# AIEED Creative Ability

## Sample Paper – 5

**Duration: 180 Minutes** **Maximum Marks: 200**

### Instructions

- This paper contains **50 Multiple Choice Questions** (Single Correct Answer), modelled on the Creative Ability Test (CAT) of **AIEED** entrance.
- Each correct answer carries **+4 marks**. There is **no negative marking** for incorrect or unattempted answers.
- Only **one** option is correct. Choose carefully.
- The test is conducted in **online (CBT) mode**. Use of personal calculators, mobile phones, or electronic gadgets is strictly prohibited.
- Topics: **Design Thinking & Awareness, Visual & Spatial Ability, Colour Theory & Composition, Lateral Thinking, Design History, Typography & Branding.**

**Q1.** The Gestalt principle that states *"the mind will always perceive an ambiguous or complex figure in its simplest, most stable possible interpretation"* is known as:

(A) Law of Proximity — elements close together are perceived as a group

(B) Law of Similarity — elements that look alike are grouped together

(C) Law of Continuity — the eye prefers to follow smooth, continuous paths

(D) Law of Prägnanz (Law of Good Form / Simplicity) — the mind resolves ambiguity in favour of the simplest stable form

**Q2.** In graphic design, **Alignment** refers to:

(A) The intentional positioning of visual elements along an invisible line or grid, creating visual order and a sense of connection between

elements

(B) The repetition of a colour, shape, or texture to create a visual pattern across a composition

(C) The relative size difference between the largest and smallest elements in a layout

(D) The use of empty (white) space to separate content sections and improve readability

**Q3.** Which of the following examples BEST demonstrates the use of **leading lines** as a compositional device?

(A) A symmetrical arrangement of geometric shapes around a central focal point, creating formal balance

(B) A photograph of a road curving toward the horizon, where the road edges guide the viewer's gaze directly toward the vanishing point

(C) A poster that uses a single dominant warm colour to draw the viewer's attention to the headline

(D) A painting in which the largest object is placed at the exact centre of the canvas

**Q4.** In design, **Pattern** is best described as:

(A) The creation of a single dominant focal point that immediately captures the viewer's attention

(B) The distribution of visual weight so that no one part of a composition feels heavier than another

(C) The systematic, organised repetition of any design element — shape, line, colour, or texture — across a surface to create visual interest and rhythm

(D) The sense of completeness and interconnection among all elements in a composition

**Q5.** Four types of balance are recognised in design: symmetrical, asymmetrical, radial, and crystallographic. Which type is described by: *"the same*

*element is repeated at equal intervals across the entire composition, with no single dominant focal point"*?

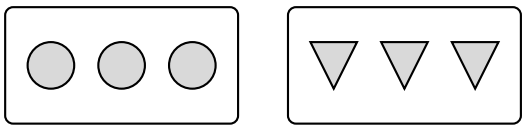
(A) Symmetrical balance — equal visual weight on both sides of a central axis

(B) Asymmetrical balance — unequal elements that achieve visual equilibrium through contrast of size or colour

(C) Radial balance — elements radiate outward from a central point, like the spokes of a wheel

(D) Crystallographic (all-over) balance — a repeated element distributed evenly across the entire field with no hierarchy

**Q6.** Study the figure below, which shows two rectangular boundary regions, each containing a set of shapes:



Group 1 Group 2

The circles form one perceived group and the triangles form another, even though the shapes differ in form. The boundary rectangles are the key factor in the grouping. Which Gestalt law BEST explains this phenomenon?

(A) Law of Common Region — elements enclosed within the same boundary are perceived as belonging to the same group, regardless of their shape or colour

(B) Law of Proximity — the circles are simply closer together than they are to the triangles

(C) Law of Similarity — the circles look alike, so they group together

(D) Law of Closure — the mind fills in missing contour information to perceive a complete shape

**Q7.** Regarding **visual rhythm** in design, which statement is MOST accurate?

(A) Repeating exactly the same element at exactly the same size, colour, and interval creates the most energetic and dynamic visual rhythm

(B) Repeating an element with deliberate variations in size, colour, or spacing creates a dynamic visual rhythm, while exact repetition without variation produces monotony

(C) Visual rhythm can only be achieved by alternating between two contrasting colours (e.g. black and white) in a regular sequence

(D) Rhythm in design is exclusively produced by curved or wavy lines; straight lines cannot contribute to visual rhythm

**Q8.** The design philosophy often summarised as *"achieving maximum visual impact or communicative effect with the minimum number of necessary elements"* is known as:

(A) Visual complexity — the deliberate use of many competing elements to create richness and depth

(B) Maximalism — the use of as many design elements as possible to fill every available space

(C) Economy of means (Minimalism) — reducing a design to only its essential elements so that every component carries full weight

(D) Ornamentation — the addition of decorative elements beyond those strictly required by function

**Q9.** The Swiss colour and design theorist **Johannes Itten**, in his influential work *The Art of Color*, argued that one particular design principle is the *"most fundamental compositional tool"* — the source from which all others derive. Which principle did Itten elevate to this primary status?

(A) Harmony — the pleasing arrangement of elements so that all parts relate to a unified whole

(B) Proportion — the size relationship between elements and between parts and the whole

(C) Unity — the sense that all elements belong together and work as a single coherent system

(D) Contrast — the juxtaposition of opposing qualities (dark/light, large/small, warm/cool, rough/smooth) as the engine of all visual interest

**Q10.** Certain visual figures — such as Rubin's Vase (which alternates between a vase and two faces) or the Duck–Rabbit (which alternates between a duck and a rabbit) — share a perceptual property in which the viewer's interpretation spontaneously switches between two equally valid readings of the same image. What is the technical term for this property?

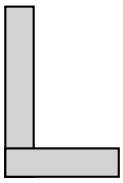
(A) Multistability (perceptual reversibility) — the tendency of an ambiguous figure to alternate between two stable perceptual interpretations

(B) The Phi phenomenon — the perception of apparent motion created by a rapid sequence of static images

(C) The Law of Prägnanz — the mind's preference for the simplest stable form of any ambiguous figure

(D) Figure–ground fusion — a failure to distinguish foreground from background due to equal luminance

**Q11.** The letter **L** is shown below in its standard upright orientation:



Letter **L** (upright)

When this letter is rotated **90° clockwise**, which description BEST matches the resulting shape?

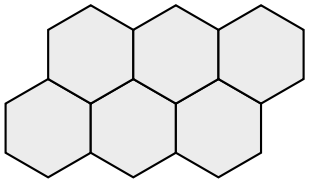
(A) A vertical bar pointing upward with a short bar extending horizontally to the LEFT from its top end

(B) A horizontal bar pointing to the RIGHT with a short bar hanging straight DOWN from the LEFT end of the horizontal bar

(C) A vertical bar pointing downward with a short bar extending horizontally to the RIGHT from its bottom end

(D) A horizontal bar pointing to the LEFT with a short bar extending straight UP from the LEFT end of the horizontal bar

**Q12.** The figure below shows a regular honeycomb arrangement of hexagonal cells in **2 rows and 3 columns**:



Hexagonal grid (2 rows $\times$ 3 columns)

How many individual hexagonal cells are present in the grid shown?

(A) 4

(B) 5

(C) 6

(D) 8

**Q13.** A regular tetrahedron has **4 equilateral triangular faces**. When its surface is unfolded flat, it produces a 2D net. Which of the following descriptions correctly identifies a valid net of a regular tetrahedron?

(A) Four equilateral triangles arranged in a straight row, each sharing one edge with the next — this strip folds into a tetrahedron

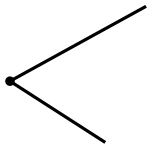
(B) Two pairs of equilateral triangles placed side by side, with the two pairs sharing one edge — this arrangement folds into a tetrahedron

(C) A large equilateral triangle subdivided into four smaller equilateral triangles by connecting the midpoints of its sides — this single piece folds into a tetrahedron

(D) A strip of three equilateral triangles in a row, with a fourth equilateral triangle attached to one of the two slanted edges of the middle triangle — this net folds correctly into a tetrahedron

**Q14.** Study the given figure below, which shows an asymmetric angular shape

(similar to a ">" symbol) whose **upper ray is longer** than the lower ray, and both rays open to the RIGHT:



Given figure

Which of the following correctly shows the **horizontal mirror image** (reflection about a vertical axis) of the given figure?

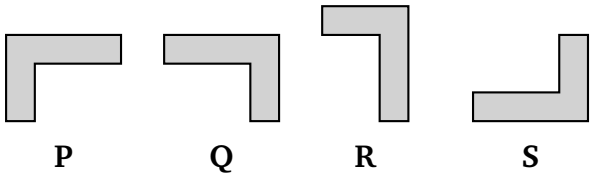
(A) A shape with the vertex on the RIGHT side, opening to the LEFT, where the **upper** ray (going to the upper-left) is **longer** than the lower ray (going to the lower-left)

(B) A shape rotated 90° clockwise from the original: the vertex is at the TOP, both rays open DOWNWARD, and the RIGHT ray is longer than the left ray

(C) A shape with the vertex on the RIGHT side, opening to the LEFT, where the **lower** ray (going to the lower-left) is **longer** than the upper ray — this is the 180° rotation, not the mirror

(D) A shape rotated 90° anti-clockwise from the original: the vertex is at the BOTTOM, both rays open UPWARD, and the LEFT ray is longer than the right ray

**Q15.** Four figures (P, Q, R, S) are shown below. Three of them are **rotations** of the same asymmetric T-shaped figure, and one is its **mirror reflection**. Which figure is the mirror reflection (the odd one out)?



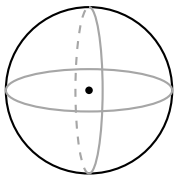

(A) Figure P

(B) Figure Q

(C) Figure R

(D) Figure S

**Q16.** The diagram below shows a sphere:



Sphere

When a sphere is viewed from the **side** (a view direction perpendicular to the vertical axis), the 2D outline most closely resembles:

(A) An oval (ellipse) — wider than it is tall

(B) A rectangle — the projection of the spherical surface onto a flat plane

(C) A perfect circle — the outline of a sphere is a circle from *any* viewing direction

(D) A semicircle — only the front hemisphere is visible, so only half a circle appears

**Q17.** The numeral **"9"** is rotated **180°** (a half-turn) about its centre. Which numeral does the rotated figure most closely resemble?

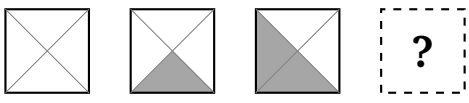
(A) 9 (the numeral is unchanged by a 180° rotation)

(B) 0 (the round part of the 9 becomes a closed loop)

(C) 8 (the tail joins the round part to form a figure-eight)

(D) 6 (the closed bowl is now at the top and the tail curves upward, producing the numeral 6)

**Q18.** Each square below is divided into four triangular quadrants by its two diagonals. The series shows a progressive filling pattern. Study the first three squares and identify what belongs in the **fourth** position (marked "?"):



(A) Three of the four triangular quadrants filled (bottom, left, and top triangles shaded; only the right triangle remains empty)

(B) All four triangular quadrants fully filled (entire square shaded uniformly)

(C) Two triangular quadrants filled (same as square 3 in the series — no change)

(D) The square is completely empty (the shading resets to zero after three steps)

**Q19.** A solid hemisphere is placed with its **flat circular face resting on a table**. When viewed from the **front** (a horizontal, eye-level viewing direction), the 2D silhouette of the hemisphere most closely resembles:

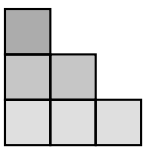
(A) A full circle — you would see the complete circular profile as if looking from directly above

(B) A semicircle (D-shape) — a curved dome arch above a flat horizontal baseline formed by the flat face

(C) A triangle — the rounded dome tapers to a point at the top when viewed from the front

(D) A rectangle — the flat base and the horizontal extent of the dome create straight top and side edges

**Q20.** The figure below shows a **3-step staircase** constructed from identical unit cubes, viewed from the front. The staircase has 3 cubes in the bottom row, 2 cubes in the middle row, and 1 cube at the top:



Staircase (3 steps)

How many **unit cubes** in total make up the staircase structure?

