

NID DAT

Complete Sample Paper – 10

Duration: 150 Minutes

Maximum Marks: 100

Instructions

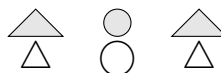
- This paper contains **50 Visual MCQs (Part A)** and **5 Drawing Tasks (Part B)**, modelled on NID DAT 2026 Prelims.
- **Part A:** Each correct answer carries **+1 mark**. There is **no negative marking**.
- **Part B:** Each drawing task carries **10 marks**; marks are awarded for design thinking, form, 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. A shape cipher uses the following legend. Decode the three-symbol message shown below the legend.

Symbol	Letter	Symbol	Letter
	A		B
	C		D
	E		F

Coded Message:



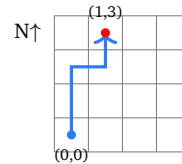
- (A) ACA
(B) BAB
(C) CAC



(D) DAD

Q2. A robot starts at grid position (0, 0) facing North. The direction coding table is shown below, followed by the command sequence the robot executes. Where does the robot end up?

Arrow	Move
↑	Forward (N)
↓	Back (S)
→	Right (E)
←	Left (W)



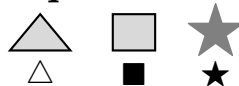
Command sequence: ↑ ↑ → ↑

- (A) (1, 2)
- (B) (1, 3)
- (C) (2, 3)
- (D) (0, 3)

Q3. A number-shape cipher maps digits to symbols as shown in the legend below. A three-symbol sequence is displayed. What number sequence does this represent?

Dig	Symbol	Dig	Symbol
1	●	2	■
3	▲	4	◆
5	★		

Sequence shown:



- (A) 325
- (B) 235
- (C) 253
- (D) 352



- Q4.** The cipher key below maps five shapes to five letters. The coded message is the sequence of 5 symbols shown. Which option correctly decodes the message as the word **RANGE**?

Symbol	Letter
	R
	A
	N
	G
	E

Coded Message:



- (A) GNAER
(B) ANGER
(C) NRAGE
(D) RANGE
- Q5.** A 4×4 grid has a shading rule: a cell is shaded if (row number + column number) is **even**. Rows and columns are numbered 1 to 4. The resulting grid is shown. How many cells are shaded?

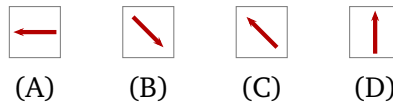
	Col 1	Col 2	Col 3	Col 4
Row 4				
Row 3				
Row 2				
Row 1				

- (A) 6
(B) 7
(C) 8
(D) 9
- Q6.** The sequence below shows a symbol being rotated progressively by 45° at each step. Which symbol correctly continues the sequence in position 6?



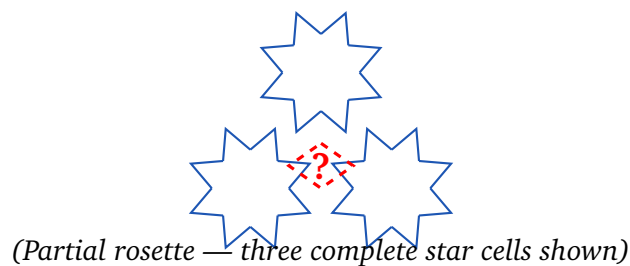


Options for position 6:



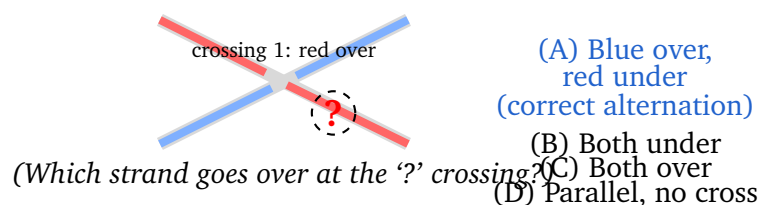
- (A) Arrow pointing left (rotated 90° from start)
 (B) Arrow pointing 225° (continuing 45° rotation from position 5)
 (C) Arrow same as position 3 (90°)
 (D) Arrow same as position 1 (original, 0°)

- Q7.** The partial Islamic 8-pointed star rosette pattern below has one tile region marked with '?'. Which tile shape correctly fills that region to continue the pattern?



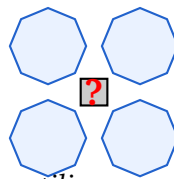
- (A) A square
 (B) A circle
 (C) A regular hexagon
 (D) An elongated kite (arrow-head) shape — the girih tile that fills the interstitial region between 8-pointed stars

- Q8.** In Celtic knotwork, every crossing must alternate: one strand goes *over* and the next goes *under*. The incomplete interlace strip below has its next crossing marked with '?'. Which option correctly continues the alternation?



- (A) Blue strand goes over, red strand goes under (correct alternation continues)
- (B) Both strands pass under a third element
- (C) Both strands pass over each other simultaneously
- (D) The strands run parallel without crossing

Q9. The partial Moorish zellige tile pattern below alternates regular octagons with a single small shape to fill the gaps. Which shape fills the interstices (the '?' regions)?



(Partial 2×2 octagon tiling — gap shape marked '?')

- (A) Regular hexagon
- (B) Equilateral triangle
- (C) Square (small squares fill the interstices between octagons)
- (D) Regular pentagon

Q10. A row of triangles alternates dark and light, starting with triangle 1 = dark. Following the alternating colour rule, what is the colour of the **7th triangle**?



(Triangles 1–7 shown; triangle 7 has a '?' label)

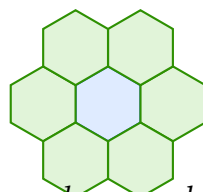
- (A) Light (white)
- (B) Dark (shaded)
- (C) Striped (half-and-half)
- (D) Grey (intermediate shade)

Q11. A Penrose tiling uses two rhombus shapes — a 'fat' rhombus and a 'thin' rhombus — to cover the plane. Which statement about Penrose tiling is **correct**?



- (A) It has a repeating unit cell and is therefore periodic
- (B) It can only be constructed using equilateral triangles
- (C) It requires at least five different tile shapes to work
- (D) It covers the plane without periodic repetition (aperiodic), yet displays a form of five-fold rotational symmetry

Q12. The regular hexagonal tiling of the plane (honeycomb tiling) is shown below. What is the **order of rotational symmetry** of a single regular hexagonal tile?



(7-hexagon honeycomb cluster)

- (A) 6 (six-fold rotational symmetry — a 60° rotation maps the hexagon onto itself)
 - (B) 4 (four-fold)
 - (C) 3 (three-fold)
 - (D) 8 (eight-fold)
- Q13.** For displaying original artworks in a gallery, at what approximate height above the floor should the **centre** of an artwork be placed to align with average visitor eye-level (the standard gallery ‘horizon line’)?
- (A) 120 cm
 - (B) 130 cm
 - (C) 145–150 cm (the internationally recognised gallery horizon line)
 - (D) 170 cm
- Q14.** The ‘white cube’ exhibition design concept, popularised in early 20th-century modern art galleries, prioritises:



- (A) A neutral, distraction-free environment that focuses attention entirely on the artwork itself
- (B) Elaborate decorative architectural settings that complement the artwork's period
- (C) Maximum natural light through glass ceilings to replicate outdoor conditions
- (D) Grouping artworks by physical size to create visual balance on each wall

Q15. In museum conservation and display lighting, which light source is **preferred** because it emits negligible ultraviolet (UV) radiation — which fades pigments and degrades organic materials?

- (A) Halogen incandescent lamps
- (B) Fluorescent tubes
- (C) Metal halide lamps
- (D) LED (light-emitting diode) luminaires

Q16. According to ADA (Americans with Disabilities Act) accessibility guidelines, the minimum clear aisle width in a public exhibition space to allow unobstructed wheelchair passage is approximately:

- (A) 60 cm
- (B) 92 cm (36 inches)
- (C) 120 cm
- (D) 150 cm

Q17. When lighting the interior of a museum display vitrine (glass case), positioning the light source at the top-front of the case angled **downward at approximately 30°** primarily serves to:

- (A) Reduce the internal temperature inside the sealed case
- (B) Illuminate the base of the case with perfectly uniform illumination



- (C) Minimise reflections on the glass face and provide frontal modelling light on the objects
- (D) Create a dramatic theatrical shadow behind each object

Q18. In museum wayfinding, which spatial element most effectively anchors a visitor's orientation in a large, multi-wing building?

