UCEED Sample Paper

Duration: 180 Minutes **Maximum Marks: 300**

Instructions

- This is a full-length UCEED practice paper. **Part A** (Q1–Q57, 200 marks, computer-based) has three sections: **Section 1** NAT, Numerical Answer Type (Q1–Q14); **Section 2** MSQ, Multiple Select Questions (Q15–Q29); **Section 3** MCQ, Multiple Choice Questions (Q30–Q57). **Part B** (Q58–Q59, 100 marks, pen and paper) tests drawing and design aptitude.
- **Marking - Part A:** NAT: **+4**, no negative marking. MSQ: **+4** if all correct options and no wrong option are chosen; **+1** for each correct option chosen when no wrong option is chosen; **−1** if any wrong option is chosen. MCQ: **+3** for correct, **−0.71** for wrong.
- **Marking - Part B:** each of the two questions carries **50 marks**, evaluated on your drawing and design response. There is no negative marking in Part B.
- Tap **View Solution** (Part A) or **View Model Approach** (Part B) under any question to jump to its worked explanation. Calculators and electronic gadgets are not allowed.

Section 1: Numerical Answer Type (NAT)

Q1. A solid cube of side 6 cm is painted on all six outer faces and then cut into 216 small cubes of side 1 cm each. How many of these small cubes have exactly two painted faces?

(Numerical Answer Type - enter a numerical value; no options.)

View Solution

Q2. A poster measures 60 cm by 90 cm. It is scaled down proportionally so that its longer side becomes 30 cm. What is the length, in cm, of the shorter side after scaling?

(Numerical Answer Type - enter a numerical value; no options.)

View Solution

Q3. In typography, 1 inch equals 72 points. A heading is set at a size of 1.5 inches. What is this size in points?

(Numerical Answer Type - enter a numerical value; no options.)

View Solution

Q4. A logo is enlarged so that each of its linear dimensions becomes 3 times the original. By what factor does the area of the logo increase?

(Numerical Answer Type - enter a numerical value; no options.)

View Solution

Q5. A flat sheet of paper is folded in half, and this folding in half is repeated until it has been folded 3 times in total. Into how many equal layers is the paper stacked?

(Numerical Answer Type - enter a numerical value; no options.)

View Solution

Q6. A colour wheel is divided into 12 equally spaced hues arranged around a full circle. What is the angle, in degrees, between two adjacent hues?

(Numerical Answer Type - enter a numerical value; no options.)

View Solution

Q7. A designer mixes white and blue paint in the ratio 3:2 to prepare 45 ml of a tint. How many ml of blue paint are used?

(Numerical Answer Type - enter a numerical value; no options.)

View Solution

Q8. In an RGB hex colour code written as #RRGGBB, each of the three channels (red, green, blue) uses 2 hexadecimal digits, and each hexadecimal digit stands for 4 bits. How many bits in total define one such colour?

(Numerical Answer Type - enter a numerical value; no options.)

View Solution

Q9. A stepped stack is built from unit cubes: the bottom row has 5 cubes, and each row above has exactly one cube fewer than the row below, up to a top row of 1 cube. How many cubes are used in all?

(Numerical Answer Type - enter a numerical value; no options.)

View Solution

Q10. A rectangular floor measuring 4 m by 5 m is to be fully covered with square tiles of side 50 cm each, with no gaps or overlaps. How many tiles are needed?

(Numerical Answer Type - enter a numerical value; no options.)

View Solution

Q11. A circular design motif has a radius of 7 cm. Taking $\pi = \frac{22}{7}$, what is its area in square centimetres?

(Numerical Answer Type - enter a numerical value; no options.)

View Solution

Q12. A rectangle is drawn so that its longer side is the golden ratio (approximately 1.618) times its shorter side. If the shorter side is 10 cm, what is the length of the longer side, rounded to the nearest whole centimetre?

(Numerical Answer Type - enter a numerical value; no options.)

View Solution

Q13. A gradient strip shows 5 evenly spaced grey tones, running from 0% black at one end to 100% black at the other. What is the difference, in percentage points, between two consecutive tones?

(Numerical Answer Type - enter a numerical value; no options.)

View Solution

Q14. In the ISO A paper series, each size has half the area of the size numbered one lower, so A1 is half of A0, A2 is half of A1, and so on. By what factor is the area of A0 larger than the area of A4?

(Numerical Answer Type - enter a numerical value; no options.)

View Solution

Section 2: Multiple Select Questions (MSQ)

Q15. A person has six daughters P, Q, R, S, T, U living in four metros. Their professions are Pilot, Accountant, Diplomat, Banker, Commando and Teacher. The following facts are known: S lives in Mumbai and is a Diplomat. Those living in Kolkata are the Commando and the Accountant. Of the two who live in Mumbai, exactly one is married; two of the unmarried daughters live in Kolkata and Delhi respectively. The Teacher lives in Chennai. T is the Accountant and is married.

U lives in Mumbai and P lives in Delhi. Q is a Commando, and Commandos do not marry. Which of the following assertions are true?

(One or more options may be correct.)

(A) If the Banker is unmarried, then the Pilot is P.

(B) R is the Teacher, and lives in Chennai.

(C) Q is unmarried.

(D) If the Diplomat is married, then so is the Banker.

