairs (Breuer's Wassily, Mies's Barcelona Chair).
- (D) Solid walnut carved shell with sheepskin — no such Eames chair exists.

Answer: (A) Go Back to Q41

Q42.

Solution

Concept: Dholavira (Gujarat) is one of the five largest Harappan (Indus Valley Civilisation) cities, dated approximately 2650–2100 BCE. It was inscribed as a UNESCO World Heritage Site in 2021. The city is remarkable for its **sophisticated urban planning**: a clear three-part grid layout (citadel, middle town, lower town) with well-planned streets, drainage systems, reservoirs, and standardised brick sizes — the most elaborate grid planning in the Indus Valley Civilisation.

Step 1: Dholavira demonstrates that grid-based city planning in the Indian sub-continent predates Greek and Roman grid cities by over a millennium.

Step 2: Option (D) correctly identifies Dholavira, Gujarat, and its Harappan grid planning.

Conclusion: Option (D).

Why other options are wrong:

- (A) Fatehpur Sikri — a Mughal capital (16th century); not Indus Valley and not a UNESCO-inscribed grid plan city.
- (B) Hampi — the Vijayanagara Empire capital (14th–16th century); UNESCO-inscribed for temple architecture, not grid planning.
- (C) Konark Sun Temple — a medieval Hindu temple (13th century); UNESCO-inscribed for its wheel-chariot architecture.

Answer: (D) Go Back to Q42

Q43.

Solution

Concept: The **RGB colour model** is called **additive** because it works by *adding* coloured light together. Starting from black (absence of light), you add red, green, and blue light in varying intensities to produce colours. When all three primary light colours are combined at full intensity, they produce **white light**. This is the model used by screens (monitors, TVs, phones, projectors).

Step 1: Additive mixing: Red + Green = Yellow; Red + Blue = Magenta; Green + Blue = Cyan; Red + Green + Blue = White.

Step 2: Contrast with CMYK (subtractive): starting from white paper, you *subtract* wavelengths using pigments; combining CMY produces black (in theory).

Conclusion: Option (B) — coloured light is added together; combining R+G+B at full intensity produces white.

Why other options are wrong:

- (A) Added to a physical surface using pigments — this describes subtractive/pigment mixing.
- (C) Adds more colours than any other model — not the meaning of "additive".
- (D) Adds cost to printing — entirely unrelated to the colour science definition.

Answer: (B) Go Back to Q43

Q44.

Solution

Concept: The **Web Content Accessibility Guidelines (WCAG) 2.1** define contrast requirements for digital text to ensure readability for users with visual impairments (including colour blindness and low vision). For **Level AA**, the minimum contrast ratio for **normal-size text** (below 18pt/14pt bold) against its background is **4.5:1**. For large text (18pt or 14pt bold and above), the minimum is 3:1. For Level AAA (enhanced accessibility), normal text requires 7:1.

Step 1: WCAG 2.1 Level AA, normal text: contrast ratio $\geq 4.5:1$.

Step 2: Contrast ratio is measured as $(L_1+0.05)/(L_2+0.05)$ where L_1 is the lighter and L_2 the darker relative luminance.

Conclusion: Option (C) — 4.5:1.

Why other options are wrong:

- (A) 2.5:1 — below any WCAG threshold; fails even Level A.
- (B) 3:1 — the Level AA minimum for *large* text (not normal text).
- (D) 7:1 — the Level AAA requirement for normal text (stricter, not the Level AA minimum).

Answer: (C) Go Back to Q44

Q45.

Solution

Concept: In colour science and digital imaging, the **gamut** of a device or colour space refers to the **complete range (or subset) of colours** that the device can reproduce, capture, or display. It is typically visualised as a triangle or polygon plotted on a chromaticity diagram (CIE 1931 xy or CIE 1976 u'v'). Different standards (sRGB, Adobe RGB, DCI-P3, Rec. 2020) define gamuts of increasing size.

Step 1: sRGB covers ≈35% of the visible spectrum; Adobe RGB ≈50%; DCI-P3 ≈54%; Rec. 2020 ≈76%.

Step 2: A device with a wider gamut can display more colours, especially vivid saturated colours.

Conclusion: Option (A) — the complete range of colours the device can reproduce or display.

Why other options are wrong:

- (B) Maximum brightness (nits) — that is peak luminance or HDR capability, not gamut.
- (C) Pixels per inch — that is resolution/PPI, not gamut.
- (D) Refresh rate in Hertz — that is the display's temporal update rate, not colour range.