- (A) A central atrium or landmark space visible from multiple points, around which visitors can mentally map the building's layout
- (B) A colour-coded floor plan handed to every visitor at the entrance
- (C) Audio guides with step-by-step directional instructions
- (D) QR codes on every wall linking to a digital map

Q19. In a service blueprint, the '**line of visibility**' separates:

- (A) The front stage from the backstage of a theatre performance
- (B) The customer-facing team from senior management
- (C) Online touchpoints from physical touchpoints
- (D) Customer-facing interactions above the line (visible to the customer) from backstage processes below the line (invisible to the customer)

Q20. In the Net Promoter Score (NPS) system, respondents who rate their likelihood to recommend a service as **9 or 10** out of 10 are classified as:

- (A) Passives
- (B) Promoters
- (C) Detractors
- (D) Advocates

Q21. In service design, a '**touchpoint**' is best defined as:

- (A) Any moment of contact or interaction between a customer and a service or brand — physical, digital, or human



- (B) The physical location where the primary service is delivered
- (C) The total number of customer-facing staff employed by a company
- (D) The specific point at which a customer complaint is formally registered

Q22. Jan Carlzon, former CEO of Scandinavian Airlines, popularised the concept of ‘**moments of truth**’ in service design. A ‘moment of truth’ is:

- (A) The moment when a customer reads a company’s annual report or mission statement
- (B) The precise instant when a product malfunctions or fails
- (C) Any episode in which a customer comes into contact with the company — however brief — and forms an impression of its quality
- (D) The internal audit moment when service processes are formally evaluated by management

Q23. In the Kano model of customer satisfaction, a ‘**delighter**’ (excitement attribute) is a feature that:

- (A) Is a basic requirement whose absence causes dissatisfaction but whose presence is not consciously noticed
- (B) Proportionally increases satisfaction as more of it is provided (a linear ‘performance’ attribute)
- (C) Consistently reduces satisfaction because it adds unnecessary complexity to the product
- (D) Is unexpected and pleasant — customers do not consciously demand it, but its presence creates strong positive delight

Q24. Which service design tool maps the sequence of a user’s **emotional highs and lows** throughout an entire service experience, plotted over time at each touchpoint?

- (A) Affinity diagram



- (B) Customer journey map (showing satisfaction and emotion over time at each touchpoint)
- (C) Service blueprint
- (D) Stakeholder map

Q25. In offset lithography, the printing plate transfers ink to an intermediate rubber blanket cylinder before the blanket prints onto the paper. The plate itself is typically made from:

- (A) Rigid steel engraved with recessed image areas
- (B) Flexible polymer relief plates with raised image areas
- (C) Thin aluminium sheets coated with a photosensitive emulsion
- (D) Copper cylinders etched with gravure cells

Q26. In screen printing (serigraphy), the **mesh count** of the screen determines:

- (A) The fineness of detail that can be reproduced — a higher mesh count allows finer lines and halftones
- (B) The pressure applied by the squeegee during printing
- (C) The maximum substrate thickness that can be printed
- (D) The number of colour separations required for the design

Q27. Letterpress printing is distinguished from offset and digital printing by the fact that it:

- (A) Uses an intermediate blanket roller to transfer ink to the substrate
- (B) Sprays microscopic droplets of ink onto the substrate using piezo-electric nozzles
- (C) Transfers the design by pressing a rubber stamp moistened with water
- (D) Uses raised physical type or plates that press directly into the paper under pressure, leaving a characteristic debossed impression



- Q28.** Risograph printing (widely used in independent publishing and zine culture) creates its distinctive aesthetic primarily because:
- (A) It uses a laser toner fused at high temperature, producing a raised toner surface
 - (B) It uses soy-based inks applied through a porous master stencil wrapped around a drum — producing slight ink bleed, mis-registration between colours, and a textured finish
 - (C) It prints exclusively on metallic substrates
 - (D) It uses letterpress relief plates with hand-set movable type
- Q29.** Flexography is the dominant printing process for which category of substrate?
- (A) Fine art archival papers
 - (B) Ceramic tiles and glass surfaces
 - (C) Flexible packaging (plastic films, foils, paper bags, corrugated board)
 - (D) Circuit boards and electronic components
- Q30.** A Pantone **spot colour** ink is preferred over a CMYK process-colour match primarily because:
- (A) It ensures exact, consistent colour reproduction from press to press — especially for brand colours that fall outside the CMYK gamut
 - (B) It reduces the number of print passes required on-press
 - (C) It allows full-colour photographic reproduction with a single ink
 - (D) It is always less expensive than CMYK four-colour process printing
- Q31.** Dokra (Dhokra) craft produces decorative metal figures from the tribal and folk traditions of Jharkhand, West Bengal, and Chhattisgarh. The technique used is:
- (A) Electroplating onto a ceramic base form
 - (B) Sand-casting using iron moulds



- (C) Die-casting under high hydraulic pressure
- (D) Lost-wax casting (*cire perdue*) — a wax model is encased in clay, fired to melt the wax, and molten metal is poured into the hollow

Q32. Bidriware is a distinctive metalcraft from Bidar, Karnataka, in which silver inlay designs are set into a base alloy. The base alloy is primarily:

- (A) Solid silver with a copper inlay
- (B) A zinc-copper alloy (approximately 16 parts zinc to 1 part copper) that turns **jet black** after treatment with a local soil paste rich in ammonium chloride
- (C) Aluminium coated with a thin layer of pewter
- (D) Cast iron with a decorative tin surface

Q33. Kondapalli toys are brightly painted wooden toys from Andhra Pradesh. They are traditionally carved from:

- (A) Teakwood (dense and hard)
- (B) Bamboo split into thin strips and pressed
- (C) A lightweight, soft wood from the 'tella poniki' tree (*Polianthia longifolia*)
- (D) Compressed papier-mâché

Q34. Channapatna toys (known as '**ivory of Karnataka**') are distinctive lacquerware wooden toys. Their characteristic shiny, smooth finish comes from:

- (A) Natural lac (shellac) applied while the piece rotates on a lathe and rubbed in while the wood is warm, producing a smooth colourful coating
- (B) Industrial polyurethane spray applied after hand carving
- (C) Wax polish made from beeswax and coconut oil, buffed by hand
- (D) Hand-painted enamel fired in a kiln at high temperature



- Q35.** Jaipur Blue Pottery is notable because its body is **not** made from conventional clay. Its body is primarily composed of:
- (A) Porcelain clay fired at 1300°C
 - (B) Papier-mâché pressed into moulds
 - (C) Terracotta mixed with recycled glass
 - (D) Quartz (ground glass) mixed with multani mitti (fuller's earth), gum, and water — fired at a relatively low temperature ($\approx 800^\circ\text{C}$)
- Q36.** The lacquerware of Nirmal, Telangana (Nirmal paintings and furniture) is known for a decorative technique that involves:
- (A) Cloisonné enamel fused on a metal base
 - (B) Painting figures in the naturalistic 'Nirmal' style — typically birds, animals, and foliage — on wood in soft colours, then applying a lacquer finish
 - (C) Inlaying mother-of-pearl into lacquered wooden surfaces
 - (D) Block-printing geometric patterns using carved wooden stamps
- Q37.** ISO 13485 is the international standard that specifically governs:
- (A) Quality management systems for the design, production, and post-market surveillance of medical devices
 - (B) Ergonomic requirements and dimensional standards for hospital furniture
 - (C) Colour coding conventions for pharmaceutical packaging
 - (D) Radiation shielding specifications for diagnostic imaging equipment
- Q38.** Medical devices and clinical instruments are designed with **rounded corners** and smooth, continuous surfaces (avoiding sharp edges, recesses, and screw threads) primarily to:
- (A) Reduce manufacturing cost by simplifying the moulding process
 - (B) Improve aesthetic appeal in clinical environments



- (C) Satisfy trademark or industrial design registration requirements
- (D) Facilitate effective cleaning, sterilisation, and infection control — sharp edges and crevices trap contaminants and resist cleaning agents

Q39. In NHS and international hospital colour-coding conventions for cleaning equipment and zones, which colour is most commonly assigned to **non-clinical or low-risk general areas** (e.g. offices, corridors, waiting rooms)?

- (A) Red (reserved for high-risk clinical areas)
- (B) Blue (general ward and patient areas)
- (C) Green (low-risk non-clinical areas)
- (D) Yellow (isolation and barrier-nursing areas)

Q40. **Poka-yoke** (error-proofing) applied to medical device design means:

- (A) Designing the device to be visually appealing so users engage with it more often
- (B) Designing the device so it can only be connected, assembled, or operated in the correct, safe way — making incorrect use physically impossible or immediately apparent
- (C) Including a second user manual in a different language inside the packaging
- (D) Making the device heavy enough (over 5 kg) so it is not accidentally dropped

Q41. For medical device design research, which user research method is most appropriate for understanding how clinicians **actually use equipment in a real operating environment** — capturing workarounds, environmental constraints, and workflow integration?

- (A) Contextual inquiry (shadowing clinicians in their real work environment — the hospital ward or operating theatre)
- (B) An online survey of 1000 general respondents



- (C) A laboratory usability test in a controlled simulated environment
- (D) A focus group discussion with department managers

Q42. Per ADA (Americans with Disabilities Act) accessibility guidelines, the maximum running slope gradient allowed for a **wheelchair ramp** in a public building is:

- (A) 1:6 (approximately 16.7% gradient)
- (B) 1:8 (12.5% gradient)
- (C) 1:10 (10% gradient)
- (D) 1:12 (approximately 8.3% gradient — 1 unit rise for every 12 units run)

Q43. In motion design and UI animation, an ‘**ease-in**’ timing function means:

- (A) The animation starts fast and decelerates to a stop
- (B) The animation moves at a perfectly constant speed throughout
- (C) The animation starts slowly and accelerates as it proceeds
- (D) The animation bounces elastically at the end of its travel

Q44. A ‘**micro-interaction**’ in UI/UX design is best described as:

- (A) Any animation lasting less than 0.1 seconds
- (B) A contained, single-purpose interaction moment — such as toggling a switch, liking a post, or a pull-to-refresh gesture — that provides immediate feedback to the user
- (C) A background animated looping pattern used for decorative purposes
- (D) A decorative animation that plays once only on the very first app launch

Q45. Lottie files, widely used for UI animations on mobile and web, are based on which underlying file format?