View Solution

Q16. In the traditional RYB colour model used by painters, which of the following are primary colours?

(One or more options may be correct.)

(A) Green

(B) Red

(C) Yellow

(D) Blue

View Solution

Q17. In the additive RGB colour model used by screens, which of the following are the primary colours?

(One or more options may be correct.)

(A) Yellow

(B) Red

(C) Green

(D) Blue

View Solution

Q18. Which of the following are vector image file formats?

(One or more options may be correct.)

(A) SVG

(B) JPEG

(C) EPS

(D) PNG

View Solution

Q19. Which of the following are raster (bitmap) image file formats?

(One or more options may be correct.)

(A) SVG

(B) PNG

(C) GIF

(D) TIFF

View Solution

Q20. Which of the following are serif typefaces?

(One or more options may be correct.)

(A) Helvetica

(B) Times New Roman

(C) Garamond

(D) Futura

View Solution

Q21. Which of the following are sans-serif typefaces?

(One or more options may be correct.)

(A) Helvetica

(B) Arial

(C) Baskerville

(D) Futura

View Solution

Q22. Which of the following are art movements that began in the early 20th century?

(One or more options may be correct.)

(A) Cubism

(B) Renaissance

(C) Surrealism

(D) Baroque

View Solution

Q23. Which of the following designers or artists are associated with the Bauhaus school?

(One or more options may be correct.)

(A) Le Corbusier

(B) Walter Gropius

(C) Wassily Kandinsky

(D) Marcel Breuer

View Solution

Q24. In typography, which of the following are relative units, meaning they depend on the current font size?

(One or more options may be correct.)

(A) Em

(B) Point

(C) En

(D) Pica

View Solution

Q25. Which of the following are primary ink colours in the CMYK subtractive model used for printing?

(One or more options may be correct.)

(A) Cyan

(B) Magenta

(C) Yellow

(D) Green

View Solution

Q26. Which of the following statements about the colour wheel are correct?

(One or more options may be correct.)

(A) Complementary colours sit directly opposite each other on the wheel.

(B) Orange is a primary colour in the RYB model.

(C) Green is a secondary colour in the RYB model.

(D) Analogous colours sit next to each other on the wheel.

View Solution

Q27. Which of the following is the Japanese art of paper folding?

(One or more options may be correct.)

(A) Ikebana

(B) Origami

(C) Bonsai

(D) Kirigami

View Solution

Q28. Which of the following are considered elements of design?

(One or more options may be correct.)

(A) Line

(B) Shape

(C) Colour

(D) Texture

View Solution

Q29. Which of the following are principles of design rather than elements of design?

(One or more options may be correct.)

(A) Balance

(B) Contrast

(C) Line

(D) Rhythm

View Solution

Section 3: Multiple Choice Questions (MCQ)

Q30. The Sydney Opera House, with its distinctive shell-shaped roofs, was designed by which architect?

(A) Jorn Utzon

(B) Frank Gehry

(C) Zaha Hadid

(D) I. M. Pei

View Solution

Q31. Which Indian city is popularly known as the "Blue City" because of the blue-painted houses in its old quarter?

(A) Jaipur

(B) Jodhpur

(C) Udaipur

(D) Jaisalmer

View Solution

Q32. The Fibonacci sequence begins 1, 1, 2, 3, 5, 8, ... What is the next number after 8?

(A) 11

(B) 12

(C) 13

(D) 15

View Solution

Q33. In the number series 2, 6, 12, 20, 30, ... what is the next term?

(A) 40

(B) 44

(C) 36

(D) 42

View Solution

Q34. In a certain code, FLOWER is written as GMPXFS. Using the same rule, how is GARDEN written?

(A) HBSEFO

(B) HBSDEO

(C) FZQCDM

(D) HBTEFO

View Solution

Q35. On an analogue clock showing exactly 3:00, what is the angle between the hour hand and the minute hand?

(A) 60 degrees

(B) 90 degrees

(C) 120 degrees

(D) 45 degrees

View Solution

Q36. Mixing blue and yellow paint gives which colour?

(A) Purple

(B) Orange

(C) Green

(D) Brown

View Solution

Q37. The Taj Mahal at Agra is built primarily from which material?

(A) Red sandstone

(B) Granite

(C) Limestone

(D) White marble

View Solution

Q38. Who painted the Mona Lisa?

(A) Leonardo da Vinci

(B) Michelangelo

(C) Raphael

(D) Donatello

View Solution

Q39. Which of the following is considered a warm colour?

(A) Blue

(B) Red

(C) Green

(D) Violet

View Solution

Q40. In printing, what does DPI stand for?

(A) Design Per Image

(B) Density Per Inch

(C) Dots Per Inch

(D) Dots Per Image

View Solution

Q41. Identify the odd one out from the following.

(A) Circle

(B) Square

(C) Triangle

(D) Cube

View Solution

Q42. A wall clock shows 4:00. If you view it in a plane mirror, what time does the reflected clock appear to show?

(A) 8:00

(B) 10:00

(C) 6:00

(D) 2:00

View Solution

Q43. The painter Salvador Dali, known for melting clocks and dreamlike scenes, is associated with which movement?

(A) Cubism

(B) Surrealism

(C) Impressionism

(D) Pop Art

View Solution

Q44. How many faces does a triangular prism have?