(A) 3 (only the top step counts as a unit)

(B) 5 (the staircase has two full rows and one partial)

(C) 6 (3 cubes in the bottom row + 2 in the middle row + 1 at the top)

(D) 9 (a full $3 \times 3$ grid of cubes)

**Q21.** In colour theory, which **dimension** (or attribute) of a colour describes its **lightness or darkness** on a scale ranging from pure white to pure black, independent of hue or saturation?

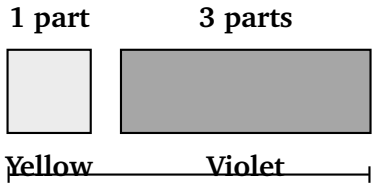
(A) Hue — the pure spectral colour identity (e.g. red, blue, yellow, green)

(B) Saturation — the intensity or vividness of a colour relative to a neutral grey

(C) Chroma — the purity of a colour relative to a grey of the same lightness (Munsell system)

(D) Value — the perceived lightness or darkness of a colour, from white (high value) to black (low value)

**Q22.** The diagram below shows two colour areas in a composition. The narrow strip represents a small area of **yellow** and the wide strip represents a large area of **violet**. These proportions are intentionally chosen so that the two colours appear visually balanced despite being different hues:




Proportional area in the composition

This proportional relationship — where the area of each colour is adjusted so that it compensates for the colour's luminosity (bright colours need less area; dark colours need more) — is described by which of Itten's **Seven Contrasts**?

(A) Contrast of Extension (Quantity) — the contrast produced by the relative *areas* of two colours, designed to achieve a proportional luminosity balance between them

(B) Simultaneous Contrast — the apparent shift in a colour's hue or value when placed next to a different colour

(C) Contrast of Hue — the contrast produced by using colours at full saturation that are clearly distinguishable by their hue alone

(D) Contrast of Saturation — the contrast produced by pairing a vivid, saturated colour with a dull, de-saturated version of the same or a similar hue

**Q23.** Colour scientists and designers distinguish between **Chroma** and **Saturation**, although the terms are sometimes used loosely as synonyms. Which statement CORRECTLY distinguishes the two?

(A) Chroma and saturation are fully synonymous terms, used interchangeably in all colour systems including Munsell, HSB, and CIELAB

(B) Chroma is the colourfulness of a stimulus relative to the brightness of a *grey of the same value* (Munsell system); saturation is the colourfulness of a stimulus relative to its *own maximum purity* (HSB/HSL systems)

(C) Saturation is measured relative to a grey of equal value; chroma is measured relative to the colour's own maximum possible purity — i.e. the definitions of the two terms are exactly swapped compared to common usage

(D) Both chroma and saturation are exclusively properties of the additive (RGB) colour model used in screen design, and neither applies to the subtractive (CMYK) model used in print

**Q24.** In the late 19th century, a group of painters developed a technique in which tiny, separate dots or strokes of **pure, unmixed pigment** were placed side by side on the canvas. At a normal viewing distance, the eye optically blends these dots, creating the perception of mixed colours without physically mixing the paints. Which art movement pioneered this technique?

(A) Expressionism — painters such as Kandinsky and Kirchner used pure colour for emotional intensity, not optical mixing

(B) Abstract Impressionism — a 20th-century movement focused on gestural abstraction, not controlled dot placement

(C) Pointillism (Neo-Impressionism / Divisionism) — developed by Georges Seurat and Paul Signac in the 1880s, based on the scientific principle of optical colour mixing

(D) Fauvism — Matisse and Derain used bold, non-naturalistic colour contrasts but did not use the systematic dot technique

**Q25.** In **interior design** and spatial colour psychology, which colour temperature makes a room appear **SMALLER and COSIER**?

(A) Cool colours (blues, blue-greens, and violets) — they visually recede, making walls appear further away and the room feel larger and more airy

(B) Neutral colours (beiges, taupes, and warm greys) — they create a timeless, spacious, and unobtrusive feeling in any room size

(C) Achromatic colours (pure black and white) — their high contrast creates visual depth that enhances the apparent size of the space

(D) Warm colours (reds, oranges, and yellows) — they visually advance, making walls appear closer, resulting in a room that feels cosier and smaller

**Q26.** The **Pantone Matching System (PMS)** is a widely used tool in print and product design. What does it primarily provide?

(A) A standardised, device-independent colour identification system that assigns unique numeric codes to specific ink colours, ensuring consistent reproduction across different printers, substrates, and manufacturers

(B) A colour mixing guide for interior wall paints, used exclusively by interior designers and architects for specifying room colours

(C) A set of ICC colour profiles embedded in computer monitors and screens to ensure accurate on-screen colour reproduction across different display devices

(D) A proprietary software tool used to automatically convert CMYK print values into RGB web-safe colour codes for digital publishing

**Q27.** A colour scheme that uses **four colours** that are equally spaced at **90-degree intervals** around the colour wheel — forming a square pattern on the wheel — is called:

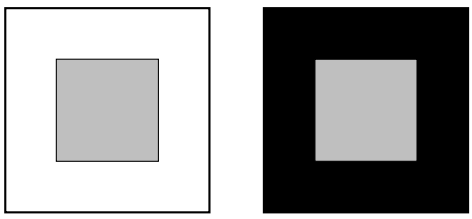
(A) A Triadic colour scheme — uses three colours equally spaced at 120° intervals, forming an equilateral triangle on the wheel

(B) A Square (Tetradic) colour scheme — uses four colours at 90° intervals, offering rich variety with strong contrast between all pairs

(C) An Analogous colour scheme — uses colours that are adjacent to one another on the colour wheel, creating a harmonious, low-contrast palette

(D) A Complementary colour scheme — uses only two colours directly opposite each other on the colour wheel

**Q28.** Study the two panels below. In each panel, an **identical mid-grey square** is placed on a different background:



**Grey on White** **Grey on Black**

Both inner grey squares are physically *identical* in colour. Yet the grey on the black background appears **lighter**, and the grey on the white background appears **darker**. What visual phenomenon is responsible for this effect?

(A) Metamerism — two colours that appear identical under one light source but different under another light source

(B) The Bezold Effect — a colour appears to shift in hue when its surrounding field colour changes

(C) Simultaneous (Brightness) Contrast — a colour's apparent lightness or darkness is influenced by the value of the surrounding colour, causing the same grey to appear lighter or darker depending on its background

(D) Colour Constancy — the perceptual mechanism by which a colour appears stable across different illumination conditions

**Q29.** Analogy: **Sculptor : Clay :: Glassblower : ___**
(A sculptor's essential raw material is clay. What is the essential raw material for a glassblower?)

(A) Kiln — the kiln is the equipment used to fire ceramics; it is not the raw material of a glassblower

(B) Metal — metalworking uses a different set of materials and tools entirely

(C) Sand (silica) — while silica sand is the base ingredient from which glass is made in a furnace, a glassblower works with the already-molten material

(D) Glass (molten glass) — a glassblower's primary working material is molten glass, just as a sculptor's primary material is clay

**Q30.** **Odd one out:** Watercolour Oil paint Charcoal Bronze casting
Three of these are flat, two-dimensional art-making media; one fundamentally produces three-dimensional objects. Which is the ODD ONE OUT?

(A) Bronze casting — it produces solid three-dimensional sculptures through a mould-and-pour process, not a flat 2D artwork on a surface

(B) Oil paint — applied to a flat canvas or board; it is a 2D medium

(C) Charcoal — applied to flat paper or canvas; it is a 2D drawing medium

(D) Watercolour — applied to flat watercolour paper; it is a 2D painting medium

**Q31.** **Riddle:** "I have **hands** but I cannot clap. I have a **face** but no eyes and no mouth. I tell you something important every single moment of the day. What am I?"

(A) A glove — a glove has finger-shaped "hands" but no face and does not tell you anything

(B) A clock — a clock has hands (the hour and minute hands), a face (the dial), and tells the time continuously

(C) A compass — a compass has a needle but not "hands" in the conventional sense, and no face with features

(D) A mirror — a mirror reflects a face but has no hands and does not tell you anything

**Q32.** Which ideation and structured thinking method, developed by **Edward de Bono**, uses **six coloured hats** to represent six distinct modes of thinking — such as factual analysis, emotional response, critical caution, optimistic exploration, creative generation, and process management?

(A) SCAMPER — a creative checklist technique that applies seven transformational verbs (Substitute, Combine, Adapt, Modify, Put to other uses, Eliminate, Reverse) to improve an existing product or idea

(B) Morphological Analysis — a method of systematically mapping all possible solutions in a matrix by combining different parameters

(C) Six Thinking Hats — each hat colour represents one thinking mode: White (data), Red (emotion), Black (caution), Yellow (optimism), Green (creativity), Blue (process management)

(D) Design Sprint — a five-day structured problem-solving workshop developed at Google Ventures for rapid prototyping and user testing

**Q33.** Analogy: **Architect : Blueprint :: Composer : ___**
(An architect expresses the design of a building in a blueprint — the precise technical document of the design. What is the equivalent precise notational document for a composer's musical work?)

(A) Palette — a palette holds colours for a painter, not notes for a composer

(B) Canvas — a canvas is the working surface for a painter, not a notational document

(C) Lyrics — lyrics are the words of a song; they are not the full notational score of a musical composition

(D) Musical score (sheet music) — the score is the precise written notation of the composer's work, equivalent to the blueprint for an architect

**Q34.** Using the standard letter-value code where **A=1, B=2, C=3, . . . Z=26**, calculate the total sum of the letter values in the word **"FORM"**:

F = __, O = __, R = __, M = __

(A) 52 (F=6, O=15, R=18, M=13; total = 52)

(B) 48

(C) 55

(D) 46

**Q35.** **Design Brief:** "Redesign a standard toothbrush for daily use by adults who are **visually impaired**. The redesign must allow the user to orient and use the toothbrush correctly **by touch alone**, without requiring any visual guidance."

Which redesign concept BEST addresses this specific accessibility requirement?

(A) A toothbrush in a brightly contrasting colour (e.g. yellow handle, red bristle head) to make it visually distinctive on the bathroom shelf

(B) A toothbrush with a raised tactile bump or ridge on the bristle end to indicate orientation, a contoured non-slip grip with thumb notch, and a snap-on protective cap that produces an audible and tactile "click" when correctly seated — enabling correct use entirely by touch

(C) A toothbrush with a built-in digital timer display that shows the remaining recommended brushing time in large numerals

(D) A toothbrush with an extra-wide bristle head containing twice the standard number of bristles, to reduce the brushing time required

**Q36.** Which design and fine art movement, flourishing in the 1960s, is MOST associated with silkscreen printing, the use of **Ben-Day dots**, imagery derived from commercial advertising and popular media (including Campbell's soup cans and comic strips), and artists such as **Andy Warhol** and **Roy Lichtenstein**?

(A) De Stijl — a Dutch movement (1917) that reduced visual form to horizontal/vertical lines and primary colours, as in Mondrian's grid paintings

(B) Constructivism — a Russian avant-garde movement that used geometric abstraction and typography in service of political ideology

(C) Pop Art — a movement that elevated consumer goods, mass media imagery, and popular culture icons into fine art and graphic design

(D) Op Art (Optical Art) — a movement using geometric patterns and colour relationships to create perceptual illusions of movement or depth

**Q37.** Which designer served as Apple's Chief Design Officer and is most celebrated for leading the industrial design of the **iMac G3** (1998), the **iPod** (2001), and the **iPhone** (2007) — products that redefined the relationship between technology and aesthetic form?