- (A) JSON (JavaScript Object Notation) — a Lottie file is a JSON file describing vector animation data exported from After Effects via the Bodymovin plugin
- (B) SVG (Scalable Vector Graphics)
- (C) GIF (Graphics Interchange Format)
- (D) MP4 video container format

Q46. A ‘**skeleton screen**’ (skeleton loader) in UI design is used to:

- (A) Display an error message when the server is unavailable
- (B) Overlay a black mask on the screen during a system update or restart
- (C) Animate a decorative geometric wireframe as a branding or splash element
- (D) Show a placeholder layout that mirrors the shape of the content being loaded — reducing perceived wait time and communicating to the user that content is on its way

Q47. GSAP (GreenSock Animation Platform) is a JavaScript library primarily used for:

- (A) Server-side rendering of PDF documents
- (B) Managing database query animations and transitions
- (C) Creating high-performance, timeline-based web animations — including scroll-triggered animations and complex SVG/DOM transitions
- (D) Generating machine-learning-driven motion paths from user behaviour data

Q48. In motion design for digital UI (drawing from the classic 2D animation principle), ‘**anticipation**’ before a UI element moves refers to:

- (A) Preloading all assets before any animation is allowed to begin



- (B) A brief initial movement in the opposite direction (or a subtle contraction) before the main motion — signalling to the user that an action is about to occur
- (C) A mandatory 300 ms delay inserted before every animation begins
- (D) Fading the element in from zero opacity before it begins its main motion

Q49. In CSS animation, which property controls the **speed curve** (timing function) of the animation — specifying whether it accelerates, decelerates, or moves at a constant speed?

- (A) `animation-timing-function` (accepting values such as `ease`, `ease-in`, `ease-out`, `linear`, `cubic-bezier()`)
- (B) `animation-duration`
- (C) `animation-delay`
- (D) `animation-fill-mode`

Q50. In a design system, a '**motion token**' standardises:

- (A) The colour used for animated elements across the product
- (B) The font size of text elements during transitions
- (C) The minimum tap target size for animated buttons
- (D) Animation duration, easing curves, and delay values — as named, reusable design decisions that ensure consistent motion behaviour across all products and platforms

Part B: Drawing Tasks — 50 Marks

Q51. Premium Tea Brand Packaging: “Darjeeling Gold”

Design the **packaging identity** for a **premium Indian tea brand** called **“Darjeeling Gold”**. Sketch: (a) the front face of a **tea box** (showing brand name, brand mark/logo, and supporting graphic elements — hills, tea leaves, or cultural imagery), and (b) the **box lid** (top view). Suggest



a colour palette in the margins (note the colours by name/number). The design should feel premium and rooted in Darjeeling's landscape.

Marks: Brand concept and visual identity (3) + front face composition (3) + lid and palette (2) + sketch quality (2). Total: 10 marks.

Q52. Futuristic Driverless Shuttle Stop

Sketch a **futuristic, driverless electric shuttle stop (bus shelter)** in **elevation view**. The shelter must integrate at least four of the following elements: a solar canopy/roof, a real-time digital display board, a QR-code self-service ticketing kiosk, a planter or living green wall, seating with charging ports, and a bicycle parking bay. Label each component clearly.

Marks: Integration of technology and greenery (3) + elevation view completeness (3) + labelling (2) + sketch quality (2). Total: 10 marks.



Q53. Hospital Wayfinding Signage System

Design a **consistent wayfinding signage system for a hospital**. Show three sign types on one sheet: (a) a **main directory board** (building entry, listing major departments), (b) a **corridor room-number plaque** (mounted on a door), and (c) an **emergency evacuation sign**. All three signs must share a consistent typeface, icon style, colour palette, and layout grid. Label the colour codes and font style used.

Marks: Visual consistency across 3 sign types (3) + hierarchy and legibility (3) + colour and type labelling (2) + sketch quality (2). Total: 10 marks.

Q54. Block Printing Workshop: Illustrative Scene

Illustrate a **traditional block-printing workshop scene** from Bagru or Sanganer, Rajasthan. Show: a craftsperson pressing a **carved wooden block** firmly onto a length of fabric spread on a low printing table, with the printed repeat pattern visible on the cloth. Include: at least 3 wooden blocks stored nearby (showing their carved faces), a colour tray, printed fabric drying or hanging in the background. Use **line and tone only** (no colour).

Marks: Craftsperson and action clarity (3) + workshop atmosphere (3) + tonal rendering (2) + line quality (2). Total: 10 marks.



Q55. Children's Outdoor Play Space: Bird's-Eye Layout Plan

Design a **children's outdoor play space** for ages 5–12 as a **bird's-eye layout plan**. The space must include at least five zones: (1) a climbing structure, (2) a sand pit, (3) a water splash/sensory water feature, (4) a seating area for accompanying adults, and (5) a clear entry path with level-change accessibility ramp. Label each zone with its name and approximate dimensions. Use graphic conventions (hatching for planting, circles for trees, etc.).

*Marks: Zone completeness (3) + spatial logic and accessibility (3) + graphic conventions and labelling (2) + design quality (2). **Total: 10 marks.***



Detailed Solutions**Part A — Visual MCQ Solutions****Q1.****Solution**

Concept — Visual Coding & Shape Cipher: A shape cipher assigns a unique symbol to each letter of the alphabet. Reading the sequence of shapes gives the decoded word.

Step 1 — Apply the legend: The message shows three shapes: $\triangle$ (=C), $\bigcirc$ (=A), $\triangle$ (=C). Reading left to right: C – A – C = **CAC**.

Why other options are wrong:

- (A) ACA: Would require Circle-Triangle-Circle ($\bigcirc\triangle\bigcirc$), not the shown sequence.
- (B) BAB: Would require Square-Circle-Square, not shown.
- (D) DAD: Would require Diamond-Circle-Diamond, not shown.

Final Answer: $\triangle \bigcirc \triangle$ decodes to CAC $\Rightarrow$ **(C)**

Answer: (C) [Go Back to Q1](#)

Q2.**Solution**

Concept — Direction Coding & Grid Navigation: Arrow symbols encode movement directions. Starting at (0,0) facing North, trace each command step by step.

Step 1 — Execute commands: $\uparrow$ (0,0) $\rightarrow$ (0,1); $\uparrow$ (0,1) $\rightarrow$ (0,2); $\rightarrow$ (0,2) $\rightarrow$ (1,2); $\uparrow$ (1,2) $\rightarrow$ (1,3). Final position: **(1,3)**.

Why other options are wrong:

- (A) (1,2): Misses the final $\uparrow$ command; stops one step early.
- (C) (2,3): Would require two rightward moves instead of one.
- (D) (0,3): Ignores the $\rightarrow$ command entirely.

Final Answer: Robot ends at (1,3) $\Rightarrow$ **(B)**

Answer: (B) [Go Back to Q2](#)



Q3.

Solution

Concept — Number-Shape Cipher Decoding: Each symbol maps to a specific digit. Read the three-symbol sequence using the given legend.

Step 1 — Apply the legend: $\triangle = 3$, $\blacksquare = 2$, $\star = 5$. Sequence: $\triangle \blacksquare \star = 3, 2, 5 = 325$.

Why other options are wrong:

- (B) 235: Incorrect reading order (swaps $\triangle$ and $\blacksquare$ meanings).
- (C) 253: Swaps $\blacksquare$ and $\star$ mappings.
- (D) 352: Transposes positions of the three symbols in the sequence.

Final Answer: $\triangle \blacksquare \star = 325 \Rightarrow$ (A)

Answer: (A) [Go Back to Q3](#)

Q4.

Solution

Concept — Five-Symbol Cipher Message Decoding: Using the key table that maps each shape to a letter, the five-symbol message must be decoded systematically.

Step 1 — Apply the key: $\diamond = R$, $\star = A$, $\triangle = N$, $\bigcirc = G$, $\blacksquare = E$. The five-symbol sequence decodes as R – A – N – G – E = **RANGE**.

Why other options are wrong:

- (A) GNAER: Scrambles the symbols without following the correct key.
- (B) ANGER: Mis-assigns $\diamond$ as A and $\star$ as N.
- (C) NRAGE: Applies an incorrect reading order (starts from position 3).

Final Answer: The 5-symbol message correctly decodes to RANGE $\Rightarrow$ (D)

Answer: (D) [Go Back to Q4](#)



Q5.

Solution

Concept — Colour-Coded Grid Rule: Parity Shading: In a 4×4 grid, a cell at row r , column c is shaded when $(r + c)$ is even.