Answer: (A) Go Back to Q45

Q46.

Solution

Concept: RGB (Red, Green, Blue) is the foundational colour model for **all emissive screen and projector technology**: LCD monitors, OLED displays, LED screens, DLP projectors, and CRT televisions all produce colour by combining varying intensities of red, green, and blue light-emitting elements (sub-pixels or phosphors).

Step 1: Every pixel on an RGB screen has three sub-pixels (or equivalent light sources): R, G, B. Varying their intensity from 0 to 255 (in 8-bit colour) produces the full displayed colour gamut.

Step 2: CMYK is for printing (subtractive); LAB is a perceptual/device-independent model used in colour management; Pantone is a spot colour ink matching system.

Conclusion: Option (D) — RGB.

Why other options are wrong:

- (A) CMYK — used in offset and inkjet printing, not screens.
- (B) LAB — used in colour management software as a reference, not in display hardware directly.
- (C) Pantone — a physical ink matching system for print production.

Answer: (D) Go Back to Q46

Q47.

Solution

Concept: HSL stands for Hue, Saturation, Lightness. In HSL:

- **Lightness (L) = 0%** always produces **pure black**, regardless of H and S.
- **Lightness (L) = 100%** always produces **pure white**, regardless of H and S.
- **Lightness (L) = 50%** at full saturation produces the most vivid version of the hue.

Step 1: L=100% means the colour is fully lightened to white. No hue or saturation information survives at L=100%.

Step 2: This is a fundamental property of HSL: the extremes (0% and 100% lightness) are always achromatic (black and white).

Conclusion: Option (B) — pure white, regardless of the hue or saturation values.

Why other options are wrong:

- (A) Fully saturated vivid hue — that is achieved at L=50%, S=100% (not L=100%).
- (C) Pure black — that is L=0%, not L=100%.
- (D) 50% grey — that is L=50%, S=0% (no saturation, midpoint lightness).

Answer: (B) Go Back to Q47

Q48.

Solution

Concept: **Out-of-gamut colours** are colours that exist within one colour space (e.g. the RGB gamut of a monitor) but fall *outside* the gamut of another colour space (e.g. CMYK used in printing). When a design file containing out-of-gamut colours is sent to a CMYK printer, a process called **gamut mapping** or **colour clipping** occurs: the out-of-gamut colours are *substituted* with the nearest reproducible CMYK colour. These substituted colours are invariably less saturated and may look noticeably duller or shifted in hue compared to the screen version.

Step 1: Highly saturated screen colours (e.g. electric blue, vivid green, neon orange) are the most commonly out-of-gamut in print.

Step 2: Solution: designers use a "soft proof" (on-screen simulation of CMYK output) and correct out-of-gamut colours before sending to print.

Conclusion: Option (C) — colours cannot be accurately reproduced in print; they will appear duller or shifted.

Why other options are wrong:

- (A) Higher-than-expected colour accuracy — opposite; out-of-gamut means lower accuracy.
- (B) Printer refuses to print — a printer does not refuse; it maps the colours automatically.
- (D) File size too large — gamut issues are about colour range, not file size.

Answer: (C) Go Back to Q48

Q49.

Solution

Concept: DCI-P3 (Digital Cinema Initiatives P3) is a wide-gamut colour space developed for digital cinema projection. It is approximately **26% wider** than sRGB in terms of the gamut area on the CIE chromaticity diagram. The extra range compared to sRGB is mainly in the **green-to-red region**: DCI-P3's green primary is shifted toward a more saturated, deeper green, and its red primary is also more saturated. This allows cinema (and now consumer displays like iPhone, iPad, and Macs) to show more vivid reds and greens.

Step 1: DCI-P3 vs. sRGB: the blue primary is approximately the same; the main expansion is in the red and green primaries.

Step 2: The green primary of DCI-P3 ($x = 0.265, y = 0.690$) is significantly more saturated (further from the white point) than sRGB's green ($x = 0.300, y = 0.600$).

Conclusion: Option (A) — deeper, more saturated greens and reds.

Why other options are wrong:

- (B) Ultraviolet spectrum — colour gamut standards cover only the human-visible spectrum.
- (C) Wider shadow tones — shadow range is dynamic range (HDR), not gamut.
- (D) Higher maximum brightness (white point) — brightness/luminance is separate from gamut; gamut describes colour range at a given luminance.

Answer: (A) Go Back to Q49

Q50.