(A) Dieter Rams — influential design director at Braun, whose "Ten Principles of Good Design" inspired Apple's design language but who did not work at Apple

(B) Hartmut Esslinger — founder of frogdesign, who worked with Apple in the early 1980s on the Snow White design language but was not the designer of the iMac, iPod, or iPhone

(C) Marc Newson — an influential industrial designer who later joined Apple but was not the lead designer of the key products listed

(D) Jonathan Ive (Jony Ive) — Apple's Chief Design Officer from 1996 to 2019, directly responsible for the iMac G3, iPod, iPhone, MacBook, and Apple Watch designs

**Q38.** Which Swiss typographer published ***Die Neue Typographie*** (The New Typography) in 1928, codifying the rules of Modernist typography — including the use of asymmetric layouts, sans-serif typefaces, and functional typographic hierarchy — and thus establishing the theoretical foundation of 20th-century graphic design?

(A) Jan Tschichold — the author of *Die Neue Typographie* (1928), which systematised asymmetric, functional Modernist type design

(B) Paul Rand — American graphic designer celebrated for corporate identity work (IBM, ABC, UPS logos) but not the author of *Die Neue Typographie*

(C) Saul Bass — American designer renowned for film title sequences (Vertigo, Psycho) and corporate logos (AT&T, United Airlines) but not this typographic treatise

(D) Alexey Brodovitch — art director of *Harper's Bazaar* (1934–1958), celebrated for pioneering editorial design but not the author of *Die Neue Typographie*

**Q39.** Which American graphic designer, a partner at **Pentagram**, is celebrated for creating the **Public Theater's** iconic typographic identity — using layered, hand-lettered woodblock-type-inspired posters — as well as identity work for the Citibank brand and Microsoft Windows branding?

(A) Neville Brody — British designer and art director of *The Face* magazine, known for experimental typographic layouts in the 1980s

(B) Paula Scher — renowned for bold, typographically expressive design; her Public Theater identity (1994) is a landmark of American graphic design

(C) David Carson — American designer famed for radical, deconstructed typography in *Ray Gun* magazine

(D) Stefan Sagmeister — Austrian-American designer known for provocative, concept-driven work including lettering carved into his own skin for an AIGA poster

**Q40.** Which design tradition is BEST described by all of the following characteristics: *"functional beauty using natural materials such as wood and leather; clean, unornamented form; democratic accessibility — the belief that well-designed objects should be affordable to everyone, not just the elite; and association with designers such as Alvar Aalto, Arne Jacobsen, and Bruno Mathsson"*?

(A) Memphis Design (1980s) — an Italian postmodern movement that embraced bold, eclectic colour, pattern, and pop-culture references in deliberate opposition to Modernist restraint

(B) Italian Radical Design — a conceptual anti-design movement of the 1960s–70s that challenged the commercial design establishment

(C) Scandinavian (Nordic) Design — characterised by functionalism, natural materials, minimal ornamentation, humanist warmth, and a social democratic commitment to good design for all

(D) German Functionalism — the Werkbund and Bauhaus tradition of rational, machine-appropriate, industrial form, typically using steel, glass, and manufactured materials rather than natural ones

**Q41.** Which architect championed the philosophy of **organic architecture** — the idea that a building should grow naturally from its site, harmonise with its environment rather than being imposed upon it, and integrate human habitation seamlessly with the surrounding landscape? His masterwork **Fallingwater** (1935) in Pennsylvania is the defining example of this philosophy.

(A) Le Corbusier — the Swiss-French architect who defined the "machine for living" ideal and the five points of architecture, but whose

buildings imposed bold geometric form on their sites

(B) Tadao Ando — a Japanese architect who uses raw concrete to create meditative spaces in dialogue with light and nature, but who is not the originator of "organic architecture" as a named philosophy

(C) Buckminster Fuller — the American designer–inventor known for geodesic domes and systems thinking, not "organic architecture" as defined above

(D) Frank Lloyd Wright — the American architect who coined and practised organic architecture throughout his career; Fallingwater, cantilevered over a waterfall in Pennsylvania, is its most celebrated embodiment

**Q42.** Which architect and theorist challenged Mies van der Rohe's famous Modernist dictum "*Less is more*" with the counter-slogan **"Less is a bore"** in his influential 1966 book *Complexity and Contradiction in Architecture*, thereby helping to launch the postmodern architecture movement?

(A) Robert Venturi — the American architect whose 1966 book directly responded to Mies's Modernist minimalism with the declaration "Less is a bore," advocating for complexity, richness, and historical reference in architecture

(B) Philip Johnson — an influential American architect who championed Mies van der Rohe's International Style before later embracing postmodernism, but who did not write *Complexity and Contradiction*

(C) Charles Jencks — the critic who popularised the term "postmodern architecture" in his 1977 book *The Language of Post-Modern Architecture*, but who did not author *Complexity and Contradiction*

(D) Rem Koolhaas — the Dutch architect and theorist known for *Delirious New York* (1978), a different theoretical text about urban density and architecture

**Q43.** Which Italian-American designer created the **1972 New York City Subway map** — notable for its strict geometric grid, diagrammatic (non-

geographically accurate) route lines, a limited palette of colours, and Helvetica typography — praised for graphic clarity but criticised for geographical distortion?

(A) Paul Mijksenaar — a Dutch information designer known for signage systems at airports, not the 1972 NYC Subway map

(B) Massimo Vignelli — the Italian-American designer at Unimark International who created the 1972 NYC Subway map, applying strict Modernist grid principles to the entire MTA signage system

(C) Harry Beck — the British engineer who designed the iconic diagrammatic London Underground map in 1931 — the direct inspiration for Vignelli's approach, but a different map

(D) Lance Wyman — the American graphic designer who created the 1968 Mexico City Olympic identity and signage system, not the NYC Subway map

**Q44.** Which design philosophy, first articulated by architect **Ron Mace** in 1985 at North Carolina State University, aims to create products, environments, and communications that are **usable by the widest possible range of people** — regardless of age, ability, or size — without the need for special adaptation or assistive technology?

(A) Sustainable Design — design that reduces environmental impact, minimises resource consumption, and extends product lifespan, but which does not specifically address the range of human physical abilities

(B) Emotional Design — Don Norman's framework distinguishing three levels of design (visceral, behavioural, reflective) focused on the emotional response that objects evoke in users

(C) Universal Design — a design framework with seven core principles (equitable use, flexibility, simple and intuitive use, perceptible information, tolerance for error, low physical effort, size and space for approach and use) intended to serve the full spectrum of human diversity

(D) Ergonomic Design — the optimisation of a product or workspace for the comfort, efficiency, and safety of a specific user profile (often based on average anthropometric data), which may exclude atypical users

**Q45.** In the anatomy of type, the term **"descender"** refers to:

(A) The vertical distance from the baseline to the top of a lowercase letter such as 'x' or 'o' — commonly called the **x-height**

(B) The vertical distance from the baseline to the top of an uppercase letter such as 'H' or 'E' — commonly called the **cap height**

(C) The small finishing strokes at the ends of letter strokes in serif typefaces, which improve letter recognition and reading continuity

(D) The portion of certain lowercase letters that extends **below the baseline** — as seen in the letters g, p, q, y, and j

**Q46.** In typography and editorial style, the **en dash** (–) is *half the width of an em dash* and is used in specific contexts. Which of the following is the CORRECT conventional use of the en dash?

(A) To indicate a **range** between two values, such as pages 12–15, the years 1990–2000, or a score of 3–1

(B) To insert a **strong parenthetical statement** or abrupt interruption within a sentence — this is the function of the em dash (—), not the en dash

(C) To **separate items** in a bulleted or numbered list — this is conventionally done with bullet points or hyphens, not en dashes

(D) To denote a **missing or redacted word** within a quoted passage — this use typically employs ellipses (. . . ) or bracketed notation [—], not a standard en dash

**Q47.** Regarding the relationship between **x-height** and **cap height** in typeface design and legibility, which statement is TRUE?

(A) A larger cap height relative to x-height generally improves the legibility of a typeface at small print sizes, because tall uppercase letters are easier to distinguish

(B) A larger x-height relative to cap height generally improves legibility at small sizes, because more of the letter's form is filled by the main body of the character, leaving proportionally larger and clearer letterforms

(C) X-height is the vertical distance measured from the cap line to the ascender line, describing how far ascenders project above the capitals

(D) A well-proportioned typeface always has an x-height equal to its cap height, ensuring uniform visual weight across all letters

**Q48.** In typography, **legibility** and **readability** are distinct properties. Which statement CORRECTLY distinguishes them?

(A) Legibility is the ease with which a reader comprehends the meaning of an extended text passage; readability is the ease with which individual characters can be identified and distinguished from one another

(B) Legibility and readability are synonymous terms describing the same property: the overall ease of processing typeset text

(C) Legibility refers to how easily **individual characters** can be distinguished from one another — a property of the typeface design itself; readability refers to how easily **extended passages of text** can be read and understood — a property of the overall typography and layout

(D) Legibility is solely determined by the font size chosen; readability is solely determined by the line length (measure) of the text column

**Q49.** Which typeface was originally designed specifically for use in a major urban transport **wayfinding system**, and remains in active use in that system today — having been created in **1916** to provide clear, consistent

lettering across the signage of an entire metropolitan railway network?

(A) Helvetica — designed by Max Miedinger and Eduard Hoffmann for the Haas type foundry in Switzerland in 1957; later adopted widely for signage but was not originally created for a transport network

(B) Gill Sans — designed by Eric Gill for the Monotype Corporation in 1928; later used by British Railways but originally a commercial typeface, not a bespoke wayfinding commission

(C) Frutiger — designed by Adrian Frutiger in 1968 for signage at the new Roissy–Charles de Gaulle Airport in Paris; an airport wayfinding typeface, not a railway system

(D) Johnston Sans (Johnston) — designed by calligrapher Edward Johnston in 1916 at the commission of Frank Pick, Managing Director of the London Underground; it has been used by the Tube ever since and inspired Gill Sans

**Q50.** Introduced in the **OpenType 1.8** specification (2016), **variable fonts** represent a significant advance in typeface technology. What are variable fonts?

(A) A single font file that contains an entire typeface family as a continuous range of styles along one or more **design axes** (such as weight, width, slant, and optical size), allowing a designer or browser to access any intermediate value without requiring separate bold, italic, light, or condensed font files

(B) A font format designed to remain legible at variable viewing distances and angles — typically used for outdoor signage, vehicle livery, and environmental graphics

(C) A special encoding format in which a font automatically adjusts the spacing between characters based on the surrounding text context, replacing the need for manual kerning

(D) A font technology that changes the colour or visual style of letterforms dynamically based on the background colour detected in the design application or web browser

## Detailed Solutions

**Q1.**

**Solution**

**Concept — Gestalt Law of Prägnanz:** Also called the Law of Good Form or Simplicity, Prägnanz is the master principle of Gestalt psychology. It holds that the perceptual system always resolves an ambiguous stimulus into the simplest, most stable, and most regular interpretation available. All other Gestalt laws are considered specific expressions of this overarching drive toward simplicity.

**Step 1 — Matching the definition:** The question describes "the mind perceiving any ambiguous figure in its simplest, most stable interpretation." This is the textbook definition of the Law of Prägnanz (Option D). Proximity, Similarity, and Continuity all describe specific grouping mechanisms, not the master simplicity principle.

**Why other options are wrong:**

- Option A: Proximity explains why spatially close elements are grouped — it is one specific law, not the master principle of simplicity.
- Option B: Similarity explains grouping by shared appearance — again a specific sub-law, not the umbrella principle.
- Option C: Continuity explains the eye's preference for smooth, uninterrupted paths — not the simplest-form principle.

**Final Answer:** The principle that resolves ambiguity into the simplest form is the Law of Prägnanz $\Rightarrow$ $\boxed{\text{D}}$

**Answer: (D)** Go Back to Q1

**Q2.**

**Solution**

**Concept — Alignment in Graphic Design:** Alignment is one of the fundamental principles of layout design. It means placing visual elements so that their edges, centres, or baselines share an invisible line or grid, creating visual order, cohesion, and a sense of intentional structure. Robin Williams' *The Non-Designer's Design Book* identifies alignment as one of the four core design principles (CARP).