(A) 4

(B) 6

(C) 5

(D) 9

View Solution

Q45. A typeface that has small finishing strokes at the ends of its letters belongs to which category?

(A) Sans-serif

(B) Script

(C) Display

(D) Serif

View Solution

Q46. In the letter series Z, X, V, T, ... which letter comes next?

(A) R

(B) S

(C) Q

(D) P

View Solution

Q47. In the design process, the main purpose of a wireframe is to:

(A) apply the final colour palette

(B) show the layout and structure of a page or screen

(C) select the typography

(D) render a realistic 3D view

View Solution

Q48. You are facing North. You turn 90 degrees clockwise, then turn a further 180 degrees. Which direction are you now facing?

(A) East

(B) South

(C) West

(D) North

View Solution

Q49. Which traditional Indian folk painting style originates from the Mithila region of Bihar?

(A) Warli

(B) Pattachitra

(C) Gond

(D) Madhubani

View Solution

Q50. How many edges does a cube have?

(A) 12

(B) 8

(C) 6

(D) 16

View Solution

Q51. On the traditional RYB colour wheel, the complementary colour of red is:

(A) Blue

(B) Green

(C) Orange

(D) Yellow

View Solution

Q52. The golden ratio, often used in design for pleasing proportions, is approximately equal to:

(A) 1.414

(B) 1.732

(C) 1.618

(D) 2.718

View Solution

Q53. Which of the following is an element of design rather than a principle of design?

(A) Balance

(B) Contrast

(C) Emphasis

(D) Line

View Solution

Q54. How many primary colours are there in the traditional RYB colour model?

(A) 3

(B) 4

(C) 5

(D) 2

View Solution

Q55. In typography, adjusting the space between two specific individual letters is called:

(A) Leading

(B) Kerning

(C) Tracking

(D) Baseline shift

View Solution

Q56. In typography, the vertical space between consecutive lines of text is called:

(A) Kerning

(B) Tracking

(C) Leading

(D) Weight

View Solution

Q57. Which shape has all four sides equal and all four interior angles equal to 90 degrees?

(A) Rectangle

(B) Rhombus

(C) Trapezium

(D) Square

View Solution

Part B: Drawing and Design Aptitude (Pen and Paper)

Q58. [Drawing - 50 Marks]

It is a bright winter afternoon on a city rooftop during the Makar Sankranti kite festival. Kites of many shapes dot the sky, string spools lie about, and neighbours on nearby terraces shout and point upward. The focal subject is a teenage boy standing near the parapet, leaning back with both arms raised, gripping a large wooden charkha (string spool) as he tugs a kite high overhead, while a younger child beside him holds the loose string and looks up. Imagine this scene and draw it with the boy and his charkha as the clear centre of interest. Show the rooftop floor and parapet, the child helper, snacks or a water bottle on the ground, several kites at different distances in the sky, and the neighbouring terraces below.

Note: Make pencil sketches only. Do not use colour.

Evaluation criteria: observation; composition; perspective and proportion; quality of lines; attention to detail.

View Model Approach

Q59. [Design Aptitude - 50 Marks]

Office workers and students carry a lunch of three or four separate items - rice, a curry, a dry sabzi, a sweet - but ordinary tiffins mix flavours, leak curry into the bag, and are awkward to open and eat from at a desk. Design a lunch carrier that keeps several dishes separate and leak-free while being carried, and then converts into a stable set of plates or bowls to eat from at a desk without needing extra dishes. Show your design in two states: (1) closed, stacked and locked for carrying, and (2) opened out and arranged as separate serving containers ready to eat from.

Note: Make pencil sketches only. Do not use colour. Explain your design only through visuals and short labels; do not write separate explanations.

View Model Approach

Detailed Solutions

Q1.

Q. A solid cube of side 6 cm is painted on all six outer faces and then cut into 216 small cubes of side 1 cm each. How many of these small cubes have exactly two painted faces?

Solution

Concept - Painting a cut cube: A small cube gets exactly two painted faces only when it sits along an edge of the big cube, but is not at a corner.

Step 1 - Count per edge: On one edge of length 6, the two end pieces are corners (three painted faces). The pieces in between are $6 - 2 = 4$, and each has exactly two painted faces.

Step 2 - Use all edges: A cube has 12 edges, so the total is $12 \times 4 = 48$.

Tip: For side n, the two-painted-face count is always $12(n - 2)$.

Answer: 48 Go Back to Q1

Q2.

Q. A poster measures 60 cm by 90 cm. It is scaled down proportionally so that its longer side becomes 30 cm.
What is the length, in cm, of the shorter side after scaling?

Solution

Concept - Proportional scaling: When a shape is scaled, every

side is multiplied by the same factor, so the width-to-length ratio stays fixed.

Step 1 - Find the factor: The longer side goes from 90 cm to 30 cm, so the factor is $\frac{30}{90} = \frac{1}{3}$.

Step 2 - Apply to the shorter side: New shorter side $= 60 \times \frac{1}{3} = 20$ cm.

Tip: Scaling keeps aspect ratio, so a quick check is $20 : 30 = 60 : 90$.

Answer: 20 Go Back to Q2

Q3.

Q. In typography, 1 inch equals 72 points. A heading is set at a size of 1.5 inches. What is this size in points?

Solution

Concept - Point as a print unit: The point is the standard unit of type size, with 72 points making up 1 inch.