Step 1 — Count shaded cells: $(r + c)$ is even when both r and c are even, or both are odd.

- Both odd: $(1,1), (1,3), (3,1), (3,3) = 4$ cells.
- Both even: $(2,2), (2,4), (4,2), (4,4) = 4$ cells.

Total shaded = $4 + 4 = 8$ cells (exactly half of the 16 cells).

Why other options are wrong:

- (A) 6, (B) 7: Under-count; miss the corner or edge cells.
- (D) 9: Over-count; parity splits exactly into half.

Final Answer: 8 cells are shaded $\Rightarrow$ (C)

Answer: (C) Go Back to Q5

Q6.

Solution

Concept — Sequential Rotation Pattern: Each symbol in the sequence is the previous one rotated by 45° . Position 1 = 0° ; position 2 = 45° ; position 3 = 90° ; position 4 = 135° ; position 5 = 180° .

Step 1 — Find position 6: Position 6 = $180^\circ + 45^\circ = 225^\circ$. This is the arrow pointing at 225° (down-left direction).

Why other options are wrong:

- (A) 90° : Same as position 3; skips the rotation rule.
- (C) 45° : Same as position 2; reverts rather than continuing.
- (D) 0° : Same as position 1; resets to start instead of continuing.

Final Answer: Position 6 must be the arrow at $225^\circ \Rightarrow$ (B)

Answer: (B) Go Back to Q6



Q7.

Solution

Concept — Islamic Geometric Pattern: Girih Tiles: Islamic 8-pointed star lattice patterns use a set of five girih tiles: the regular decagon, elongated hexagon, bowtie, rhombus, and elongated kite. The interstitial regions between 8-pointed star cells are filled by the **elongated kite** (arrow-head) shape.

Step 1 — Identify the gap shape: Between the pointed arms of adjacent 8-pointed stars, the remaining region is a narrow, elongated kite (sometimes called an arrow-head or dart tile). No other regular shape fills this gap without distortion.

Why other options are wrong:

- (A) Square: Leaves angular gaps at the junctions.
- (B) Circle: Cannot tile a plane without overlapping.
- (C) Regular hexagon: Has 120° interior angles, incompatible with the 45° -based star geometry.

Final Answer: The elongated kite (girih tile) fills the '?' region $\Rightarrow$ **(D)**

Answer: (D) **Go Back to Q7**

Q8.

Solution

Concept — Celtic Knotwork: Over-Under Alternation: The defining rule of Celtic interlace is that at every crossing, the strands strictly alternate: if one strand went over at the previous crossing, it must go under at the next, and vice versa.

Step 1 — Apply the rule: At crossing 1, the red strand goes over. At crossing 2 (the '?' crossing), the rule requires the *other* strand (blue) to go over — and red to go under. Option (A) correctly shows blue over, red under.

Why other options are wrong:

- (B) Both under: Impossible; one strand must be on top of the other.
- (C) Both over: Similarly impossible at a two-strand crossing.
- (D) Parallel, no cross: Eliminates the crossing that defines knotwork.

Final Answer: Blue over, red under (correct alternation) $\Rightarrow$ **(A)**

Answer: (A) **Go Back to Q8**



Q9.

Solution

Concept — Moorish Zellige: Octagon-Square Tiling: The octagon-square tiling (also called the 4.8.8 Archimedean tiling) fills the plane with regular octagons separated by small square tiles at the interstices.

Step 1 — Identify the gap shape: When regular octagons are packed in a grid arrangement, the small square gaps between four adjacent octagons are precisely **squares**. Each gap has four equal sides and four right angles.

Why other options are wrong:

- (A) Hexagon: Interior angles of 120° are incompatible with the 135° octagon vertex.
- (B) Triangle: The gap region has four sides, not three.
- (D) Pentagon: Five-sided shapes do not fill the four-sided interstitial gap.

Final Answer: Small squares fill the gaps between octagons $\Rightarrow$ **(C)**

Answer: (C) **Go Back to Q9**

Q10.

Solution

Concept — Alternating Colour Sequence: Parity Rule: Triangle 1 = dark, triangle 2 = light, triangle 3 = dark, ... Following the odd-dark / even-light rule, any triangle with an odd number is dark.

Step 1 — Check the 7th triangle: 7 is odd $\Rightarrow$ triangle 7 is **dark** (shaded), matching the pattern dark, light, dark, light, dark, light, **dark**.

Why other options are wrong:

- (A) Light: Applies even-position logic to an odd position.
- (C) Striped: No rule produces a striped result; the rule is binary.
- (D) Grey: The rule specifies only two states: dark and light.

Final Answer: The 7th triangle is dark (shaded) $\Rightarrow$ **(B)**

Answer: (B) **Go Back to Q10**



Q11.

Solution

Concept — Penrose Tiling: Aperiodic Tessellation: Penrose tilings, discovered by Roger Penrose in the 1970s, use exactly two rhombus tile shapes (a fat rhombus with angles $72^\circ/108^\circ$ and a thin rhombus with angles $36^\circ/144^\circ$) to tile the plane without ever repeating periodically — yet with a statistically five-fold rotational symmetry visible in the global pattern.

Step 1 — Evaluate each statement: A Penrose tiling has no translational unit cell (it is non-periodic) but exhibits a form of five-fold (pentagonal) rotational symmetry throughout the pattern.

Why other options are wrong:

- (A) Periodic: By definition, Penrose tiling is aperiodic.
- (B) Only triangles: Two rhombus shapes are used, not triangles.
- (C) Five shapes: Only two tile shapes are needed.

Final Answer: Penrose tiling is aperiodic with five-fold rotational symmetry $\Rightarrow$ **(D)**

Answer: (D) **Go Back to Q11**

Q12.

Solution

Concept — Hexagonal Tessellation: Rotational Symmetry: A regular hexagon has interior angles of 120° . Rotating it by 60° maps each vertex to the next, producing an identical configuration. This can be done 6 times before returning to the original position — giving **6-fold** (order 6) rotational symmetry.

Step 1 — Count rotation angles: $360^\circ \div 60^\circ = 6$ distinct rotations (including the identity). Order of rotational symmetry = **6**.

Why other options are wrong:

- (B) 4: Four-fold is characteristic of squares (90° rotations).
- (C) 3: Three-fold is characteristic of equilateral triangles.
- (D) 8: Eight-fold is characteristic of regular octagons.

Final Answer: Regular hexagon has 6-fold rotational symmetry $\Rightarrow$ **(A)**

Answer: (A) **Go Back to Q12**



Q13.

Solution

Concept — Gallery Exhibition Design: Artwork Height: The internationally recognised standard for gallery hanging is to place the **centre** of each artwork at approximately 145–150 cm above floor level — corresponding to the average human eye-level. This is sometimes called the ‘horizon line’ standard and is used by major museums worldwide (including MoMA, Tate, and the Louvre).

Why other options are wrong:

- (A) 120 cm: Too low; aligns the centre with the chest rather than the eye.
- (B) 130 cm: Still below standard eye-level for most adults.
- (D) 170 cm: Places the artwork centre above eye-level, requiring the viewer to look up.

Final Answer: Gallery horizon line is 145–150 cm ⇒ (C)

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

Q14.

Solution

Concept — White Cube Exhibition Concept: The ‘white cube’ concept was theorised by artist Brian O’Doherty in his 1976 essays *Inside the White Cube*. It describes the modern gallery convention of neutral white walls, controlled lighting, and the elimination of decorative architecture — so the viewer’s attention is directed entirely toward the artwork.

Why other options are wrong:

- (B) Elaborate decorative settings: The opposite of the white cube ideal.
- (C) Maximum natural light: Natural light is typically avoided to prevent UV damage and glare.
- (D) Grouping by size: Artwork is typically grouped by curatorial logic, not size.

Final Answer: White cube prioritises a neutral, artwork-focused environment ⇒ (A)

Answer: (A) **Go Back to Q14**



Q15.

Solution

Concept — Museum Conservation Lighting: LED: Ultraviolet (UV) radiation causes photo-chemical degradation: it bleaches pigments, yellows varnishes, and weakens organic fibres. LED luminaires emit negligible UV (virtually zero) and very little infrared heat, making them the gold standard for conservation-grade museum lighting.

Why other options are wrong:

- (A) Halogen lamps: Emit significant UV and infrared heat — harmful to objects.
- (B) Fluorescent tubes: Emit measurable UV and require UV-filter sleeves in conservation contexts.
- (C) Metal halide lamps: High UV output; unsuitable for unfiltered display use.

Final Answer: LEDs are preferred because they emit negligible UV radiation ⇒ **(D)**

Answer: (D) [Go Back to Q15](#)

Q16.

Solution

Concept — ADA Accessibility: Minimum Aisle Width: The Americans with Disabilities Act (ADA) Standards for Accessible Design require a minimum clear floor width of **36 inches** (approximately 92 cm) for accessible routes and aisles in public spaces — sufficient for a standard wheelchair to pass without obstruction.