**Step 1 — Matching the definition:** Option A correctly defines alignment as "intentional positioning along an invisible line or grid, creating visual order and connection." The other options describe Repetition (B), Scale/Proportion (C), and

White Space/Proximity (D).

**Why other options are wrong:**

- Option B: Describes Repetition — the recurrence of a colour, shape, or texture to create visual unity.
- Option C: Describes Scale or Contrast of Size — the relative difference in element size, not positioning.
- Option D: Describes the use of negative (white) space to separate content — this is a different principle.

**Final Answer:** Alignment = intentional positioning along an invisible line or grid $\Rightarrow$ A

**Answer: (A)** Go Back to Q2

## Q3.

### Solution

**Concept — Leading Lines in Composition:** Leading lines are actual or implied lines within an image or composition that direct the viewer's gaze toward a focal point. They exploit the eye's natural tendency to follow continuous paths. Classic examples include roads, rivers, fences, railway tracks, and corridors that converge toward a vanishing point.

**Step 1 — Identifying the correct example:** Option B — a road curving toward the horizon where the road edges guide the viewer's gaze to the vanishing point — is the textbook example of leading lines. Options A, C, and D describe symmetrical balance, colour dominance, and centred composition respectively — none of which is the leading-lines device.

**Why other options are wrong:**

- Option A: Describes formal/symmetrical balance around a central focal point, not a directional line.
- Option C: Describes use of warm dominant colour to attract attention — colour-based emphasis, not a compositional line device.
- Option D: Describes centred composition (rule of centring), which is a placement strategy, not a guiding-line device.

**Final Answer:** A road converging to the horizon is the defining example of leading lines $\Rightarrow$ B

**Answer: (B)** Go Back to Q3

## Q4.

**Solution**

**Concept — Pattern as a Design Principle:** Pattern in design is the organised, systematic repetition of any visual element — shape, line, colour, or texture — across a surface. Unlike simple repetition, pattern implies an underlying structure or rule that governs the arrangement, creating rhythm, visual texture, and surface interest. Examples include tile patterns, textile weaves, and wallpaper motifs.

**Step 1 — Selecting the best definition:** Option C — "systematic, organised repetition of any design element across a surface to create visual interest and rhythm" — is the correct definition of Pattern. Option A defines Emphasis/Focal point, Option B defines Balance, and Option D defines Unity.

**Why other options are wrong:**

- Option A: Describes Emphasis — the creation of a single dominant focal point to capture attention.
- Option B: Describes Balance — the distribution of visual weight so no area feels heavier than another.
- Option D: Describes Unity — the sense of completeness and coherence among all compositional elements.

**Final Answer:** Pattern = systematic, organised repetition of elements across a surface $\Rightarrow$ C

**Answer: (C)** Go Back to Q4

## Q5.

**Solution**

**Concept — Crystallographic (All-over) Balance:** The four types of balance in design are symmetrical (bilateral), asymmetrical, radial, and crystallographic. Crystallographic (or all-over) balance lacks any single dominant focal point; instead, the same element repeats at equal intervals across the entire composition, distributing visual weight evenly. Textile patterns, wallpapers, and herringbone weaves are typical examples.

**Step 1 — Matching description to type:** "The same element repeated at equal intervals with no single dominant focal point" matches crystallographic/all-over balance (D). Symmetrical balance requires a central axis; asymmetrical balance achieves equilibrium through size or colour contrast; radial balance radiates from a centre.

**Why other options are wrong:**

- Option A: Symmetrical balance has a clear central axis and mirror-image halves — it does have a focal centre.
- Option B: Asymmetrical balance uses unequal elements and relies on contrast of size or colour to reach equilibrium.
- Option C: Radial balance radiates from a central point outward, like the spokes of a wheel — it has a focal centre.

**Final Answer:** Equal repetition across the entire field with no hierarchy = Crystallographic balance $\Rightarrow$ D

**Answer: (D)** Go Back to Q5

## Q6.

### Solution

**Concept — Gestalt Law of Common Region:** The Law of Common Region states that elements enclosed within the same bounded area or region are perceived as belonging together, regardless of their shape, colour, or proximity to each other. This is why card UI elements, bordered panels, and grouped rectangles effectively signal membership even when the contained items differ in form.

**Step 1 — Applying to the figure:** In the figure, circles and triangles are enclosed in separate rectangular borders. The grouping occurs because of the shared enclosure (common region), not because the circles look alike or are merely close together. The boundary rectangles are the operative factor, making Common Region (A) the correct law.

**Why other options are wrong:**

- Option B: Proximity would explain grouping by spatial closeness — but the circles are also close to the boundary of Group 1, not just to each other, and the key cue is the rectangle, not distance.
- Option C: Similarity explains grouping by shared appearance — but circles and triangles within the same group differ in form, so similarity cannot be the governing principle.
- Option D: Closure involves the mind filling in missing contour information — no incomplete contours exist here.

**Final Answer:** Shared boundary enclosure drives grouping = Law of Common Region $\Rightarrow$ A

**Answer: (A)** Go Back to Q6

## Q7.

### Solution

**Concept — Visual Rhythm:** Visual rhythm in design is analogous to musical rhythm: it is created by the controlled repetition of elements. The key distinction is between *regular* rhythm (exact repetition, which can become monotonous) and *progressive* or *dynamic* rhythm (repetition with deliberate variation in size, colour, or spacing), which creates energy and movement.

**Step 1 — Evaluating each statement:** Option B correctly states that variation in repeated elements creates dynamic rhythm, while exact repetition without variation produces monotony. Options A, C, and D make false restrictive claims about rhythm.

**Why other options are wrong:**

- Option A: Exact repetition at the same size, colour, and interval produces predictable, monotonous rhythm — it is NOT the most energetic or dynamic form.
- Option C: Rhythm does not require alternating black and white; it can be created through any type of element variation.
- Option D: Rhythm is not exclusive to curved lines; straight lines arranged with interval variation also produce strong visual rhythm.

**Final Answer:** Variation in repeated elements creates dynamic rhythm; exact repetition creates monotony $\Rightarrow$ B

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

## Q8.

### Solution

**Concept — Economy of Means / Minimalism:** Economy of means is the design philosophy of achieving the maximum communicative or aesthetic effect with the fewest necessary elements. Every element earns its place; nothing is superfluous. It is closely associated with the Modernist dictum "Less is more" (Mies van der Rohe), the Bauhaus tradition, and 20th-century minimalist design.

**Step 1 — Matching the philosophy:** The phrase "maximum visual impact with the minimum number of necessary elements" is the definition of Economy of

Means / Minimalism (C). Options A, B, and D define opposing philosophies: complexity, maximalism, and ornamentation.

**Why other options are wrong:**

- Option A: Visual complexity is the opposite approach — using many competing elements to create richness.
- Option B: Maximalism deliberately fills every available space with elements — the antithesis of economy of means.
- Option D: Ornamentation adds decorative elements beyond those required by function — again the opposite of minimalism.

**Final Answer:** Maximum effect with minimum elements = Economy of Means / Minimalism $\Rightarrow$ C

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

## Q9.

### Solution

**Concept — Johannes Itten and Contrast:** Swiss colour theorist Johannes Itten, in *The Art of Color* (1961), argued that Contrast is the most fundamental compositional tool — the source from which all visual interest derives. He identified seven specific contrasts (hue, value, temperature, complementary, simultaneous, saturation, and extension), but elevated the general principle of contrast as primary.

**Step 1 — Identifying Itten's primary principle:** Itten explicitly stated that contrast — the juxtaposition of opposing qualities — is the engine of all visual expression. Harmony, Proportion, and Unity are important principles but are derivative or secondary in Itten's framework. Option D correctly names Contrast.

**Why other options are wrong:**

- Option A: Harmony is a result that can be achieved through certain contrast relationships, but Itten treated contrast as the more fundamental generative force.
- Option B: Proportion is a spatial/size relationship principle and is not what Itten elevated to primary status in *The Art of Color*.
- Option C: Unity is a compositional outcome or goal, not the primary generative tool that Itten identified.

**Final Answer:** Itten's primary compositional tool = Contrast $\Rightarrow$ D

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

## Q10.

**Solution**

**Concept — Multistability / Perceptual Reversibility:** Multistable figures are ambiguous visual stimuli that support two or more equally valid perceptual interpretations. The observer's perception spontaneously alternates between these stable states. Classic examples include Rubin's Vase (vase vs. two faces) and the Necker Cube (two possible orientations of a wire cube).

**Step 1 — Matching the perceptual property:** The spontaneous alternation between two valid readings of the same image is called Multistability or perceptual reversibility (A). The Phi phenomenon describes apparent motion from static images; Prägnanz is the simplicity preference; Figure–ground fusion is a failure to distinguish layers.

**Why other options are wrong:**

- Option B: The Phi phenomenon (Max Wertheimer) describes the illusion of motion created by rapidly sequenced static frames — unrelated to bistable/multistable figure perception.
- Option C: The Law of Prägnanz is about resolving ambiguity into the simplest form, but multistable figures resist resolution and continue to flip — they are the exception Prägnanz struggles to explain.
- Option D: Figure–ground fusion is not a standard term for this phenomenon; it conflates a different perceptual failure with multistability.

**Final Answer:** Spontaneous alternation between two valid readings = Multistability $\Rightarrow$ $\boxed{\text{A}}$

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

## Q11.

**Solution**

**Concept — Mental Rotation (Letter L, 90° CW):** When a shape is rotated 90° clockwise, the top of the original figure points to the right, and the right side points downward. For the letter L (a vertical bar with a short horizontal foot at the lower-left), a 90° CW rotation moves the vertical bar to become a horizontal bar pointing right, and the foot (which was at the bottom) swings to hang downward from the left end.

**Step 1 — Tracing the rotation:** Original L: vertical bar (top to bottom), short foot extending RIGHT from the BOTTOM. After 90° CW: the vertical bar becomes

horizontal (pointing right); the bottom of that bar (which now carries the foot) is on the left. The foot, originally pointing right, now points DOWN. Result: a horizontal bar pointing right with a short bar hanging DOWN from its LEFT end — Option B.

**Why other options are wrong:**

- Option A: Describes a vertical bar with a foot at the TOP-LEFT — this matches the letter $\Gamma$ (rotated 90° counter-clockwise from L), not 90° CW.
- Option C: Describes a vertical bar pointing downward with a foot extending RIGHT from the BOTTOM — this is 180° rotation of L, not 90° CW.
- Option D: Describes a horizontal bar pointing LEFT with a foot extending UP from its LEFT end — this matches 90° counter-clockwise rotation.

**Final Answer:** L rotated 90° CW = horizontal bar to right with foot hanging down from left end $\Rightarrow$ $\boxed{\text{B}}$

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

## Q12.

### Solution

**Concept — Counting Cells in a Hexagonal Grid:** A hexagonal grid described as "2 rows $\times$ 3 columns" contains $2 \times 3 = 6$ individual cells. In a honeycomb arrangement, offset rows may shift horizontally, but each cell in each row is still individually countable and each is a complete hexagon.

**Step 1 — Direct count:** Row 1 (bottom): 3 hexagons at positions (0,0), (1.126,0), (2.252,0).
Row 2 (top, offset): 3 hexagons at positions (0.563,0.975), (1.689,0.975), (2.815,0.975).
Total: $3 + 3 = 6$ individual hexagonal cells.

**Why other options are wrong:**

- Option A: 4 cells would be a $2 \times 2$ grid — the question specifies 3 columns, not 2.
- Option B: 5 cells is not obtainable from any regular arrangement of 2 rows and 3 columns.
- Option D: 8 cells would require more than 2 rows or more than 3 columns; none of the stated dimensions support 8.