Solution

Concept: Colour banding (or posterisation) is a digital image artefact where smooth colour gradients appear as visible **stepped bands** of discrete, solid tones instead of a continuous transition. It is caused by **insufficient bit depth**: an 8-bit channel stores only 256 discrete values per channel ($256^3 \approx 16.7$ million colours). In very subtle gradients (e.g. a pale blue sky), neighbouring tones can be as close as $1/256$ apart — but if the gradient spans fewer steps than the number of pixels, adjacent regions snap to the same value, creating visible steps.

Step 1: 8-bit = 256 values per channel. A smooth sky gradient covering 1000 pixels with a tonal range of only 20 values will show obvious banding.

Step 2: Solution: use 16-bit colour (65,536 values per channel), add "dithering" (randomised noise to break up the bands), or avoid very large subtle gradients at low bit depth.

Conclusion: Option (D) — insufficient bit depth causing smooth gradients to appear as stepped bands.

Why other options are wrong:

- (A) Too many colours — banding is caused by *too few* discrete tones, not too many.
- (B) Incorrect ICC profile — a colour management issue causing colour shift, not stepped banding.
- (C) Overexposure during photography — overexposure causes highlight clipping, not gradient banding.

Answer: (D) Go Back to Q50

Part B — Drawing Task Model Answers

Q51.

Solution

Model Sketch Description — Smart Home App Dashboard UI Wireframe

What the ideal sketch should contain:

- **Overall layout:** A phone screen outline (portrait, roughly 9:19 aspect ratio) with a clear status bar at the top and a navigation bar at the bottom.
- **Section 1 — Lighting Control:** A row of round icons representing individual lights (e.g. living room, bedroom, kitchen) with an on/off toggle sketched next to each. A brightness slider bar can be included.
- **Section 2 — Temperature/AC:** A large circular thermostat dial (similar to a Nest-style dial) showing the set temperature numerically in the centre; up/down arrows to adjust; current room temperature shown nearby.
- **Section 3 — Security Camera Feed:** A rectangular card showing a sketched camera-view thumbnail (simple perspective room interior or outdoor view with a few lines), with a "Live" badge and camera name label.
- **Section 4 — Daily Energy Usage Graph:** A simple bar chart or line graph showing energy consumption across the hours of the day (x-axis: time; y-

axis: kWh). Bars should vary in height to suggest usage patterns (morning spike, midday low, evening peak).

- **Hierarchy and layout logic:** Each section is clearly separated (card-style blocks with visible dividers or whitespace). The most frequently used control (lighting) should be placed near the top/thumb-reach zone.
- **Sketching quality:** Clean ruled boxes for sections, consistent icon size, legible labels. No freehand-messy lines.

Marking rubric: Functional clarity (3) + inclusion of 4 sections (2) + layout logic and hierarchy (3) + sketch quality (2) = **10 marks**.

Q52.

Solution

Model Sketch Description — Traditional Potter at Work

What the ideal sketch should contain:

- **Figure and gesture:** The potter is seated cross-legged or on a low stool beside the wheel. The **hands** are the focal point — both hands cupped around a rising clay form on the spinning wheel, fingers gently pressing inward, thumbs at the top interior. The gesture should suggest gentle but controlled pressure. Body slightly leaning forward, head bowed in concentration.
- **The potter's wheel:** Shown as a low circular disc at ground level, with a smaller spinning head (bat) on top. A few curved lines suggest motion/spin. The clay form (a partially thrown vessel) sits centred on the bat.
- **Workshop atmosphere:** Background elements: a rough wooden shelf or ledge with 3–5 completed pots of varying sizes (water pots, small bowls); a bucket of water nearby; a few simple wire tools and a sponge on the ground. Clay smears on the floor, splattered mud texture suggested by small flicks of the pen.
- **Tonal range:** Darks in shadows under the shelf, inside the thrown vessel, and under the potter's torso. Midtones on the clay surface and floor. Lights on the wet, shiny clay top and the potter's face/hands. Hatching and cross-hatching for depth.
- **No colour** — entirely in pencil line and tone.

Marking rubric: Figure gesture and hands (3) + workshop atmosphere and detail (3) + tonal range (2) + quality (2) = **10 marks**.

Q53.