Step 1 - Multiply: $1.5 \times 72 = 108$ points.

Tip: 1 pica $= 12$ points, so 108 points also equals 9 picas.

Answer: 108 Go Back to Q3

Q4.

Q. A logo is enlarged so that each of its linear dimensions becomes 3 times the original. By what factor does the area of the logo increase?

Solution

Concept - Area under scaling: Area depends on two length dimensions, so it scales by the square of the linear factor.

Step 1 - Square the factor: Linear factor is 3, so area factor $= 3^2 = 9$.

Tip: Volume would scale by $3^3 = 27$; remember area uses the square, volume the cube.

Answer: 9 Go Back to Q4

Q5.

Q. A flat sheet of paper is folded in half, and this folding in half is repeated until it has been folded 3 times in total. Into how many equal layers is the paper stacked?

Solution

Concept - Doubling by folding: Each fold in half doubles the number of stacked layers.

Step 1 - Track the folds: Start with 1 layer, then $2, 4, 8$ after each of the 3 folds.

Step 2 - Use the power of 2: Layers $= 2^3 = 8$.

Tip: After n folds the layer count is 2^n.

Answer: 8 Go Back to Q5

Q6.

Q. A colour wheel is divided into 12 equally spaced hues arranged around a full circle. What is the angle, in degrees, between two adjacent hues?

Solution

Concept - Equal division of a circle: A full circle is $360°$; equal hues split it into equal arcs.

Step 1 - Divide: $\frac{360}{12} = 30$ degrees between adjacent hues.

Tip: Complementary hues sit $180°$ apart, which is 6 steps on this wheel.

Answer: 30 Go Back to Q6

Q7.

Q. A designer mixes white and blue paint in the ratio 3:2 to prepare 45 ml of a tint. How many ml of blue paint are used?

Solution

Concept - Sharing in a ratio: The total parts are added first, then each colour takes its share of the whole amount.

Step 1 - Total parts: $3 + 2 = 5$ parts make 45 ml, so one part $= \frac{45}{5} = 9$ ml.

Step 2 - Blue share: Blue is 2 parts $= 2 \times 9 = 18$ ml.

Tip: Check: white $= 3 \times 9 = 27$ ml, and $27 + 18 = 45$ ml.

Answer: 18 Go Back to Q7

Q8.

Q. In an RGB hex colour code written as #RRGGBB, each of the three channels (red, green, blue) uses 2 hexadecimal digits, and each hexadecimal digit stands for 4 bits. How many bits in total define one such colour?

Solution

Concept - Bits per channel: Each hex digit encodes 4 bits, so 2 hex digits per channel is 8 bits.

Step 1 - Per channel: $2 \times 4 = 8$ bits for one channel.

Step 2 - Three channels: $8 \times 3 = 24$ bits in total.

Tip: 24-bit colour gives 2^{24}, about 16.7 million, distinct colours.

Answer: 24 Go Back to Q8

Q9.

Q. A stepped stack is built from unit cubes: the bottom row has 5 cubes, and each row above has exactly one cube fewer than the row below, up to a top row of 1 cube. How many cubes are used in all?

Solution

Concept - Sum of consecutive counts: The rows form the run $5, 4, 3, 2, 1$, which is a simple arithmetic sum.

Step 1 - Add the rows: $5 + 4 + 3 + 2 + 1 = 15$.

Tip: The sum 1 to n is $\frac{n(n+1)}{2} = \frac{5 \times 6}{2} = 15$.

Answer: 15 Go Back to Q9

Q10.

Q. A rectangular floor measuring 4 m by 5 m is to be fully covered with square tiles of side 50 cm each, with no gaps or overlaps. How many tiles are needed?

Solution

Concept - Tiling by counting rows and columns: With square tiles that divide the sides evenly, count how many fit along each side.

Step 1 - Tiles per side: 4 m $= 400$ cm gives $\frac{400}{50} = 8$ tiles; 5 m $= 500$ cm gives $\frac{500}{50} = 10$ tiles.

Step 2 - Multiply: $8 \times 10 = 80$ tiles.

Tip: Cross-check by area: floor 20 m^2, tile 0.25 m^2, so $\frac{20}{0.25} = 80$.

Answer: 80 Go Back to Q10

Q11.

Q. A circular design motif has a radius of 7 cm. Taking $\pi = \frac{22}{7}$, what is its area in square centimetres?

Solution

Concept - Area of a circle: The area is πr^2.

Step 1 - Substitute: $\frac{22}{7} \times 7^2 = \frac{22}{7} \times 49$.

Step 2 - Simplify: $22 \times 7 = 154$ square centimetres.

Tip: With $r = 7$, the 7 cancels neatly, which is why 7 is a friendly radius for $\pi = \frac{22}{7}$.

Answer: 154 Go Back to Q11

Q12.

Q. A rectangle is drawn so that its longer side is the golden ratio (approximately 1.618) times its shorter side. If the shorter side is 10 cm, what is the length of the longer side, rounded to the nearest whole centimetre?

Solution

Concept - Golden ratio in a rectangle: A golden rectangle has long side $= 1.618\times$ short side.

Step 1 - Multiply: $10 \times 1.618 = 16.18$ cm.