**Final Answer:** 2 rows $\times$ 3 columns = 6 individual hexagonal cells $\Rightarrow$ $\boxed{\text{C}}$

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

## Q13.

### Solution

**Concept — Net of a Regular Tetrahedron:** A regular tetrahedron has 4 equilateral triangular faces. A valid net must contain exactly 4 equilateral triangles arranged so that, when folded, each edge is shared by exactly two faces and no faces overlap. The classic valid net is a strip of 3 equilateral triangles with a 4th triangle attached to one of the slanted edges of the middle triangle.

**Step 1 — Evaluating each net description:** Option D describes: a strip of 3 triangles in a row, with a 4th attached to the middle triangle's slant edge. This is the standard textbook net of a tetrahedron. When folded: the middle triangle becomes a base face, its two neighbours fold up to form two side faces, and the 4th triangle folds to form the remaining side face.

**Why other options are wrong:**

- Option A: Four triangles in a straight row cannot fold into a tetrahedron — two edge-to-edge triangles would overlap when closing the 4th face.
- Option B: Two pairs placed side by side sharing one edge gives only one folding axis — it cannot close into a tetrahedron with four distinct faces meeting correctly.
- Option C: Subdividing a large equilateral triangle by midpoints produces the *Sierpiński triangle* subdivision; those four smaller triangles remain coplanar and do not fold into a 3D tetrahedron.

**Final Answer:** Strip of 3 triangles with 4th on the middle triangle's slant edge = valid tetrahedron net $\Rightarrow$ $\boxed{\text{D}}$

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

## Q14.

### Solution

**Concept — Horizontal Mirror Reflection:** A horizontal mirror (reflection about a vertical axis) swaps left and right while preserving top and bottom. If the original figure has its vertex on the LEFT with rays opening to the RIGHT (upper ray longer), the mirror image will have its vertex on the RIGHT with rays opening to the LEFT, and the same ray (upper) remains longer.

**Step 1 — Applying the reflection:** Original: vertex at left, opens RIGHT, upper ray longer. After reflecting about a vertical axis: vertex moves to RIGHT, opens LEFT. The upper ray (which was upper-right) is now upper-LEFT and still longer. This matches Option A exactly.

**Why other options are wrong:**

- Option B: Describes a 90° CW rotation (vertex at top, rays open downward) — rotation is not the same as mirror reflection.
- Option C: Describes a figure where the LOWER ray is longer — this corresponds to a 180° rotation (both left-right and up-down reversed), not a horizontal mirror.
- Option D: Describes a 90° CCW rotation (vertex at bottom, rays open upward) — again a rotation, not a mirror image.

**Final Answer:** Horizontal mirror = vertex on right, opens left, upper ray still longer $\Rightarrow$ $\boxed{\text{A}}$

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

## Q15.

### Solution

**Concept — Mirror Reflection vs. Rotation:** For an asymmetric shape (one with no axis of symmetry), any rotation (0°, 90°, 180°, 270°) produces a version that is congruent to the original. However, a mirror reflection produces a shape that cannot be superimposed on the original by any rotation — it is a distinct "handedness."

**Step 1 — Identifying the odd one out:** The question states that three figures (P, R, S) are rotations of the same asymmetric T-shape, and one (Q) is its mirror reflection. The TikZ code confirms this: Q is drawn as the mirror of P (stem on the RIGHT side of the horizontal bar, whereas P has stem on the LEFT). Figures R and S are 90° CW and 180° rotations of P respectively.

**Why other options are wrong:**

- Option A: Figure P is the original orientation — it is a rotation (0°) of itself, not the mirror.
- Option C: Figure R has the stem on the bottom of a vertical bar (90° CW rotation of P) — it is a rotation, not a mirror.
- Option D: Figure S is the 180° rotation of P — it is a rotation, not a mirror.

**Final Answer:** Figure Q is the mirror reflection (stem on the RIGHT, which cannot be achieved by rotation of P) $\Rightarrow$ B

**Answer: (B)** Go Back to Q15

## Q16.

### Solution

**Concept — Orthographic Projection of a Sphere:** A sphere is the set of all points equidistant from a centre. From any viewing direction, the projected silhouette of a sphere is always a perfect circle with radius equal to the sphere's radius. This is because the sphere possesses perfect rotational symmetry about any axis through its centre.

**Step 1 — Applying geometric reasoning:** Regardless of the viewing angle (front, side, top, diagonal), the outer boundary of a sphere's projection is a great circle of the sphere. There is no preferred axis that would produce an ellipse, rectangle, or semicircle. The side view therefore gives a perfect circle (C).

**Why other options are wrong:**

- Option A: An ellipse would result from viewing a prolate or oblate spheroid at an angle — a sphere always projects to a circle, never an ellipse.
- Option B: A rectangle is never the silhouette of a smooth convex sphere; rectangles arise from box-shaped objects.
- Option D: A semicircle would arise only if the observer could somehow see only the front hemisphere with a flat cut — but the silhouette of the whole sphere is a full circle.

**Final Answer:** A sphere viewed from any direction produces a perfect circular outline $\Rightarrow$ C

**Answer: (C)** Go Back to Q16

## Q17.

**Solution**

**Concept — 180° Rotation of the Numeral 9:** Rotating a digit 180° (a half-turn) is equivalent to turning the page upside down. The numeral 9 consists of a closed circular bowl at the top and a descending tail at the bottom. When rotated 180°, the bowl moves to the bottom and the tail curves upward — which is precisely the form of the numeral 6.

**Step 1 — Tracing the rotation:**

- Original 9: closed loop at TOP, tail descending from the BOTTOM of the loop.
- After 180°: closed loop at BOTTOM, tail now curves UP from the top of the loop.
- This matches the numeral **6**.

**Why other options are wrong:**

- Option A: The numeral 9 is NOT rotationally symmetric; rotating it 180° produces a different digit (6), not the same 9.
- Option B: The numeral 0 is a simple closed oval and has no tail; 9 rotated 180° retains the characteristic tail, so it does not become a 0.
- Option C: The numeral 8 has two stacked loops with no open tail; 9 has one loop and a tail, which after 180° stays as one loop and a tail (=6), not 8.

**Final Answer:** 9 rotated 180° = the numeral 6 $\Rightarrow$ $\boxed{\text{D}}$

**Answer: (D)** Go Back to Q17

## Q18.

**Solution**

**Concept — Progressive Pattern Series:** The series shows a rule: each successive square adds one more filled triangular quadrant (going clockwise or in a consistent order). Square 1 = 0 filled, Square 2 = 1 filled (bottom), Square 3 = 2 filled (bottom + left). The next step must have 3 filled quadrants.

**Step 1 — Applying the progression rule:**

- Square 1: 0 filled triangles.
- Square 2: 1 filled (bottom triangle added).
- Square 3: 2 filled (bottom + left triangles).

- Square 4 ("?"): 3 filled — bottom + left + top triangles; only the right triangle remains empty.

This matches Option A exactly.

**Why other options are wrong:**

- Option B: All four quadrants filled (= 4) would skip the 3-filled step and jump to completion prematurely; the series adds one per step.
- Option C: Two quadrants filled (same as Square 3) would imply no change — the series is clearly progressive, not static.
- Option D: Completely empty (reset to 0) contradicts the additive pattern; there is no evidence of a cyclical reset.

**Final Answer:** Next in series = 3 filled quadrants (bottom, left, top; right empty) $\Rightarrow$ A

**Answer: (A)** Go Back to Q18

## Q19.

**Solution**

**Concept — Front Silhouette of a Hemisphere:** A hemisphere placed flat-face down on a table has a flat circular base and a curved dome above it. When viewed from the front at eye level (horizontal viewing direction perpendicular to the vertical axis), the observer sees the dome profile above the flat baseline. The silhouette is a D-shape: a straight horizontal line at the bottom (the flat face edge) and a curved semicircular arc above it (the dome profile).

**Step 1 — Reasoning about the front view:** The flat face is at the bottom, forming a straight horizontal base edge. The dome curves upward symmetrically from each end of that edge to the highest point directly above the centre. The resulting 2D outline is a semicircle (D-shape) — Option B.

**Why other options are wrong:**

- Option A: A full circle would be the top view (looking directly down at the flat circular face) — not the front (horizontal) view.
- Option C: A triangle implies the dome tapers to a point — but a hemisphere has a smooth, rounded dome that never comes to a point.
- Option D: A rectangle requires straight top and side edges — the dome is curved, so its silhouette is never rectangular.

**Final Answer:** Front view of hemisphere flat-face down = semicircle (D-shape) $\Rightarrow$ B

**Answer: (B)** Go Back to Q19

## Q20.

### Solution

**Concept — Counting Unit Cubes in a Staircase:** A 3-step staircase is built so that each step is one unit cube high. The bottom row supports the full 3-step height and is 3 cubes wide; the middle row is 2 cubes wide (supporting the top 2 steps); the top row is 1 cube. Total cubes = sum of cubes in each row.

**Step 1 — Direct count:**

$$\text{Bottom row} = 3 \text{ cubes} \quad + \quad \text{Middle row} = 2 \text{ cubes} \quad + \quad \text{Top row} = 1 \text{ cube} \quad = \quad 6 \text{ cubes}$$

This matches Option C: $3 + 2 + 1 = 6$.

**Why other options are wrong:**

- Option A: 3 cubes counts only the bottom row (or only the visible front faces) and ignores the stacked rows.
- Option B: 5 cubes would arise from miscounting one of the rows (e.g., counting 3+2+0 or 2+2+1) — neither matches the stated 3-2-1 arrangement.
- Option D: 9 cubes assumes a full $3 \times 3$ grid, but the staircase is a staircase (triangular profile), not a complete square block.

**Final Answer:** $3 + 2 + 1 = 6$ unit cubes total $\Rightarrow$ C

**Answer: (C)** Go Back to Q20

## Q21.

### Solution

**Concept — The Three Dimensions of Colour:** In colour science, any colour can be described along three independent dimensions: Hue (the spectral identity — red, blue, yellow), Saturation/Chroma (the vividness or purity), and Value (the lightness or darkness). Value is the dimension that places a colour on a scale from pure white (high value) to pure black (low value), independent of hue or saturation.

**Step 1 — Matching the definition:** "Lightness or darkness on a scale from white

to black, independent of hue or saturation" is the definition of Value (D). This term is used in the Munsell system and in general colour theory. HSB/HSL systems call this "Brightness" or "Lightness."

**Why other options are wrong:**

- Option A: Hue is the pure spectral colour identity (red, blue, yellow, etc.) — it describes *which* colour, not how light or dark it is.
- Option B: Saturation is the intensity or vividness of a colour relative to a neutral grey — it describes *purity*, not lightness.
- Option C: Chroma (Munsell) is the colourfulness of a sample relative to a grey of the same value — also a purity measure, not a lightness measure.

**Final Answer:** Lightness/darkness independent of hue and saturation = Value $\Rightarrow$ $\boxed{\text{D}}$

**Answer: (D)** Go Back to Q21

## Q22.

### Solution

**Concept — Itten's Contrast of Extension (Quantity):** Among Johannes Itten's Seven Contrasts of colour, the Contrast of Extension (also called Contrast of Proportion or Quantity) addresses the relative *areas* occupied by two or more colours in a composition. Itten showed that bright, luminous colours (like yellow) need less area than dark, low-luminance colours (like violet) to achieve visual equilibrium. His proportional formula: yellow:violet $\approx$ 1:3 by area.

**Step 1 — Applying Itten's Extension formula:** The diagram shows 1 part yellow vs. 3 parts violet — exactly the proportional relationship Itten prescribed for luminosity balance between these complementary colours. This is the Contrast of Extension (A).

**Why other options are wrong:**

- Option B: Simultaneous Contrast is a perceptual effect where a colour's apparent hue or value shifts when placed next to another colour — it is about perceptual distortion, not proportional area design.
- Option C: Contrast of Hue uses fully saturated, clearly distinguishable hues placed side by side — it is about colour identity, not the proportional balance of areas.
- Option D: Contrast of Saturation pairs a vivid colour with a de-saturated version — it concerns purity levels, not proportional areas.