Solution

Model Sketch Description — Modular Bookshelf in 3 Configurations

What the ideal sketch should contain:

- **The modular unit:** A single bookshelf cube or rectangular unit (e.g. $300 \times 300 \times 300$ mm or $400 \times 300 \times 250$ mm), open-fronted, with one adjustable internal shelf. Label this unit clearly in Config A or B ("Basic Module — 300 W $\times$ 300 H $\times$ 250 D mm", with an arrow).
- **Configuration A — Compact (2 modules):** Two units stacked vertically (total height $600\,mm$) or placed side by side. Label: "Config A: 2-module stack for corridor/alcove."
- **Configuration B — Medium (4 modules):** Four units arranged in a 2×2 grid (2 wide, 2 tall). Label: "Config B: 4-module for studio/small bedroom."
- **Configuration C — Full (6 modules):** Six units in a 3×2 or 2×3 arrangement (three wide, two tall, or six in a row). Label: "Config C: 6-module full wall installation."
- **Connection detail:** Show a small callout sketch of how two modules connect (e.g. cam-lock dowel, bolt-through, or clip system) in at least one configuration.
- **Sketching quality:** Each configuration drawn in quick isometric or front elevation; consistent module proportions across all three; clear, readable labels.

Marking rubric: Modularity concept clarity (3) + adaptability across 3 sizes (3) + labelling (2) + sketch quality (2) = **10 marks**.

Q54.

Solution

Model Sketch Description — Traditional Wedding Invitation Border

What the ideal sketch should contain:

- **Overall A5 card:** The card outline (148×210 mm portrait) is drawn clearly. The border occupies the outermost 10–15 mm band on all four sides. The interior of the card is left empty (the text area) or lightly ruled.
- **Border motifs (one tradition or blend):**

  - *Mehndi/Henna style:* Paisleys, lotus petals, fine dots, mango motifs, and stylised leaves arranged in a running vine or creeper pattern. Very detailed fine-line work.
  - *Mughal jali style:* Geometric interlocking arabesque pattern, small floral rosettes at intersections, pointed arch forms.
  - *Temple frieze style:* Repeated petalled lotus medallions, yali/lion scrolls, bell-and-chain motifs.

- **Rhythmic pattern quality:** The motif repeats regularly along each side with consistent spacing. The pattern should transition smoothly into the corners.
- **Enlarged corner detail:** A separate square sketch (approx. 3×3 cm on the sheet) showing the corner motif in close-up detail — how the horizontal and vertical border elements meet and interlock. This is a required element.
- **Feel:** Celebratory, ornate, auspicious.

Marking rubric: Cultural reference and motif richness (3) + rhythmic pattern quality (3) + corner detail (2) + presentation (2) = **10 marks**.

Q55.

Solution

Model Sketch Description — Lighthouse at Dawn, Atmospheric Rendering

What the ideal sketch should contain:

- **Lighthouse form:** A classic cylindrical tapering lighthouse tower (wider at base, narrower at top) with a lantern room at the top. The light housing is suggested with a few concentric ellipses or a dome. A keeper's cottage or base structure may be added at the base.
- **Rocky promontory:** Jagged, irregular foreground rocks in deep shadow (heavy hatching, near-black). Rock texture is suggested with angular broken lines. The promontory extends below and around the lighthouse base.
- **Sky and light rays:** The focal drama. Light rays fan outward in multiple directions from behind or through a gap in cloud cover. Rays are drawn as converging lines radiating from a bright point just behind or above the clouds. Clouds are massed to the left/right with the bright gap in the centre or upper portion of the composition. The sky near the source is nearly white; it grades (using progressively denser hatching) to a mid-grey at the edges.
- **Water:** Mid-tone horizontal strokes suggest a calm sea. Light reflections

(small white areas or lighter horizontal lines) appear directly below the brightest sky area.

- **Value structure:** Foreground rocks = darkest (value 1); mid-distance water = mid-tone (value 3–4); sky at light source = lightest (value 6–7). The lighthouse tower itself sits mid-tone against the bright sky, making it legible as a silhouette.
- **No human figures.**

Marking rubric: Atmospheric light and drama (3) + compositional balance (3) + tonal range and rendering (2) + line quality (2) = **10 marks**.

Answer Key (Part A — Visual MCQs)

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	A	2	D	3	B	4	C	5	A
6	D	7	B	8	C	9	A	10	D
11	B	12	C	13	A	14	D	15	B
16	C	17	A	18	D	19	B	20	C
21	A	22	D	23	B	24	C	25	A
26	D	27	B	28	C	29	A	30	D
31	B	32	C	33	A	34	D	35	B
36	C	37	A	38	D	39	B	40	C
41	A	42	D	43	B	44	C	45	A
46	D	47	B	48	C	49	A	50	D