Why other options are wrong:

- (A) 60 cm: Far too narrow for wheelchair passage.
- (C) 120 cm: This is the width required for *two* wheelchairs to pass simultaneously.
- (D) 150 cm: Exceeds the minimum requirement; applies to wider passing spaces.

Final Answer: Minimum ADA aisle width = 92 cm (36 inches) ⇒ **(B)**

Answer: (B) [Go Back to Q16](#)



Q17.

Solution

Concept — Vitrine Lighting: Angle and Reflection Control: Positioning the light at the top-front of a display case, angled downward at $\approx 30^\circ$, achieves two goals simultaneously: the angle directs light onto object surfaces for good modelling (revealing form and texture), while keeping the light source outside the viewer's cone of vision so specular reflections off the glass are directed away from the viewer's eye.

Why other options are wrong:

- (A) Reduce internal temperature: Light position does not materially affect case temperature.
- (B) Uniform base illumination: A 30° front angle provides frontal light, not even base illumination.
- (D) Dramatic shadow: Shadow effects are created by side or back lighting, not front-top.

Final Answer: 30° top-front angle minimises glass reflections and provides modelling light $\Rightarrow$ (C)

Answer: (C) [Go Back to Q17](#)

Q18.

Solution

Concept — Museum Wayfinding: Spatial Anchoring: Cognitive mapping research (Lynch, *The Image of the City*) shows that people orient themselves using prominent **nodes** and **landmarks**. A central atrium visible from multiple wings acts as a persistent spatial anchor, allowing visitors to triangulate their position and recover orientation when lost.

Why other options are wrong:

- (B) Colour-coded floor plan: Effective supplement but not a spatial anchor — requires active consulting.
- (C) Audio guides: Sequential and linear; do not support mental map-building.
- (D) QR codes: Require a device and break spatial flow; do not anchor orientation passively.



Final Answer: A central atrium or landmark space most effectively anchors visitor orientation ⇒ (A)

Answer: (A) Go Back to Q18

Q19.

Solution

Concept — Service Blueprint: Line of Visibility: The service blueprint (developed by G. Lynn Shostack, 1984) uses horizontal dividing lines to separate different levels of service activity. The **line of visibility** specifically marks the boundary between what the customer can see/interact with (above) and what happens in the back office, unseen by the customer (below).

Why other options are wrong:

- (A) Theatre front/backstage: An analogy, not the formal definition in service blueprinting.
- (B) Customer team vs. management: Not defined by the visibility line.
- (C) Online vs. physical: These are categories of touchpoints, not the visibility line's function.

Final Answer: Line of visibility separates customer-visible interactions from invisible backstage processes ⇒ (D)

Answer: (D) Go Back to Q19

Q20.

Solution

Concept — Net Promoter Score (NPS) Classification: Fred Reichheld's NPS system classifies respondents into three groups based on a 0–10 scale: **Promoters** (9–10): enthusiastic loyalists who actively recommend the service. **Passives** (7–8): satisfied but unenthusiastic. **Detractors** (0–6): unhappy customers who may spread negative word-of-mouth.

Why other options are wrong:

- (A) Passives: Passives score 7–8, not 9–10.
- (C) Detractors: Detractors score 0–6.
- (D) Advocates: Not a formal NPS category (though used in broader loyalty



literature).

Final Answer: Respondents scoring 9–10 are classified as Promoters ⇒ **(B)**

Answer: (B) Go Back to Q20

Q21.

Solution

Concept — Service Design: Definition of a Touchpoint: In service design, a **touchpoint** is any point of contact — physical, digital, or interpersonal — between a customer and a brand or service at any stage of the customer journey. Touchpoints include websites, packaging, staff interactions, invoices, signage, and social media.

Why other options are wrong:

- (B) Physical location only: Touchpoints include digital and human interactions, not just locations.
- (C) Number of staff: Staff count is an operational metric, not a touchpoint definition.
- (D) Complaint registration point: This is one specific touchpoint, not the definition of a touchpoint.

Final Answer: A touchpoint is any moment of contact between customer and brand ⇒ **(A)**

Answer: (A) Go Back to Q21

Q22.

Solution

Concept — Moments of Truth (Jan Carlzon, SAS): Jan Carlzon described a ‘moment of truth’ as any episode — however brief — in which a customer interacts with the company and forms an impression of its service quality. He famously calculated that SAS had 50,000 moments of truth per day, each lasting an average of 15 seconds.

Why other options are wrong:

- (A) Annual report: Reading marketing material is not a service interaction.
- (B) Product failure: A specific event, not the broad concept of any contact



moment.

- (D) Internal audit: An internal process invisible to the customer; opposite of a customer moment of truth.

Final Answer: A moment of truth is any brief customer-company contact that forms an impression ⇒ (C)

Answer: (C) Go Back to Q22

Q23.

Solution

Concept — Kano Model: Excitement/Delighter Attributes: The Kano model (Noriaki Kano, 1984) categorises product features into three types: **Basic needs** (must-haves whose absence causes dissatisfaction), **Performance needs** (more is better, linear satisfaction), and **Delighters/Excitement** (unexpected features that produce strong positive satisfaction when present).

Why other options are wrong:

- (A) Basic requirement: Describes a ‘must-be’ attribute, not a delighter.
- (B) Linear performance: Describes the ‘performance’ (one-dimensional) attribute category.
- (C) Reduces satisfaction: No Kano category is inherently dissatisfying by presence.

Final Answer: A delighter is unexpected, pleasant, and creates strong positive satisfaction ⇒ (D)

Answer: (D) Go Back to Q23

Q24.

Solution

Concept — Customer Journey Map vs. Related Tools: A customer journey map visualises the end-to-end experience of a customer: it plots each touchpoint along a timeline and typically shows the customer’s emotional state (highs and lows) as a curve above or below a neutral line. This makes it the specific tool for tracking emotional experience over time.

Why other options are wrong:



- (A) Affinity diagram: Groups qualitative data by themes; does not show time or emotion.
- (C) Service blueprint: Shows the operational back-and-front-stage processes, not primarily the emotional arc.
- (D) Stakeholder map: Shows relationships between parties; no temporal or emotional dimension.

Final Answer: Customer journey map tracks emotional highs and lows over time at each touchpoint ⇒ **(B)**

Answer: (B) **Go Back to Q24**

Q25.

Solution

Concept — Offset Lithography: Plate Material: In offset lithography, the printing plate carries the image in a planographic (flat) manner — no raised or recessed areas. The image and non-image areas are distinguished by their chemical affinity for ink (oleophilic) or water (hydrophilic). The plate is made from **thin aluminium** coated with a **photosensitive emulsion** that is exposed and developed photographically.

Why other options are wrong:

- (A) Steel with recessed areas: Describes gravure printing, not offset litho.
- (B) Polymer relief plates: Describes flexographic printing (raised image areas).
- (D) Copper cylinders with gravure cells: Describes rotogravure/intaglio printing.

Final Answer: Offset litho plates are thin aluminium sheets with photosensitive emulsion ⇒ **(C)**

Answer: (C) **Go Back to Q25**



Q26.

Solution

Concept — Screen Printing: Mesh Count: The **mesh count** of a screen refers to the number of threads per inch (or per centimetre) in the woven screen fabric. A **higher mesh count** means finer, closer threads — allowing smaller ink particles to pass through, enabling finer lines and more detailed halftone reproduction. A lower mesh count is used for thick, opaque inks on textiles.

Why other options are wrong:

- (B) Squeegee pressure: Determined by the printer's technique and squeegee hardness, not the mesh count.
- (C) Substrate thickness: Maximum substrate thickness is a function of the screen frame and press, not mesh count.
- (D) Number of colour separations: A design property, independent of the mesh specification.

Final Answer: Higher mesh count allows finer detail and halftone reproduction ⇒ (A)

Answer: (A) **Go Back to Q26**

Q27.

Solution

Concept — Letterpress Printing: Relief Process: Letterpress is a **relief** printing process. Raised surfaces (movable type or photopolymer plates) are inked and pressed directly onto the substrate under significant pressure. This physical impression creates the characteristic 'kiss' or debossed impression in the paper that is one of letterpress's aesthetic signatures.

Why other options are wrong:

- (A) Blanket roller transfer: Defines offset lithography.
- (B) Ink droplets: Defines inkjet printing.
- (C) Rubber stamp with water: Not a printing process; a confusion with lithography's water-ink chemistry.

Final Answer: Letterpress uses raised plates pressed directly into the paper ⇒ (D)

Answer: (D) **Go Back to Q27**



Q28.

Solution

Concept — Risograph Printing: Stencil Drum Process: A Risograph (manufactured by Riso Kagaku Corporation) is a high-speed digital duplicator. The machine creates a **thermal master stencil** from the digital file, wraps it around a drum, and forces soy-based or rice-based ink through the stencil's perforations onto paper. The result is characterised by slight ink bleed, visible grain, mis-registration between colour layers, and a slightly transparent, matte-textured finish.

Why other options are wrong:

- (A) Laser toner: Describes laser printing, which fuses toner with heat.
- (C) Metallic substrates only: Risograph prints on regular paper and card.
- (D) Letterpress relief plates: A different process entirely.