**Final Answer:** Proportional area adjusted for luminosity balance = Contrast of Extension $\Rightarrow$ A

**Answer: (A)** Go Back to Q22

## Q23.

### Solution

**Concept — Chroma vs. Saturation Distinguished:** Although often used interchangeably in casual speech, chroma and saturation have technically distinct meanings in colour science. Chroma (Munsell system) measures colourfulness relative to a grey of the *same value* (lightness). Saturation (HSB/HSL) measures colourfulness relative to the colour's own maximum possible purity — i.e., how much of the hue's maximum intensity is present at the current brightness level.

**Step 1 — Selecting the correct distinction:** Option B correctly states: Chroma = colourfulness relative to grey of the same value (Munsell); Saturation = colourfulness relative to the colour's own maximum purity (HSB/HSL). This is the standard technical distinction.

**Why other options are wrong:**

- Option A: The claim that chroma and saturation are fully synonymous is incorrect in technical colour science — they have distinct operational definitions in different colour models.
- Option C: This option reverses the definitions — it assigns the Munsell-relative-to-value definition to saturation and the HSB-relative-to-own-maximum definition to chroma, which is backwards.
- Option D: Both chroma and saturation apply to all colour models (including CMYK and subtractive systems) — they are not exclusive to additive RGB screen design.

**Final Answer:** Chroma = relative to grey of same value; Saturation = relative to own maximum purity $\Rightarrow$ B

**Answer: (B)** Go Back to Q23

## Q24.

**Solution**

**Concept — Pointillism and Optical Colour Mixing:** Pointillism (also called Neo-Impressionism or Divisionism) was developed in France in the 1880s by Georges Seurat and Paul Signac. The technique places tiny, unmixed dots of pure pigment side by side; at viewing distance the eye's optical system mixes them, creating the perception of new colours without physical pigment blending. This was grounded in the colour science of Ogden Rood and Michel Eugène Chevreul.

**Step 1 — Matching the technique:** "Tiny separate dots of pure, unmixed pigment that optically blend at viewing distance" = Pointillism / Neo-Impressionism (C). Expressionism (A), Abstract Impressionism (B), and Fauvism (D) all use colour boldly but not through the systematic small-dot optical-mixing technique.

**Why other options are wrong:**

- Option A: Expressionism (Kandinsky, Kirchner) used pure colour for emotional expression — no systematic dot placement; paints were often mixed on the palette.
- Option B: Abstract Impressionism (gestural abstraction) is a 20th-century movement about expressive mark-making, not scientific optical mixing of unmixed dots.
- Option D: Fauvism (Matisse, Derain) used bold, non-naturalistic colour in broad strokes — not the small-dot technique of Pointillism.

**Final Answer:** Unmixed dots that optically blend at viewing distance = Pointillism / Neo-Impressionism $\Rightarrow$ $\boxed{\text{C}}$

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

## Q25.

**Solution**

**Concept — Colour Temperature and Spatial Perception:** Warm colours (reds, oranges, yellows) are described as "advancing" colours — they appear to come toward the viewer, making surfaces seem closer. This perceptual effect makes rooms painted in warm colours feel smaller and cosier. Conversely, cool colours (blues, blue-greens) "recede," making spaces feel larger and more airy.

**Step 1 — Applying colour psychology to space:** The question asks which colour temperature makes a room feel SMALLER and COSIER. Warm colours advance and make walls feel closer, reducing perceived room size. This is Option D.

**Why other options are wrong:**

- Option A: Cool colours recede — they make a room feel LARGER and more airy, the opposite of smaller and cosier.
- Option B: Neutral colours (beiges, warm greys) create a spacious, unobtrusive feeling — they do not produce the advancing, cosy effect of warm hues.
- Option C: Achromatic colours (pure black and white) create high contrast and visual depth — typically perceived as dramatic or graphic, not particularly small-and-cosy.

**Final Answer:** Warm colours (red, orange, yellow) advance, making rooms feel smaller and cosier $\Rightarrow$ D

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

## Q26.

**Solution**

**Concept — Pantone Matching System (PMS):** The Pantone Matching System, developed in 1963, is a standardised colour communication system widely used in print, fashion, product design, and manufacturing. It assigns unique numeric codes (e.g., Pantone 185 C) to specific ink colours, enabling any printer or manufacturer anywhere in the world to reproduce an exact colour without ambiguity, regardless of the equipment or substrate used.

**Step 1 — Identifying the primary function:** Option A correctly describes PMS as a "standardised, device-independent colour identification system assigning unique numeric codes to specific ink colours for consistent reproduction." Options B, C, and D describe paint guides, ICC screen profiles, and software conversion tools — none of which is PMS.

**Why other options are wrong:**

- Option B: Pantone does produce paint guides for interior design, but PMS's *primary* function is as a universal print/product colour standard, not exclusively an interior paint guide.
- Option C: ICC profiles embedded in monitors are a different technology (International Color Consortium standards) — not the Pantone Matching System.
- Option D: Pantone is not a software tool that converts CMYK to RGB; it is a physical swatch/code system for specifying proprietary ink formulations.

**Final Answer:** PMS = standardised numeric code system for device-independent

colour identification $\Rightarrow$ A

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

## Q27.

**Solution**

**Concept — Square (Tetradic) Colour Scheme:** Colour harmonies are defined by the geometric relationship of colours on the colour wheel. A square scheme (also called tetradic) places four colours at equal 90° intervals around the wheel, forming a square. This provides the richest variety of hues (four distinct colours) with strong contrast between all opposite pairs, making it the most complex and challenging harmony to balance.

**Step 1 — Matching the interval:** Four colours at 90° intervals = Square/Tetradic scheme (B). Triadic uses three colours at 120°; analogous uses adjacent colours (small intervals); complementary uses two colours at 180°.

**Why other options are wrong:**

- Option A: Triadic uses three colours at 120° intervals forming an equilateral triangle — three colours, not four; 120° intervals, not 90°.
- Option C: Analogous uses colours adjacent on the wheel (small, neighbouring intervals) — typically low contrast and harmonious, not high contrast.
- Option D: Complementary uses only two colours directly opposite each other (180°) — two colours, not four.

**Final Answer:** Four colours at 90° intervals = Square (Tetradic) colour scheme $\Rightarrow$ B

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

## Q28.

**Solution**

**Concept — Simultaneous (Brightness) Contrast:** Simultaneous contrast is the perceptual phenomenon in which a colour's apparent lightness or darkness (or hue) is influenced by the value of the surrounding colour. A mid-grey square surrounded by black appears lighter (because the visual system enhances the difference); the same grey on a white background appears darker. Both inner squares are physically identical — only the surround changes.

**Step 1 — Identifying the phenomenon:** The question describes two identical grey squares appearing differently light based on their backgrounds (black vs. white). This is the textbook example of Simultaneous Contrast (C) — specifically, simultaneous brightness contrast or value contrast.

**Why other options are wrong:**

- Option A: Metamerism is when two colour samples match under one light source but diverge under another due to different spectral compositions — it involves light source change, not surround colour change.
- Option B: The Bezold Effect (or spreading effect) involves a colour appearing to shift in *hue* when its surround changes — the question describes a lightness shift, not a hue shift.
- Option D: Colour Constancy is the perceptual mechanism by which a colour appears stable across different illumination conditions (e.g., a red apple looks red in daylight and incandescent light) — it concerns illumination, not surround value contrast.

**Final Answer:** Same grey appearing lighter on black, darker on white = Simultaneous Brightness Contrast $\Rightarrow$ C

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

## Q29.

### Solution

**Concept — Analogy: Primary Working Material:** The analogy is Sculptor : Clay :: Glassblower : ___. The relationship is "craftsperson : their primary working material." A sculptor's medium is clay (or stone, but clay in this context). The equivalent for a glassblower must be their primary working material.

**Step 1 — Identifying the glassblower's material:** A glassblower works with molten glass — the hot, viscous material they shape by blowing, twisting, and pulling. Although glass originates from silica sand, the raw material a glassblower directly manipulates is molten glass (Option D). A sculptor shapes clay directly; a glassblower shapes molten glass directly.

**Why other options are wrong:**

- Option A: A kiln is a furnace/oven — equipment, not the raw material. The analogy asks for the material, not the tool.
- Option B: Metal is the material of metalworkers and blacksmiths, not glassblowers — a different craft entirely.

- Option C: Sand (silica) is the upstream raw material used to *make* glass in a furnace, but the glassblower does not blow sand — they blow molten glass.

**Final Answer:** Glassblower's primary working material = molten glass $\Rightarrow$ D

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

## Q30.

### Solution

**Concept — 2D vs. 3D Art-Making Media:** Two-dimensional media are applied to flat surfaces and produce flat artworks (paintings, drawings, prints). Three-dimensional media produce solid objects with volume that occupy physical space. The question asks which of the four listed items fundamentally produces a 3D object rather than a flat 2D artwork.

**Step 1 — Classifying each medium:**

- Watercolour: applied to flat paper — 2D medium.
- Oil paint: applied to flat canvas or board — 2D medium.
- Charcoal: applied to flat paper or canvas — 2D drawing medium.
- Bronze casting: poured into a 3D mould to produce a solid sculptural object — fundamentally 3D.

Bronze casting (A) is the odd one out.

**Why other options are wrong:**

- Option B: Oil paint is a 2D medium applied to flat surfaces — it is not 3D, even though paint layers have some physical thickness.
- Option C: Charcoal is a dry drawing medium applied to flat paper or canvas — entirely 2D.
- Option D: Watercolour is a water-based medium applied to flat watercolour paper — entirely 2D.

**Final Answer:** Bronze casting produces 3D sculptures — it is the odd one out $\Rightarrow$ A

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

## Q31.

**Solution**

**Concept — Lateral Thinking Riddle (Clock):** Riddles use metaphorical language to describe an object's properties. The clues "has hands but cannot clap," "has a face but no eyes or mouth," and "tells you something important every moment" must all be satisfied simultaneously by the correct answer.

**Step 1 — Matching clues to answer:**

- Hands: clock has hour and minute hands (and second hand) — non-clapping hands. ✓
- Face: clock has a dial face — no eyes or mouth. ✓
- Tells something every moment: a clock tells the time continuously, every instant. ✓

All three clues map perfectly to a clock (B).

**Why other options are wrong:**

- Option A: A glove has finger-shaped "hands" but has no face and does not tell you anything.
- Option C: A compass has a needle, not "hands" in the conventional sense, and has no face with features; it also doesn't tell you something "every moment" in the same way.
- Option D: A mirror reflects your face but has no hands and tells you nothing over time.

**Final Answer:** Hands + face + tells time every moment = a clock $\Rightarrow$ $\boxed{\text{B}}$

**Answer: (B)** Go Back to Q31

## Q32.

**Solution**

**Concept — Six Thinking Hats (Edward de Bono):** The Six Thinking Hats is a structured parallel thinking method created by Edward de Bono (1985). Each of six coloured hats represents a distinct mode of thinking: White (facts/data), Red (emotions/intuition), Black (caution/critical), Yellow (optimism/benefits), Green (creativity/new ideas), Blue (process management/facilitation). It enables groups to explore a problem from multiple perspectives without conflict.

**Step 1 — Matching the method:** The description — six coloured hats, each repre-

senting a distinct thinking mode (factual, emotional, cautious, optimistic, creative, managerial) — matches de Bono's Six Thinking Hats (C) precisely. SCAMPER (A), Morphological Analysis (B), and Design Sprint (D) are other ideation tools with entirely different structures.

**Why other options are wrong:**

- Option A: SCAMPER is a creative checklist (Substitute, Combine, Adapt, Modify, Put to other uses, Eliminate, Reverse) for transforming an existing product — no hats, no thinking modes.
- Option B: Morphological Analysis uses a parameter matrix to map all solution combinations — no hats or thinking-mode roles.
- Option D: Design Sprint is a 5-day Google Ventures workshop framework for rapid prototyping and user testing — no hat-based thinking modes.