Step 2 - Round: 16.18 rounds to 16 cm.

Tip: The golden ratio appears often in logo and layout grids for balanced proportions.

Answer: 16 Go Back to Q12

Q13.

Q. A gradient strip shows 5 evenly spaced grey tones, running from 0% black at one end to 100% black at the other. What is the difference, in percentage points, between two consecutive tones?

Solution

Concept - Even steps need gaps, not tones: With 5 tones there are 4 equal gaps between the two ends.

Step 1 - Count gaps: $5 - 1 = 4$ gaps span 0% to 100%.

Step 2 - Divide the range: $\frac{100}{4} = 25$ percentage points per step.

Tip: The tones are $0, 25, 50, 75, 100$ percent black.

Answer: 25 Go Back to Q13

Q14.

Q. In the ISO A paper series, each size has half the area of the size numbered one lower, so A1 is half of A0, A2 is half of A1, and so on. By what factor is the area of A0 larger than the area of A4?

Solution

Concept - Repeated halving: Going from A0 to A4 is 4 steps, and each step halves the area.

Step 1 - Count steps: A0 to A4 is 4 steps.

Step 2 - Apply halving: Area is divided by $2^4 = 16$, so A0 is 16 times A4.

Tip: A0 has an area of 1 square metre, so A4 is $\frac{1}{16}$ square metre.

Answer: 16 Go Back to Q14

Q15.

Q. A person has six daughters P, Q, R, S, T, U living in four metros. Their professions are Pilot, Accountant, Diplomat, Banker,

Commando and Teacher. The following facts are known: S lives in Mumbai and is a Diplomat. Those living in Kolkata are the Commando and the Accountant. Of the two who live in Mumbai, exactly one is married; two of the unmarried daughters live in Kolkata and Delhi respectively. The Teacher lives in Chennai. T is the Accountant and is married. U lives in Mumbai and P lives in Delhi. Q is a Commando, and Commandos do not marry. Which of the following assertions are true?

(A) If the Banker is unmarried, then the Pilot is P.
(B) R is the Teacher, and lives in Chennai.
(C) Q is unmarried.
(D) If the Diplomat is married, then so is the Banker.

Solution

Concept - Grid deduction: Fix each daughter to a city and a job using the certain clues, then test each assertion.

Step 1 - Place cities and jobs: Mumbai has S and U; Kolkata has the Commando Q and the Accountant T; P is in Delhi; so R is in Chennai and is the Teacher. Jobs left, Pilot and Banker, go to P and U.

Step 2 - Fix marital status: T is married; Q is unmarried (Commando). The unmarried Kolkata daughter is Q and the unmarried Delhi daughter is P. Among Mumbai's S and U exactly one is married, which stays undecided.

Step 3 - Test options: (A) If the Banker is P (unmarried), the Pilot is U, not P, so A need not hold - false. (B) R is the Chennai Teacher - true. (C) Q is a Commando, so unmarried - true. (D) If S the

Diplomat is married, U is unmarried; the Banker (P or U) can still be unmarried, so D need not hold - false.

Tip: For an assertion with "if", one counterexample is enough to reject it. Correct options: B and C.

Answer: B, C Go Back to Q15

Q16.

Q. In the traditional RYB colour model used by painters, which of the following are primary colours?

(A) Green
(B) Red
(C) Yellow
(D) Blue

Solution

Concept - RYB primaries: In the artists' subtractive model, the three primaries are red, yellow and blue; all other hues are mixed from them.

Step 1 - Evaluate options: (A) Green is made by mixing blue and yellow, so it is a secondary, not a primary. (B) Red is a primary. (C) Yellow is a primary. (D) Blue is a primary.

Tip: Green, orange and violet are the RYB secondaries. Correct options: B, C and D.

Answer: B, C, D Go Back to Q16

Q17.

Q. In the additive RGB colour model used by screens, which of the following are the primary colours?

(A) Yellow
(B) Red
(C) Green
(D) Blue

Solution

Concept - RGB additive primaries: Screens emit light and add red, green and blue to build every colour; all three at full strength give white.

Step 1 - Evaluate options: (A) Yellow is formed by adding red and green light, so it is not a primary here. (B) Red is a primary. (C) Green is a primary. (D) Blue is a primary.

Tip: Do not confuse RGB (light) with RYB (paint). Correct options: B, C and D.

Answer: B, C, D Go Back to Q17

Q18.

Q. Which of the following are vector image file formats?

(A) SVG
(B) JPEG
(C) EPS
(D) PNG

Solution

Concept - Vector vs raster: Vector files store shapes as maths (points, curves) and scale without blur; raster files store a grid of pixels.

Step 1 - Evaluate options: (A) SVG is a vector format. (B) JPEG is a compressed raster format. (C) EPS is a vector format. (D) PNG is a raster format.

Tip: SVG and EPS stay crisp at any size; JPEG and PNG pixelate when enlarged. Correct options: A and C.

Answer: A, C Go Back to Q18

Q19.

Q. Which of the following are raster (bitmap) image file formats?

(A) SVG

(B) PNG

(C) GIF

(D) TIFF

Solution

Concept - Raster formats: Raster images are made of a fixed grid of pixels and lose sharpness when scaled up.