Final Answer: Risograph uses a stencil drum with soy-based inks, producing its distinctive textured aesthetic ⇒ **(B)**

Answer: (B) **Go Back to Q28**

Q29.

Solution

Concept — Flexography: Packaging Substrate: Flexography is a **rotary relief** printing process using flexible photopolymer plates and fast-drying solvent or UV inks. It runs at very high speeds and can print on almost any substrate, including **non-absorbent flexible materials** such as plastic films, aluminium foil, cellophane, paper bags, and corrugated cardboard — making it the dominant process for flexible packaging.

Why other options are wrong:

- (A) Fine art papers: These use lithography or inkjet for archival quality.
- (B) Ceramic tiles and glass: These use screen printing or digital ceramic printing.
- (D) Circuit boards: These use screen printing with solder paste or specialised processes.

Final Answer: Flexography dominates flexible packaging substrates ⇒ **(C)**

Answer: (C) **Go Back to Q29**



Q30.

Solution

Concept — Pantone Spot Colour vs. CMYK Process Colour: CMYK printing reproduces colour by overprinting four transparent inks (Cyan, Magenta, Yellow, Black). The **gamut** of CMYK is limited — certain vivid oranges, blues, and greens fall outside what CMYK can reproduce. A **Pantone spot colour** is a pre-mixed, proprietary ink formulated to a precise recipe, ensuring the same colour is reproduced identically on any press anywhere in the world.

Why other options are wrong:

- (B) Fewer print passes: Spot colours require an additional pass (extra plate), not fewer.
- (C) Full-colour photography with one ink: Full-colour images require multiple separations; one ink cannot render photography.
- (D) Always cheaper: Spot colours add cost (extra plate and ink per colour).

Final Answer: Pantone spot colours guarantee exact, consistent colour across presses ⇒ (A)

Answer: (A) **Go Back to Q30**

Q31.

Solution

Concept — Dokra (Dhokra): Lost-Wax Casting: Dokra is one of the oldest known metal-casting techniques in the world, practised for over 4,000 years. The craftsperson (called a *Dhokra karigar*) first builds a wax model over a clay core. The wax model is encased in successive layers of clay, then fired in a kiln: the wax melts and drains out through vents (*cire perdue* = lost wax), leaving a hollow mould. Molten brass or bell metal is then poured in.

Why other options are wrong:

- (A) Electroplating: An industrial finishing process, not a traditional folk casting method.
- (B) Sand-casting with iron moulds: Produces hard-edged industrial castings; not Dokra's method.
- (C) Die-casting: Requires expensive machinery and high pressure; not hand-craft.



Final Answer: Dokra uses lost-wax (*cire perdue*) casting $\Rightarrow$ (D)

Answer: (D) Go Back to Q31

Q32.

Solution

Concept — Bidriware: Zinc-Copper Alloy Base: Bidriware (from Bidar, Karnataka) is renowned for its dramatic black-and-silver contrast. The base metal is a specific alloy: **approximately 16 parts zinc to 1 part copper**, sometimes with small amounts of tin and lead. After the silver (or gold) wire is inlaid and the surface burnished, the object is treated with a paste made from soil from Bidar's fort walls, which contains ammonium chloride — this blackens only the zinc-copper alloy, leaving the silver inlay bright.

Why other options are wrong:

- (A) Solid silver with copper inlay: Silver is the inlay, not the base.
- (C) Aluminium with pewter coating: Aluminium is a modern material not used in traditional Bidriware.
- (D) Cast iron with tin surface: Iron does not react with the blackening treatment.

Final Answer: Bidriware base is a zinc-copper alloy that turns jet black after soil treatment $\Rightarrow$ (B)

Answer: (B) Go Back to Q32

Q33.

Solution

Concept — Kondapalli Toys: Tella Poniki Wood: Kondapalli toys from Andhra Pradesh are traditionally carved from the wood of the **tella poniki tree** (*Polianthia longifolia*, also called the mast tree). This wood is unusually **soft and lightweight** when freshly cut, allowing artisans to carve fine details easily. Once dried, it becomes firm. The carved pieces are then coated with a paste of sawdust and tamarind seed glue before being brightly painted.

Why other options are wrong:

- (A) Teakwood: Dense, hard, and expensive; unsuitable for the fine carving and light weight required.



- (B) Bamboo strips: Bamboo is used for other crafts but not traditional Kondapalli toy carving.
- (D) Papier-mâché: Used in Kashmiri toys and Channapatna base preparation, not Kondapalli.

Final Answer: Kondapalli toys are carved from the soft tella poniki tree wood ⇒ (C)

Answer: (C) **Go Back to Q33**

Q34.

Solution

Concept — Channapatna Toys: Natural Lac Lacquerware: Channapatna, Karnataka is famous for its *lac*-finished wooden toys. The wood (typically ivory wood or rosewood) is turned on a lathe. While the piece rotates at speed, the artisan holds a stick of natural **lac (shellac)** against it: friction melts the lac, which is then quickly burnished in with a wooden tool while still warm, creating a smooth, glossy, hard coloured coating. No brushes, sprays, or kilns are used.

Why other options are wrong:

- (B) Industrial polyurethane: A synthetic chemical finish; not the traditional process.
- (C) Beeswax and coconut oil: Produces a soft matte wax finish, not the hard lacquer characteristic.
- (D) Kiln-fired enamel: Describes ceramic or glass enamelwork; wood toys cannot be kiln-fired.

Final Answer: Channapatna finish comes from natural lac applied on a spinning lathe ⇒ (A)

Answer: (A) **Go Back to Q34**



Q35.

Solution

Concept — Jaipur Blue Pottery: Quartz-Based Body: Jaipur Blue Pottery is unique in Indian ceramics because its body contains **no conventional clay**. It is made from a mixture of powdered **quartz** (ground glass or sand), **multani mitti** (fuller's earth), *katira* gum, and water. This body is moulded and fired at a relatively low temperature ($\approx 800^\circ\text{C}$) compared to porcelain (1300°C), producing a translucent, glassy, non-porous ware decorated with cobalt blue and other pigments under a glaze.

Why other options are wrong:

- (A) Porcelain clay at 1300°C : No clay is used; this is the defining distinction of Jaipur Blue Pottery.
- (B) Papier-mâché: Used in Kashmiri lacquerware, not Blue Pottery.
- (C) Terracotta with recycled glass: Terracotta is earthenware clay, not used in the Blue Pottery body.

Final Answer: Jaipur Blue Pottery body is quartz + multani mitti, fired at $\approx 800^\circ\text{C}$
 $\Rightarrow$ (D)

Answer: (D) [Go Back to Q35](#)

Q36.

Solution

Concept — Nirmal Lacquerware: Naturalistic Painting + Lacquer Finish: Nirmal art from Telangana (formerly in Andhra Pradesh) involves painting wooden furniture, panels, and boxes with **naturalistic motifs** — birds (especially peacocks and swans), animals, flowers, and foliage — in soft, muted colours derived from natural pigments. These paintings are then protected by a **lacquer (varnish) finish**, giving the surface a characteristic warm glow.

Why other options are wrong:

- (A) Cloisonné enamel: A metalwork technique using metal cloisons and fused glass enamel; not related to Nirmal.
- (C) Mother-of-pearl inlay: Used in Mysore furniture and Bidri occasionally; not Nirmal.
- (D) Block-printing with stamps: Nirmal work is hand-painted, not block-printed.



Final Answer: Nirmal involves naturalistic painting on wood with a lacquer finish
⇒ (B)

Answer: (B) **Go Back to Q36**

Q37.

Solution

Concept — ISO 13485: Medical Device Quality Management: ISO 13485:2016 is the international standard that specifies requirements for a **quality management system (QMS)** specific to organisations involved in the lifecycle of medical devices — including design, development, production, installation, and post-market surveillance. It is the medical device sector's counterpart to the general ISO 9001.

Why other options are wrong:

- (B) Hospital furniture ergonomics: Covered by ISO 11228 and EN standards for ergonomics; not ISO 13485.
- (C) Pharmaceutical packaging colour coding: Governed by pharmacopoeia standards and national drug regulations.
- (D) Radiation shielding for imaging: Governed by IEC 60601 and radiation protection standards.

Final Answer: ISO 13485 governs quality management for medical devices ⇒ (A)

Answer: (A) **Go Back to Q37**

Q38.

Solution

Concept — Medical Device Design: Rounded Corners and Infection Control: Healthcare-associated infections (HAIs) are a critical patient safety concern. Medical devices are required to be cleaned, disinfected, or sterilised between uses. **Sharp corners, deep recesses, screw threads, and crevices** are notoriously difficult to clean — they trap biological material (blood, tissue) and resist penetration by disinfectants and steam. Smooth, rounded surfaces ensure cleaning agents reach all areas and mechanical cleaning cloths wipe surfaces without trapping residue.

Why other options are wrong:



- (A) Reduce manufacturing cost: Rounded surfaces often require additional machining steps.
- (B) Aesthetic appeal: Aesthetics are secondary to safety and clinical requirements.
- (C) Trademark registration: Industrial design features are not driven by IP registration concerns.