**Final Answer:** Six coloured hats for six thinking modes = Edward de Bono's Six Thinking Hats $\Rightarrow$ C

**Answer: (C)** Go Back to Q32

## Q33.

### Solution

**Concept — Analogy: Design Document for a Creative Work:** The analogy is Architect : Blueprint :: Composer : ___. The relationship is "creator : their precise technical notational document." A blueprint is the exact, detailed notational record of an architect's building design. The equivalent for a composer is the musical score (sheet music) — the precise written notation of all notes, rhythms, dynamics, and instrumentation.

**Step 1 — Matching the analogy:** A musical score (sheet music) serves the composer exactly as a blueprint serves an architect: it is the precise, reproducible notational record from which the work can be realised by others. Option D correctly identifies this.

**Why other options are wrong:**

- Option A: A palette holds colours for a painter — it is not a document, and a composer does not use a palette.
- Option B: A canvas is the working surface for a painter, not a notational document and not analogous to a blueprint's informational role.
- Option C: Lyrics are only the words of a song — they do not contain the complete musical notation (melody, harmony, rhythm, orchestration) that a

full score provides.

**Final Answer:** Composer's equivalent of a blueprint = Musical score (sheet music) $\Rightarrow$ D

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

## Q34.

### Solution

**Concept — Alphabetic Positional Values (A=1...Z=26):** Each letter is assigned a number equal to its position in the English alphabet: A=1, B=2, C=3, ..., Z=26. The sum for a word is obtained by adding the positional values of all its letters.

**Step 1 — Calculating FORM:**

$$F = 6, \quad O = 15, \quad R = 18, \quad M = 13$$

$$6 + 15 + 18 + 13 = 52$$

This matches Option A (52).

**Why other options are wrong:**

- Option B: 48 would result from an error such as using F=5 or M=12 — incorrect positional assignments.
- Option C: 55 would result from miscounting (e.g., F=6, O=15, R=18, M=16) — M is the 13th letter, not the 16th.
- Option D: 46 would result from a larger error, such as using F=4 or R=16 — neither is the correct positional value.

**Final Answer:** F(6)+O(15)+R(18)+M(13) = 52 $\Rightarrow$ A

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

## Q35.

**Solution**

**Concept — Inclusive Design for Visual Impairment:** When designing for users who are visually impaired, all usability cues must be perceptible through senses other than sight — primarily touch (haptic feedback) and hearing (auditory feedback). A redesigned toothbrush must allow correct orientation and use *by touch alone*, without any visual information.

**Step 1 — Evaluating the redesign concepts:** Option B addresses every requirement: (1) a raised tactile bump indicates orientation by touch; (2) a contoured non-slip grip with thumb notch provides secure, oriented handling; (3) a snap-on cap with audible+tactile click confirms correct cap seating — all achievable without vision. Options A, C, and D rely on visual, digital display, or size features that do not help a visually impaired user.

**Why other options are wrong:**

- Option A: A brightly contrasting colour scheme is entirely visual — useless for a person who cannot see the colour.
- Option C: A built-in digital timer display with large numerals is visual feedback — a visually impaired user cannot read the display.
- Option D: An extra-wide bristle head with more bristles reduces brushing *time* but provides no orientation cue and does not help a blind user identify which end is which.

**Final Answer:** Tactile bump + contoured grip + audible click cap = best tactile-only design solution $\Rightarrow$ $\boxed{\text{B}}$

**Answer: (B)** Go Back to Q35

## Q36.

**Solution**

**Concept — Pop Art:** Pop Art emerged in the UK in the mid-1950s and flourished in the USA in the 1960s. It elevated mass-produced consumer goods, advertising imagery, comic strips, and popular culture into fine art. Key techniques included silkscreen printing, Ben-Day dot patterns (from commercial printing processes), and bold, flat colours. Key figures: Andy Warhol (Campbell's soup cans, Marilyn Monroe prints) and Roy Lichtenstein (comic-strip-style paintings using Ben-Day dots).

**Step 1 — Matching the description:** "Silkscreen printing, Ben-Day dots, commer-

cial advertising and popular media imagery, Andy Warhol and Roy Lichtenstein" = Pop Art (C). De Stijl, Constructivism, and Op Art are distinct movements with different aesthetics.

**Why other options are wrong:**

- Option A: De Stijl (1917, Mondrian) used horizontal/vertical lines and primary colours in geometric abstraction — no Ben-Day dots, no popular media imagery.
- Option B: Constructivism was a Russian avant-garde movement using geometric abstraction in service of revolutionary politics — no consumer goods or comic-strip imagery.
- Option D: Op Art (Optical Art) used geometric patterns to create perceptual illusions of movement or vibration — not connected to consumer culture or Ben-Day dots.

**Final Answer:** Ben-Day dots + consumer imagery + Warhol/Lichtenstein = Pop Art $\Rightarrow$ C

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

## Q37.

**Solution**

**Concept — Jonathan Ive at Apple:** Sir Jonathan Ive (Jony Ive) joined Apple in 1992 and became Senior Vice President of Industrial Design, later Chief Design Officer (2015–2019). He led the design of the translucent iMac G3 (1998, which saved Apple from bankruptcy), the iPod (2001), iPhone (2007), MacBook Air, and Apple Watch. His work redefined industrial design as a primary competitive advantage in consumer electronics.

**Step 1 — Matching the designer to the products:** The iMac G3 (1998), iPod (2001), and iPhone (2007) are all confirmed Jony Ive designs. Option D correctly names Jonathan Ive and his role as Apple's CDO.

**Why other options are wrong:**

- Option A: Dieter Rams was design director at Braun (1961–1995); his Ten Principles of Good Design influenced Apple's philosophy, but he did not work at Apple and did not design the iMac, iPod, or iPhone.
- Option B: Hartmut Esslinger (frogdesign) developed the Snow White design language for Apple in the early 1980s (Apple IIc, Lisa) but was not the designer of the post-1997 products listed.

- Option C: Marc Newson is a celebrated Australian industrial designer who joined Apple's design team later (2014) but was not the lead designer of the iMac G3, iPod, or iPhone.

**Final Answer:** iMac G3, iPod, iPhone designer at Apple = Jonathan Ive (Jony Ive) $\Rightarrow$ D

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

## Q38.

### Solution

**Concept — Jan Tschichold and *Die Neue Typographie*:** Jan Tschichold (1902–1974) published *Die Neue Typographie* in 1928, drawing on his experiences at the Bauhaus and influenced by El Lissitzky and Constructivism. The book codified Modernist typographic principles: asymmetric layouts, standardised paper sizes, sans-serif typefaces (particularly Akzidenz-Grotesk), and functional hierarchy. It became the manifesto of 20th-century graphic design.

**Step 1 — Matching the typographer to the publication:** *Die Neue Typographie* (1928) = Jan Tschichold (A). Paul Rand, Saul Bass, and Alexey Brodovitch were all influential designers of the 20th century but did not write this book.

**Why other options are wrong:**

- Option B: Paul Rand designed the IBM, ABC, and UPS logos and wrote *Thoughts on Design* (1947) — important, but not *Die Neue Typographie*.
- Option C: Saul Bass designed film title sequences (Vertigo, Psycho, Anatomy of a Murder) and corporate logos — a graphic designer, not the author of this typographic treatise.
- Option D: Alexey Brodovitch was art director of *Harper's Bazaar* (1934–1958) and a celebrated editorial designer — not the author of *Die Neue Typographie*.

**Final Answer:** *Die Neue Typographie* (1928) author = Jan Tschichold $\Rightarrow$ A

**Answer: (A)** Go Back to Q38

## Q39.

**Solution**

**Concept — Paula Scher and the Public Theater:** Paula Scher is a partner at Pentagram (New York) and one of the most influential American graphic designers of the late 20th century. She is celebrated for the New York Public Theater's typographic identity (1994), which used bold, layered, woodblock-type-inspired lettering to create a landmark American graphic identity. She also designed the Citibank identity and contributed to Microsoft Windows branding.

**Step 1 — Matching the designer to the work:** "Partner at Pentagram + Public Theater typographic identity + Citibank + Microsoft Windows branding" = Paula Scher (B). Neville Brody, David Carson, and Stefan Sagmeister are other significant graphic designers but are associated with different bodies of work.

**Why other options are wrong:**

- Option A: Neville Brody was the art director of *The Face* magazine (1981–1986) and is known for experimental typographic layouts — not the Public Theater identity.
- Option C: David Carson designed the radical, deconstructed typography of *Ray Gun* magazine in the 1990s — influential but not the Public Theater designer.
- Option D: Stefan Sagmeister is known for concept-driven, provocative work (AIGA poster with skin lettering, Sagmeister & Walsh studio) — not associated with the Public Theater identity.

**Final Answer:** Pentagram partner + Public Theater identity (1994) = Paula Scher $\Rightarrow$ $\boxed{\text{B}}$

**Answer: (B)** Go Back to Q39

## Q40.

**Solution**

**Concept — Scandinavian (Nordic) Design:** The Scandinavian design tradition emerged in the Nordic countries (Finland, Sweden, Denmark, Norway) in the early 20th century and flourished from the 1930s to the 1960s. Its defining characteristics are: functional beauty using natural materials (wood, leather, wool); clean, minimal, unornamented form; and a democratic philosophy that well-designed objects should be affordable to all. Associated designers include Alvar Aalto (Finland), Arne Jacobsen (Denmark), and Bruno Mathsson (Sweden).

**Step 1 — Matching all four characteristics:** Natural materials + clean unornamented form + democratic accessibility + Aalto/Jacobsen/Mathsson = Scandinavian (Nordic) Design (C). Memphis, Italian Radical Design, and German Functionalism each match some but not all of the stated characteristics.

**Why other options are wrong:**

- Option A: Memphis Design (1980s, Ettore Sottsass) was deliberately eclectic, colourful, and anti-functionalist — the opposite of the restrained, natural Scandinavian tradition.
- Option B: Italian Radical Design (1960s–70s) was a conceptual, anti-commercial movement — not associated with natural materials or democratic accessibility.
- Option D: German Functionalism (Bauhaus/Werkbund) used steel, glass, and industrial materials — rational and machine-appropriate, but not typically associated with wood and leather or Aalto/Jacobsen/Mathsson.

**Final Answer:** Functional beauty + natural materials + democratic access + Aalto/Jacobsen = Scandinavian Design $\Rightarrow$ C

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

## Q41.

### Solution

**Concept — Frank Lloyd Wright and Organic Architecture:** Frank Lloyd Wright (1867–1959) coined the term "organic architecture" to describe his philosophy that buildings should grow from their sites as naturally as plants grow from soil. Buildings should be in harmony with their environment, use natural materials honestly, and integrate human habitation seamlessly with the landscape. Fallingwater (1935), cantilevered directly over a waterfall in rural Pennsylvania, is the definitive embodiment of this philosophy.

**Step 1 — Matching the architect and the philosophy:** "Organic architecture + harmony with environment + Fallingwater (1935)" = Frank Lloyd Wright (D). Le Corbusier, Tadao Ando, and Buckminster Fuller each represent different architectural philosophies.

**Why other options are wrong:**

- Option A: Le Corbusier defined the "machine for living" and five points of architecture (pilotis, roof garden, free plan, ribbon windows, free facade) — his buildings impose bold geometric form on sites rather than grow from

them.

- Option B: Tadao Ando uses raw concrete to create meditative spaces in dialogue with light and nature — he is influenced by organic ideas but is not the originator of "organic architecture" as a named philosophy.
- Option C: Buckminster Fuller designed geodesic domes and systems-thinking approaches to shelter — his work is about structural efficiency and global resource management, not organic architecture.