Step 1 - Evaluate options: (A) SVG is a vector format, not raster. (B) PNG is raster. (C) GIF is raster. (D) TIFF is raster.

Tip: Only SVG here scales cleanly. Correct options: B, C and D.

Answer: B, C, D Go Back to Q19

Q20.

Q. Which of the following are serif typefaces?

(A) Helvetica

(B) Times New Roman

(C) Garamond

(D) Futura

Solution

Concept - Serif vs sans-serif: Serif faces carry small finishing strokes at the ends of letters; sans-serif faces do not.

Step 1 - Evaluate options: (A) Helvetica is sans-serif. (B) Times New Roman is serif. (C) Garamond is serif. (D) Futura is sans-serif.

Tip: Times New Roman and Garamond are classic body-text serifs. Correct options: B and C.

Answer: B, C Go Back to Q20

Q21.

Q. Which of the following are sans-serif typefaces?

(A) Helvetica

(B) Arial

(C) Baskerville

(D) Futura

Solution

Concept - Sans-serif faces: These typefaces have clean letter ends with no serifs, giving a modern, plain look.

Step 1 - Evaluate options: (A) Helvetica is sans-serif. (B) Arial is sans-serif. (C) Baskerville is a serif face. (D) Futura is sans-serif.

Tip: Baskerville is the odd one out here. Correct options: A, B and D.

Answer: A, B, D Go Back to Q21

Q22.

Q. Which of the following are art movements that began in the early 20th century?

(A) Cubism
(B) Renaissance
(C) Surrealism
(D) Baroque

Solution

Concept - Timeline of movements: Placing each movement on the timeline separates the early 1900s ones from older periods.

Step 1 - Evaluate options: (A) Cubism began around 1907. (B) The Renaissance is 14th to 16th century. (C) Surrealism began in the 1920s. (D) The Baroque period is 17th century.

Tip: Cubism and Surrealism are modern-art movements; Renaissance and Baroque are far older. Correct options: A and C.

Answer: A, C Go Back to Q22

Q23.

Q. Which of the following designers or artists are associated with the Bauhaus school?

(A) Le Corbusier
(B) Walter Gropius
(C) Wassily Kandinsky
(D) Marcel Breuer

Solution

Concept - The Bauhaus circle: The Bauhaus (founded 1919) gathered teachers and students who shaped modern design.

Step 1 - Evaluate options: (A) Le Corbusier was a modernist architect but not part of the Bauhaus. (B) Walter Gropius founded the Bauhaus. (C) Wassily Kandinsky taught there. (D) Marcel Breuer studied and taught there and designed its tubular-steel furniture.

Tip: Le Corbusier belongs to a separate modernist strand. Correct options: B, C and D.

Answer: B, C, D Go Back to Q23

Q24.

Q. In typography, which of the following are relative units, meaning they depend on the current font size?

(A) Em

(B) Point

(C) En

(D) Pica

Solution

Concept - Relative vs absolute units: A relative unit scales with the type size, while an absolute unit is a fixed physical length.

Step 1 - Evaluate options: (A) An em equals the current font size, so it is relative. (B) A point is a fixed length ($\frac{1}{72}$ inch), so it is absolute. (C) An en is half an em, so it is relative. (D) A pica is a fixed 12 points, so it is absolute.

Tip: Em and en stretch with the font; point and pica do not.
Correct options: A and C.

Answer: A, C Go Back to Q24

Q25.

Q. Which of the following are primary ink colours in the CMYK subtractive model used for printing?

(A) Cyan

(B) Magenta

(C) Yellow

(D) Green

Solution

Concept - CMYK inks: Colour printing lays down cyan, magenta

and yellow inks, plus black (K) for depth.

Step 1 - Evaluate options: (A) Cyan is a CMYK primary. (B) Magenta is a CMYK primary. (C) Yellow is a CMYK primary. (D) Green is mixed from cyan and yellow, so it is not a primary ink.

Tip: The K stands for the key (black) plate, not green. Correct options: A, B and C.

Answer: A, B, C Go Back to Q25

Q26.

Q. Which of the following statements about the colour wheel are correct?

(A) Complementary colours sit directly opposite each other on the wheel.
(B) Orange is a primary colour in the RYB model.
(C) Green is a secondary colour in the RYB model.
(D) Analogous colours sit next to each other on the wheel.

Solution

Concept - Reading the colour wheel: Position on the wheel defines relationships such as complementary, analogous, primary and secondary.

Step 1 - Evaluate options: (A) Complementary pairs are opposite, so true. (B) Orange is made from red and yellow, so it is secondary, not primary - false. (C) Green is mixed from blue and yellow, so it is secondary - true. (D) Analogous colours are neighbours on the wheel - true.

Tip: Only statement B is wrong. Correct options: A, C and D.

Answer: A, C, D Go Back to Q26

Q27.

Q. Which of the following is the Japanese art of paper folding?

(A) Ikebana
(B) Origami
(C) Bonsai
(D) Kirigami

Solution

Concept - Japanese craft names: Each term names a distinct traditional art, so match the description to the right one.

Step 1 - Evaluate options: (A) Ikebana is flower arranging. (B) Origami is folding paper into forms without cutting - this matches. (C) Bonsai is growing miniature trees. (D) Kirigami involves cutting paper, not only folding.

Tip: Origami folds, kirigami cuts. Only B is correct.