Final Answer: Rounded corners facilitate effective cleaning and sterilisation ⇒ **(D)**

Answer: (D) [Go Back to Q38](#)

Q39.

Solution

Concept — NHS Hospital Colour Coding: Zone Classification: The NHS National Standards of Healthcare Cleanliness and the colour-coding systems for cleaning equipment use a four-colour zone scheme to prevent cross-contamination: **Red** = high-risk clinical (ICUs, operating theatres, isolation areas); **Yellow** = barrier/isolation nursing; **Blue** = general wards and clinical areas; **Green** = low-risk non-clinical areas (offices, corridors, reception, staff rooms).

Why other options are wrong:

- (A) Red: Reserved for highest-risk clinical environments.
- (B) Blue: Assigned to general ward and patient care areas.
- (D) Yellow: Used for isolation and barrier-nursing areas.

Final Answer: Green = low-risk non-clinical general areas ⇒ **(C)**

Answer: (C) [Go Back to Q39](#)



Q40.

Solution

Concept — Poka-Yoke (Error-Proofing) in Medical Device Design: Poka-yoke (Japanese: ‘mistake-proofing’) is a concept from Shigeo Shingo’s Toyota Production System, widely applied in medical device design. The goal is to design the device so that incorrect assembly, connection, or operation is **physically impossible** — for example, asymmetric connectors that can only mate one way, colour-coded ports for different gases, and luer locks that require a specific twist to engage. This prevents potentially life-threatening use errors.

Why other options are wrong:

- (A) Visual appeal for engagement: Aesthetics are a separate design objective; poka-yoke is about preventing errors.
- (C) Second-language manual: Addresses language access, not physical error-proofing.
- (D) Weight limit: Weight does not prevent incorrect use; it creates other ergonomic hazards.

Final Answer: Poka-yoke means the device can only be used correctly — incorrect use is physically impossible ⇒ **(B)**

Answer: (B) **Go Back to Q40**

Q41.

Solution

Concept — User Research Methods: Contextual Inquiry for Real-World Use: **Contextual inquiry** (a qualitative research method developed by Beyer and Holtzblatt) involves the researcher **shadowing users in their natural work environment** while they perform real tasks. For medical device research, this means visiting the operating theatre, ward, or ICU and observing how clinicians actually use equipment — capturing informal workarounds, environmental constraints (cable management, lighting, space), team communication, and workflow integration that would never be revealed in a lab or survey.

Why other options are wrong:

- (B) Online survey: Lacks the ecological validity of real-environment observation; self-reported data misses tacit behaviour.
- (C) Laboratory usability test: Controlled environments remove the contex-



tual factors that most affect real-world use.

- (D) Focus group with managers: Managers describe policy, not actual clinical use behaviour.

Final Answer: Contextual inquiry (shadowing in real clinical environments) is most appropriate $\Rightarrow$ (A)

Answer: (A) [Go Back to Q41](#)

Q42.

Solution

Concept — ADA Wheelchair Ramp Maximum Gradient: The ADA Standards for Accessible Design (Section 405) specify a maximum **running slope** for ramps of **1:12** — meaning for every 1 unit of rise (vertical), the ramp must run at least 12 units horizontally ($\approx 8.3\%$ gradient, or 4.76° angle). This gradient allows most manual wheelchair users to navigate independently.

Why other options are wrong:

- (A) 1:6 ($\approx 16.7\%$): Far too steep for wheelchair access; only allowed for very short ramps in existing buildings.
- (B) 1:8 (12.5%): Steeper than the ADA maximum.
- (C) 1:10 (10%): Steeper than the ADA maximum of 1:12.

Final Answer: ADA maximum wheelchair ramp slope = 1:12 ($\approx 8.3\%$) $\Rightarrow$ (D)

Answer: (D) [Go Back to Q42](#)

Q43.

Solution

Concept — Motion Design Timing Functions: Ease-In: CSS and motion design use timing functions to describe the rate of change of an animation over time. An **ease-in** curve starts slowly (low velocity) and accelerates toward the end. Mathematically, it corresponds to the cubic Bézier curve `cubic-bezier(0.42, 0, 1.0, 1.0)`. It mimics the way an object starts from rest and gains momentum.

Why other options are wrong:

- (A) Starts fast and decelerates: Describes **ease-out**.



- (B) Constant speed: Describes **linear**.
- (D) Bounces at end: Describes a **spring** or **bounce** easing (a custom cubic-bezier or spring function).

Final Answer: Ease-in = starts slowly and accelerates $\Rightarrow$ (C)

Answer: (C) **Go Back to Q43**

Q44.

Solution

Concept — Micro-interactions in UI/UX Design: The term ‘micro-interaction’ was popularised by Dan Saffer (*Microinteractions*, 2013). A micro-interaction is a **contained, single-purpose interaction moment** within a larger product. It has four components: a trigger (initiates the micro-interaction), rules (what happens), feedback (what the user sees/feels), and loops/modes (meta-rules). Examples: toggling a light switch, liking a photo, submitting a form, pull-to-refresh, password strength indicators.

Why other options are wrong:

- (A) Less than 0.1 seconds: Duration is not the defining criterion; many micro-interactions last 0.3–0.5 s.
- (C) Background decorative loop: This is a passive visual element, not an interactive moment.
- (D) Once-only launch animation: A splash screen or onboarding animation, not a micro-interaction.

Final Answer: A micro-interaction is a contained, single-purpose interaction providing immediate feedback $\Rightarrow$ (B)

Answer: (B) **Go Back to Q44**



Q45.

Solution

Concept — Lottie Animation File Format: Lottie is an open-source animation file format created by Hernan Torrisi and popularised by Airbnb. A **Lottie file is a JSON** (JavaScript Object Notation) text file that encodes vector animation data — paths, colours, keyframes, easing curves — originally exported from Adobe After Effects via the **Bodymovin** plugin. JSON makes Lottie files small, resolution-independent, and directly renderable in a web browser or mobile app without a video player.

Why other options are wrong:

- (B) SVG: SVG supports animation (SMIL/CSS) but is not the Lottie container format.
- (C) GIF: Raster format, resolution-dependent, no vector animation; large file sizes.
- (D) MP4: Video container format; requires a video player and is resolution-fixed.

Final Answer: Lottie files are JSON files describing vector animation $\Rightarrow$ **(A)**

Answer: (A) [Go Back to Q45](#)

Q46.

Solution

Concept — Skeleton Screen (Skeleton Loader): A skeleton screen displays a **grey placeholder layout** that mirrors the shape and structure of the content that is loading — typically showing blurred or animated rectangular blocks where images will appear and thin lines where text will appear. Facebook, LinkedIn, and YouTube popularised this pattern. It reduces **perceived loading time** by giving users something meaningful to look at immediately and setting expectations about the content structure.

Why other options are wrong:

- (A) Error message: A skeleton screen appears during loading, not on error.
- (B) Black mask during system update: Describes a full-screen system overlay, not a skeleton.
- (C) Decorative wireframe branding: A skeleton is functional (content-mirroring), not decorative.



Final Answer: Skeleton screens show placeholder content layout to reduce perceived wait time $\Rightarrow$ (D)

Answer: (D) Go Back to Q46

Q47.

Solution

Concept — GSAP (GreenSock Animation Platform): GSAP is a professional JavaScript animation library created by GreenSock. It provides a **timeline-based API** that allows developers to sequence, overlap, and control complex animations of DOM elements, SVG paths, CSS properties, Canvas objects, and Three.js/WebGL scenes. It is widely used for scroll-triggered animations (via ScrollTrigger plugin), SVG morphing, and high-performance UI transitions — significantly outperforming CSS animations and jQuery in benchmarks.

Why other options are wrong:

- (A) Server-side PDF rendering: Handled by libraries like Puppeteer or pdfkit, not GSAP.
- (B) Database query animations: No such category exists in standard web development.
- (D) ML-driven motion paths: Machine learning inference libraries are separate from GSAP.

Final Answer: GSAP creates timeline-based web animations and scroll-triggered transitions $\Rightarrow$ (C)

Answer: (C) Go Back to Q47

Q48.

Solution

Concept — Anticipation as UI Motion Design Principle: ‘Anticipation’ is one of the 12 classic principles of animation (Disney’s Ollie Johnston and Frank Thomas). In 2D animation, a character crouches before jumping. In UI motion design, **anticipation** means a brief initial movement in the *opposite* direction of the main motion (or a slight contraction/squeeze) immediately before the element moves — signalling to the user that something is about to happen and preparing them psychologically for the main motion.

Why other options are wrong:



- (A) Preloading assets: Asset preloading is a performance optimisation, not the anticipation animation principle.
- (C) 300 ms delay: A delay is a pause before the animation; anticipation is an active counter-movement.
- (D) Fade-in before motion: This is the 'staging' or 'ease-in' principle, not anticipation.

Final Answer: Anticipation = brief counter-movement before the main action to signal intent ⇒ **(B)**

Answer: (B) [Go Back to Q48](#)

Q49.