**Final Answer:** Organic architecture + Fallingwater = Frank Lloyd Wright $\Rightarrow$ D

**Answer: (D)** Go Back to Q41

## Q42.

### Solution

**Concept — Robert Venturi and Postmodern Architecture:** Robert Venturi's *Complexity and Contradiction in Architecture* (1966) is considered the founding text of architectural postmodernism. Venturi argued against Mies van der Rohe's Modernist minimalism ("Less is more") and declared "Less is a bore," championing ambiguity, complexity, historical reference, and layered meaning in architecture.

**Step 1 — Matching the theorist and the slogan:** "Less is a bore" + *Complexity and Contradiction in Architecture* (1966) = Robert Venturi (A). Philip Johnson, Charles Jencks, and Rem Koolhaas each played important roles in postmodernism but are associated with different texts.

**Why other options are wrong:**

- Option B: Philip Johnson championed the International Style at MOMA before embracing postmodernism, but did not write *Complexity and Contradiction* and is not the originator of "Less is a bore."
- Option C: Charles Jencks popularised the term "postmodern architecture" in *The Language of Post-Modern Architecture* (1977) — a different, later text; Jencks did not write *Complexity and Contradiction*.
- Option D: Rem Koolhaas wrote *Delirious New York* (1978), a different theoretical work about Manhattan's urban density and "culture of congestion" — not the source of "Less is a bore."

**Final Answer:** "Less is a bore" + *Complexity and Contradiction* (1966) = Robert Venturi $\Rightarrow$ A

**Answer: (A)** Go Back to Q42

## Q43.

**Solution**

**Concept — Massimo Vignelli and the 1972 NYC Subway Map:** Massimo Vignelli (1931–2014), while at Unimark International, designed the New York City Subway signage system and the 1972 subway map. The map applied strict Modernist grid principles: routes drawn at 45° or 90° angles only (diagrammatic, not geographically accurate), a limited palette of colours, and consistent Helvetica typography. It was praised for graphic clarity and criticised for geographical distortion (Central Park, for example, appears square rather than rectangular).

**Step 1 — Matching the designer and the map:** "1972 NYC Subway map + strict geometric grid + diagrammatic routes + Helvetica" = Massimo Vignelli (B). Paul Mijksenaar designed airport wayfinding; Harry Beck designed the 1931 London Underground map; Lance Wyman designed the 1968 Mexico City Olympic identity.

**Why other options are wrong:**

- Option A: Paul Mijksenaar is a Dutch information designer known for Schiphol Airport and other wayfinding systems — not the 1972 NYC Subway map.
- Option C: Harry Beck designed the diagrammatic London Underground map in 1931 — the direct inspiration for Vignelli's approach, but a different city and different designer.
- Option D: Lance Wyman created the iconic pictogram-based identity for the 1968 Mexico City Olympic Games — not the NYC Subway map.

**Final Answer:** 1972 NYC Subway map (geometric grid + Helvetica) = Massimo Vignelli $\Rightarrow$ $\boxed{\text{B}}$

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

## Q44.

**Solution**

**Concept — Universal Design (Ron Mace):** Universal Design is a design philosophy articulated by architect Ron Mace at North Carolina State University in 1985. It aims to create products, environments, and communications usable by the widest range of people — regardless of age, ability, or body size — without the need for special adaptation or assistive technology. It is guided by seven principles: Equitable Use, Flexibility in Use, Simple and Intuitive Use, Perceptible Information, Tolerance for Error, Low Physical Effort, and Size and Space for Approach and Use.

**Step 1 — Matching the philosophy:** "Widest possible range of people + no special adaptation needed + seven core principles + Ron Mace (1985)" = Universal Design (C). Sustainable Design, Emotional Design, and Ergonomic Design are distinct frameworks with different goals.

**Why other options are wrong:**

- Option A: Sustainable Design focuses on reducing environmental impact and resource consumption — it does not specifically address the full spectrum of human physical abilities.
- Option B: Emotional Design (Don Norman) distinguishes visceral, behavioural, and reflective levels of design experience — it is about emotional response, not physical accessibility for the widest user range.
- Option D: Ergonomic Design optimises for comfort and efficiency of a specific user profile based on anthropometric data — this often excludes users who fall outside the average range, the opposite of Universal Design's intent.

**Final Answer:** Usable by the widest range of people without adaptation = Universal Design (Ron Mace, 1985) $\Rightarrow$ C

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

## Q45.

### Solution

**Concept — Descenders in Type Anatomy:** In the anatomy of a typeface, the baseline is the invisible line on which most letters sit. Some lowercase letters have strokes that extend *below* the baseline — these extensions are called descenders. The letters with descenders are: g, p, q, y, and j (and sometimes f in certain typefaces). The vertical distance they extend below the baseline is the descender depth.

**Step 1 — Matching the definition:** Option D correctly defines "descender" as "the portion of certain lowercase letters that extends below the baseline (g, p, q, y, j)." Options A, B, and C describe x-height, cap height, and serifs respectively.

**Why other options are wrong:**

- Option A: Describes the x-height — the distance from the baseline to the top of a lowercase letter without ascenders or descenders (e.g., 'x', 'o', 'a').
- Option B: Describes the cap height — the distance from the baseline to the top of uppercase letters (e.g., 'H', 'E', 'T').
- Option C: Describes serifs — the small finishing strokes at the ends of letter

strokes in serif typefaces; not a measurement or extension of the letter body.

**Final Answer:** Descender = part of lowercase letter extending below the baseline (g, p, q, y, j) $\Rightarrow$ D

**Answer: (D)** Go Back to Q45

## Q46.

### Solution

**Concept — En Dash Usage:** The en dash (–) is a punctuation mark half the width of an em dash. Its primary conventional use is to indicate a *range* between two quantities, dates, times, or scores — e.g., pages 12–15, the years 1990–2000, a game score of 3–1. It is also used to connect compound adjectives involving multi-word elements (the London–Paris train) and in some style guides to replace "to" or "through" in ranges.

**Step 1 — Identifying correct en dash usage:** Option A — "to indicate a range between two values (pages 12–15, years 1990–2000, score 3–1)" — is the correct conventional use of the en dash. Options B, C, and D describe uses of the em dash, bullets/hyphens, and ellipses respectively.

**Why other options are wrong:**

- Option B: Strong parenthetical statements and abrupt interruptions within a sentence use the *em dash* (—), not the en dash.
- Option C: Separating items in a list is conventionally done with bullet points (•) or hyphens (-), not en dashes.
- Option D: Missing or redacted words in quoted passages use ellipses (. . . ) or bracketed notation [—] — not a standard en dash.

**Final Answer:** En dash (–) is used to indicate a range between two values $\Rightarrow$ A

**Answer: (A)** Go Back to Q46

## Q47.

**Solution**

**Concept — X-height, Cap Height, and Legibility:** The x-height is the height of the main body of lowercase letters (letters without ascenders or descenders, measured from baseline to the top of 'x'). A larger x-height relative to cap height means that lowercase letterforms occupy more of the available vertical space, making each letter's body larger and more legible at small sizes. Most highly legible text typefaces (e.g., Verdana, Georgia, Trebuchet) have a relatively large x-height.

**Step 1 — Evaluating the relationship:** Option B correctly states that a larger x-height relative to cap height improves legibility at small sizes because the main body of each letter is larger and clearer. This is well-established in type design practice and research.

**Why other options are wrong:**

- Option A: A larger cap height relative to x-height means lowercase letters are proportionally smaller — at small sizes, the lowercase body becomes harder to read, reducing legibility.
- Option C: X-height is measured from the *baseline* to the top of lowercase letters without ascenders — it is NOT the distance from the cap line to the ascender line (that would be the ascender overshoot).
- Option D: A typeface with x-height equal to cap height would have no visual distinction between uppercase and lowercase forms — this would significantly reduce readability, not improve it.

**Final Answer:** Larger x-height relative to cap height improves legibility at small sizes $\Rightarrow$ $\boxed{\text{B}}$

**Answer: (B)** Go Back to Q47

## Q48.

**Solution**

**Concept — Legibility vs. Readability:** These two terms have distinct technical meanings in typography. *Legibility* is a property of the typeface design itself — how easily individual characters can be identified and distinguished from one another (e.g., is the 'l' distinguishable from the '1'?). *Readability* is a property of the overall typographic setting — how easily extended passages of text can be read and understood, influenced by factors such as font size, line spacing (leading), line length (measure), and colour contrast.

**Step 1 — Selecting the correct distinction:** Option C correctly defines: Legibility = individual character recognition (typeface design property); Readability = extended text comprehension (typographic layout property). Option A reverses the two definitions. Options B and D are incorrect simplifications.

**Why other options are wrong:**

- Option A: This option reverses the definitions — it defines legibility as "ease of comprehension of extended text" (which is readability) and readability as "ease of identifying individual characters" (which is legibility).
- Option B: Legibility and readability are *not* synonymous — they describe different levels of typographic analysis (character level vs. text-body level).
- Option D: Legibility is not solely determined by font size — it depends on letterform design (counter size, stroke contrast, character spacing). Readability is not solely determined by line length — it is also affected by leading, font size, and contrast.

**Final Answer:** Legibility = individual character recognition; Readability = extended text comprehension $\Rightarrow$ C

**Answer: (C)** Go Back to Q48

## Q49.

### Solution

**Concept — Johnston Sans and the London Underground:** Johnston Sans (also called Johnston) was designed by calligrapher Edward Johnston in 1916, commissioned by Frank Pick (then Publicity Manager, later Managing Director of the Underground Group). It was created to provide clear, distinctive, and consistent lettering across all signage of the London Underground. The typeface has remained in continuous use by the Tube ever since and directly inspired Eric Gill's Gill Sans (1928).

**Step 1 — Matching the typeface to the commission:** "Designed in 1916 + bespoke wayfinding commission + metropolitan railway network + still in active use" = Johnston Sans for the London Underground (D). Helvetica (1957), Gill Sans (1928), and Frutiger (1968) were all designed later or for different contexts.

**Why other options are wrong:**

- Option A: Helvetica was designed in 1957 by Max Miedinger and Eduard Hoffmann for the Haas type foundry in Switzerland — not originally created for a transport network (though later adopted widely for signage).

- Option B: Gill Sans was designed by Eric Gill for the Monotype Corporation in 1928 — a commercial typeface, not a bespoke wayfinding commission; later used by British Railways.
- Option C: Frutiger was designed by Adrian Frutiger in 1968 for Charles de Gaulle Airport in Paris — an airport wayfinding commission, not a railway commission, and from 1968, not 1916.

**Final Answer:** 1916 London Underground commission = Johnston Sans (Edward Johnston) $\Rightarrow$ D

**Answer: (D)** Go Back to Q49

## Q50.

### Solution

**Concept — Variable Fonts (OpenType 1.8):** Variable fonts were introduced in the OpenType 1.8 specification (2016), jointly developed by Apple, Google, Microsoft, and Adobe. A variable font is a single font file that encodes an entire typeface family as a continuous, multidimensional design space along one or more *design axes* (e.g., Weight, Width, Slant, Optical Size, Italic). A designer or browser can access any intermediate value along each axis — no separate bold, italic, condensed, or light font files are required.

**Step 1 — Matching the definition:** "Single file + entire family as continuous range along design axes + any intermediate value without separate files" = Variable fonts (A). Options B, C, and D describe fictional or misattributed font technologies.

**Why other options are wrong:**

- Option B: No standard font format is specifically designed to remain legible at variable viewing distances and angles for signage — this describes engineering properties of a physical sign, not a digital font format.
- Option C: Automatic context-sensitive character spacing (adaptive kerning) is a feature of OpenType layout features (kerning tables, GPOS) — it is not what "variable fonts" means, which refers to axis-based style interpolation.
- Option D: Colour fonts (OpenType SVG, COLR/CPAL) can encode coloured letterforms, but this is a separate technology from variable fonts — variable fonts change weight/width/slant along axes, not colour based on detected background.

**Final Answer:** Single font file with continuous design axes for entire family = Variable Fonts (OpenType 1.8, 2016) $\Rightarrow$ A

Answer: (A) Go Back to Q50

# Answer Key

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