Answer: B Go Back to Q27

Q28.

Q. Which of the following are considered elements of design?

(A) Line
(B) Shape
(C) Colour

(D) Texture

Solution

Concept - Elements of design: Elements are the basic visual building blocks an artist arranges, such as line, shape, form, colour, texture, value and space.

Step 1 - Evaluate options: (A) Line is an element. (B) Shape is an element. (C) Colour is an element. (D) Texture is an element.

Tip: Elements are the parts; principles (balance, contrast) are how you arrange them. All four are correct: A, B, C and D.

Answer: A, B, C, D Go Back to Q28

Q29.

Q. Which of the following are principles of design rather than elements of design?

(A) Balance
(B) Contrast
(C) Line
(D) Rhythm

Solution

Concept - Principles vs elements: Principles describe how elements are organised to create effective compositions.

Step 1 - Evaluate options: (A) Balance is a principle. (B) Contrast is a principle. (C) Line is an element, not a principle. (D) Rhythm is

a principle.

Tip: Line is a raw building block, so it is an element. Correct options: A, B and D.

Answer: A, B, D Go Back to Q29

Q30.

Q. The Sydney Opera House, with its distinctive shell-shaped roofs, was designed by which architect?

(A) Jorn Utzon
(B) Frank Gehry
(C) Zaha Hadid
(D) I. M. Pei

Solution

Concept - Landmark architects: Iconic 20th-century buildings are often linked to a single defining designer.

Step 1 - Match the building: The Sydney Opera House was designed by Danish architect Jorn Utzon, who won its 1957 design competition.

Step 2 - Rule out others: Gehry designed the Guggenheim Bilbao, Hadid the MAXXI museum, and Pei the Louvre Pyramid.

Tip: Utzon's shells are a classic case of structural form as identity.

Answer: A Go Back to Q30

Q31.

Q. Which Indian city is popularly known as the "Blue City" because of the blue-painted houses in its old quarter?

(A) Jaipur
(B) Jodhpur
(C) Udaipur
(D) Jaisalmer

Solution

Concept - City colour nicknames: Several Rajasthani cities carry colour nicknames tied to their built environment.

Step 1 - Match the colour: Jodhpur is the Blue City, named for the blue houses around the Mehrangarh Fort.

Step 2 - Rule out others: Jaipur is the Pink City, Udaipur the City of Lakes, and Jaisalmer the Golden City.

Tip: Pink Jaipur and Blue Jodhpur are the two most commonly confused.

Answer: B Go Back to Q31

Q32.

Q. The Fibonacci sequence begins 1, 1, 2, 3, 5, 8, ... What is the next number after 8?

(A) 11
(B) 12
(C) 13
(D) 15

Solution

Concept - Fibonacci rule: Each term is the sum of the two terms before it.

Step 1 - Add the last two: $5 + 8 = 13$.

Tip: The Fibonacci numbers underlie the golden ratio and appear in many natural spirals.

Answer: C Go Back to Q32

Q33.

Q. In the number series 2, 6, 12, 20, 30, ... what is the next term?

(A) 40
(B) 44
(C) 36
(D) 42

Solution

Concept - Growing differences: When a series is not arithmetic, check the differences between terms.

Step 1 - Find differences: $4, 6, 8, 10$, each rising by 2, so the next difference is 12.

Step 2 - Add: $30 + 12 = 42$.

Tip: These are $n(n+1)$ values: $1 \cdot 2, 2 \cdot 3, 3 \cdot 4, \ldots$.

Answer: D Go Back to Q33

Q34.

Q. In a certain code, FLOWER is written as GMPXFS. Using the same rule, how is GARDEN written?

(A) HBSEFO
(B) HBSDEO
(C) FZQCDM
(D) HBTEFO

Solution

Concept - Letter-shift cipher: Compare each coded letter with the original to find the shift.

Step 1 - Find the rule: F to G, L to M, O to P, and so on - each letter moves forward by 1.

Step 2 - Apply to GARDEN: G to H, A to B, R to S, D to E, E to F, N to O gives HBSEFO.

Tip: A quick check on one or two letters confirms the shift before coding the whole word.

Answer: A Go Back to Q34

Q35.

Q. On an analogue clock showing exactly 3:00, what is the angle between the hour hand and the minute hand?

(A) 60 degrees
(B) 90 degrees
(C) 120 degrees

(D) 45 degrees

Solution

Concept - Clock angles: Each hour mark is $\frac{360}{12} = 30$ degrees apart.

Step 1 - Count the gap: At 3:00 the minute hand is at 12 and the hour hand at 3, a gap of 3 hour marks.

Step 2 - Multiply: $3 \times 30 = 90$ degrees.

Tip: At 3:00 and 9:00 the hands make a clean right angle.

Answer: B Go Back to Q35

Q36.

Q. Mixing blue and yellow paint gives which colour?

(A) Purple
(B) Orange
(C) Green
(D) Brown

Solution

Concept - Mixing RYB secondaries: Combining two primaries yields a secondary colour.

Step 1 - Mix the pair: Blue and yellow paint mix to green.

Tip: Red plus yellow gives orange; red plus blue gives purple.

Answer: C Go Back to Q36

Q37.