Solution

Concept — CSS Animation: animation-timing-function: CSS animation has six core properties. The animation-timing-function property controls the **speed curve** (how the animation accelerates or decelerates at each point in its cycle). Common values include: linear (constant speed), ease (default: slow-fast-slow), ease-in (starts slow), ease-out (ends slow), ease-in-out, and custom cubic-bezier(x1,y1,x2,y2) curves.

Why other options are wrong:

- (B) animation-duration: Specifies the total time length (e.g., 0.4s); does not affect the speed curve.
- (C) animation-delay: Specifies how long to wait before the animation begins.
- (D) animation-fill-mode: Specifies how styles are applied before/after the animation (none, forwards, backwards, both).

Final Answer: animation-timing-function controls the speed curve ⇒ **(A)**

Answer: (A) [Go Back to Q49](#)



Q50.

Solution

Concept — Motion Tokens in Design Systems: Design tokens are named, platform-agnostic design decisions stored as variables (e.g., in JSON or YAML) that can be consumed by code, design tools, and documentation. **Motion tokens** specifically standardise the **temporal and easing aspects of animation** — for example: `duration-fast: 150ms`, `duration-moderate: 300ms`, `easing-standard: cubic-bezier(0.4,0,0.2,1)`, `delay-default: 0ms`. Using motion tokens ensures that every product built on the design system animates with the same rhythm and feel.

Why other options are wrong:

- (A) Colour for animated elements: Colour tokens are a separate category of design token.
- (B) Font size during transitions: Typography tokens handle font sizing; motion tokens handle timing.
- (C) Minimum tap target size: Spacing/size tokens handle tap targets; unrelated to motion.

Final Answer: Motion tokens standardise duration, easing, and delay for consistent animation ⇒ **(D)**

Answer: (D) [Go Back to Q50](#)

Part B — Drawing Task Model Answers

Q51.

Solution

Model Sketch Description — Premium Tea Brand Packaging: “Darjeeling Gold”

What the ideal sketch should contain:

- **Front face of tea box:** Brand name ‘Darjeeling Gold’ in an elegant serif or Art Deco typeface, occupying the upper third. A central brand mark — such as a stylised tea leaf with a mountain silhouette or a golden sun rising over rolling hills. A tagline line (e.g. ‘Single Origin · First Flush · Estate Reserve’) in a small refined font. Decorative border referencing Darjeeling patterns (diagonal cross-hatch, fine filigree, or plantation row texture).



- **Top lid view:** Brand name centred, with a simplified version of the brand mark. A subtle repeat pattern of tea leaves or topographic contour lines fills the lid surface.
- **Colour palette (noted in margins):** Deep forest green (Pantone 349 C) + antique gold (Pantone 871 C) + cream/ivory background + a touch of terracotta or rust for warmth.
- **Visual vocabulary:** Minimal, premium, not tourist-kitsch. Typeface pairing: a display serif for the brand name + a humanist sans-serif for body copy.
- **Sketch technique:** Clean box perspective, ruled for orthographic front and top views; palette swatches clearly labelled.

Marking rubric: Brand concept and visual identity (3) + front face composition (3) + lid and palette (2) + sketch quality (2) = **10 marks**.

Q52.

Solution

Model Sketch Description — Futuristic Driverless Shuttle Stop

What the ideal sketch should contain:

- **Elevation view:** A clean, horizontal shelter structure — low and aerodynamic. The canopy is a photovoltaic (solar) panel array, indicated by grid lines and annotated 'Solar PV Canopy'. Structural columns are slender and angled (tensile/minimal structure aesthetic).
- **Integrated elements (minimum 4 of 6):** (1) Real-time digital display board (showing route map and countdown timer, annotated); (2) QR-code self-service ticketing kiosk (touch screen panel with QR symbol, annotated); (3) Living green wall or planter integrated into a side panel or column (foliage drawn with small leaf strokes, annotated 'Living Wall'); (4) Seating bench with armrest-integrated USB/wireless charging ports (annotated); (5) Bicycle parking bay (stylised bike rack form, annotated); (6) Solar canopy as listed above.
- **Labelling:** Each component labelled with a neat leader line and text. No unlabelled elements.
- **Scale and proportion:** Human silhouette figure (170 cm) drawn for scale reference at one side.
- **Sketch quality:** Clean elevational projection, consistent line weight (heavy



outlines, lighter infill), no perspective distortion.

Marking rubric: Integration of technology and greenery (3) + elevation view completeness (3) + labelling (2) + sketch quality (2) = **10 marks**.

Q53.

Solution

Model Sketch Description — Hospital Wayfinding Signage System

What the ideal sketch should contain:

- **Sign type (a) — Main directory board:** Large rectangular board (wide landscape format). Hospital logo top-left. Departments listed in a two-column grid (Emergency, Radiology, ICU, OPD, Pharmacy, etc.) each with a corresponding icon and floor/wing code. Directional arrows beside each entry. Colour coding by department type (red for emergency, blue for diagnostics, green for pharmacy, etc.). Typeface labelled (e.g. 'Frutiger / Helvetica Neue, Bold + Regular').
- **Sign type (b) — Corridor room-number plaque:** Small portrait-format plaque (door-mounted). Room number in large numerals, department icon below, department name in smaller text. Same typeface and colour palette as the directory board.
- **Sign type (c) — Emergency evacuation sign:** Green background (ISO 7010 E-series), white running figure icon (ISO standard), 'EXIT →' text, floor assembly point code. Same icon style as (a) and (b) — consistent with the system's icon grid.
- **Consistency elements clearly noted:** Same typeface family, same icon grid size and weight, same colour palette swatches (labelled with hex or Pantone), same corner radius and margin proportions across all three signs.
- **Sketch quality:** All three signs drawn to consistent scale; proportions correct; no freehand wobble on ruled elements.

Marking rubric: Visual consistency across 3 sign types (3) + hierarchy and legibility (3) + colour and type labelling (2) + sketch quality (2) = **10 marks**.



Q54.

Solution**Model Sketch Description — Block Printing Workshop: Illustrative Scene****What the ideal sketch should contain:**

- **Central action:** A craftsperson (shown in three-quarter or side view) kneeling or seated at a low printing table, pressing a carved wooden block firmly onto a length of cotton or muslin fabric with both hands or the heel of the palm. Posture conveys weight and deliberate pressure.
- **Printed repeat pattern on fabric:** The fabric surface shows a partially printed repeat pattern — the printed section is dark/tonal, showing the characteristic geometric or floral Bagru/Sanganer block motif, fading to blank (unprinted) fabric toward the edges.
- **Stored blocks:** At least 3 wooden blocks propped up or stacked nearby, their carved faces visible — each face showing a different pattern (one geometric, one floral, one border). Block thickness and handle visible on the side.
- **Colour tray:** A flat shallow tray (thali) containing ink/colour pad, positioned beside the craftsperson within reach.
- **Background:** Printed fabric hanging or draped on a rope/pole in the background, showing the completed repeat pattern. Workshop setting suggested with hatched floor/wall texture and minimal background elements.
- **Rendering:** Line and tone only (no colour). Tonal differentiation achieved by hatching, cross-hatching, and varied line weight. Darkest tones on the printed pattern and shadow areas; mid-tones on skin and block surfaces; lightest on unprinted fabric and background.

Marking rubric: Craftsperson and action clarity (3) + workshop atmosphere (3) + tonal rendering (2) + line quality (2) = **10 marks**.

Q55.

Solution**Model Sketch Description — Children's Outdoor Play Space: Bird's-Eye Layout Plan****What the ideal sketch should contain:**

- **Overall layout:** North arrow and approximate scale bar (e.g. 1 cm = 2 m). Overall site boundary clearly drawn. Entry path from a gate with the level-



change accessibility ramp marked (ramp shown as diagonal hatched lines with slope direction arrow and annotation '1:12 ramp').

- **Zone 1 — Climbing structure:** Shown as an irregular polygon (footprint of play structure) with an X-hatch fill and labelled 'Climbing Structure (6m × 5m)'. Surrounding safety fall zone shown with dotted boundary.
- **Zone 2 — Sand pit:** Circular or rectangular soft-edged shape, filled with small dot texture (sand) and labelled 'Sand Pit (4m dia.)'. Drainage indicated by dashed arrow.
- **Zone 3 — Water splash feature:** Wavy perimeter shape, blue wash or parallel curve lines indicating water, labelled 'Splash / Sensory Water Feature (3m × 3m)'. Drain marked.
- **Zone 4 — Adult seating area:** Rectangle with small square (bench) symbols, shade tree symbol (circle with radiating lines), labelled 'Adult Seating + Shade (5m × 4m)'.
- **Zone 5 — Entry path and ramp:** Clear path from gate, minimum 1.5 m wide, accessibility ramp as noted above.
- **Graphic conventions:** Tree symbols (circle + cross), planted areas (diagonal hatching), hard paving (grid lines), grass (horizontal parallel lines), all used consistently and with a brief legend box.
- **Labelling:** Every zone named and dimensioned; materials or surface types noted in margins.

Marking rubric: Zone completeness (3) + spatial logic and accessibility (3) + graphic conventions and labelling (2) + design quality (2) = **10 marks**.



Answer Key (Part A — Visual MCQs)

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