Q. The Taj Mahal at Agra is built primarily from which material?

(A) Red sandstone
(B) Granite
(C) Limestone
(D) White marble

Solution

Concept - Monument materials: Mughal monuments used specific stones that define their look.

Step 1 - Identify the stone: The Taj Mahal's main structure is clad in white Makrana marble, inlaid with semi-precious stones.

Step 2 - Contrast: Red sandstone is the main material of the nearby Agra Fort and the surrounding gateway.

Tip: White marble is what gives the Taj its glow that shifts with the light.

Answer: D Go Back to Q37

Q38.

Q. Who painted the Mona Lisa?

(A) Leonardo da Vinci
(B) Michelangelo
(C) Raphael
(D) Donatello

Solution

Concept - Renaissance masters: Famous works are tied to specific Italian Renaissance artists.

Step 1 - Match the work: The Mona Lisa was painted by Leonardo da Vinci in the early 1500s.

Step 2 - Rule out others: Michelangelo sculpted David, Raphael painted The School of Athens, and Donatello was a sculptor.

Tip: The Mona Lisa hangs in the Louvre in Paris.

Answer: A Go Back to Q38

Q39.

Q. Which of the following is considered a warm colour?

(A) Blue
(B) Red
(C) Green
(D) Violet

Solution

Concept - Warm and cool colours: Warm colours (reds, oranges, yellows) suggest heat; cool colours (blues, greens, violets) suggest calm.

Step 1 - Sort the options: Red is warm; blue, green and violet sit on the cool side.

Tip: Warm colours tend to advance in a composition, cool colours recede.

Answer: B Go Back to Q39

Q40.

Q. In printing, what does DPI stand for?

(A) Design Per Image

(B) Density Per Inch

(C) Dots Per Inch

(D) Dots Per Image

Solution

Concept - Print resolution: DPI measures how finely ink dots are packed on paper.

Step 1 - Expand the term: DPI means Dots Per Inch, the number of ink dots printed along one inch.

Tip: Higher DPI (300 and above) gives sharper prints; screens use the related term PPI, pixels per inch.

Answer: C Go Back to Q40

Q41.

Q. Identify the odd one out from the following.

(A) Circle

(B) Square

(C) Triangle

(D) Cube

Solution

Concept - Dimensions of shapes: Group the items by a shared property to spot the outlier.

Step 1 - Compare: Circle, square and triangle are flat 2D shapes; a cube is a 3D solid.

Tip: The odd one out is the only form with volume - the cube.

Answer: D Go Back to Q41

Q42.

Q. A wall clock shows 4:00. If you view it in a plane mirror, what time does the reflected clock appear to show?

(A) 8:00
(B) 10:00
(C) 6:00
(D) 2:00

Solution

Concept - Mirror image of a clock: A mirror reverses the clock left to right, so the shown time is $12{:}00$ minus the actual time.

Step 1 - Subtract from 12: $12{:}00 - 4{:}00 = 8{:}00$.

Tip: For any exact hour, mirror time and real time add up to 12 hours.

Answer: A Go Back to Q42

Q43.

Q. The painter Salvador Dali, known for melting clocks and dreamlike scenes, is associated with which movement?

(A) Cubism
(B) Surrealism
(C) Impressionism
(D) Pop Art

Solution

Concept - Artist and movement: Signature styles link an artist to a movement.

Step 1 - Match Dali: His dreamlike, subconscious imagery places him in Surrealism.

Step 2 - Rule out others: Cubism is Picasso and Braque, Impressionism is Monet, and Pop Art is Warhol.

Tip: "The Persistence of Memory" with its melting clocks is Dali's best-known Surrealist work.

Answer: B Go Back to Q43

Q44.

Q. How many faces does a triangular prism have?

(A) 4
(B) 6
(C) 5
(D) 9

Solution

Concept - Faces of a prism: A prism has two identical end faces plus one rectangular face for each side of the cross-section.

Step 1 - Count: Two triangular ends plus three rectangular sides give $2 + 3 = 5$ faces.

Tip: It also has 9 edges and 6 vertices, satisfying $V - E + F = 2$.

Answer: C Go Back to Q44

Q45.

Q. A typeface that has small finishing strokes at the ends of its letters belongs to which category?

(A) Sans-serif
(B) Script
(C) Display
(D) Serif

Solution

Concept - Type classification: The presence or absence of end strokes defines the two main type families.

Step 1 - Match the clue: The small end strokes are called serifs, so the face is a serif typeface.

Step 2 - Rule out others: Sans-serif faces lack these strokes; script mimics handwriting; display is for large headline use.

Tip: "Sans" means without, so sans-serif is the family with no serifs.

Answer: D Go Back to Q45

Q46.

Q. In the letter series Z, X, V, T, ... which letter comes next?

(A) R

(B) S

(C) Q

(D) P

Solution

Concept - Alphabet position: Convert letters to positions to see the step pattern.

Step 1 - List positions: Z(26), X(24), V(22), T(20) - each drops by 2.

Step 2 - Next term: $20 - 2 = 18$, which is R.

Tip: Stepping back by 2 skips one letter each time.

Answer: A Go Back to Q46

Q47.

Q. In the design process, the main purpose of a wireframe is to:

(A) apply the final colour palette

(B) show the layout and structure of a page or screen

(C) select the typography

(D) render a realistic 3D view

Solution

Concept - Wireframes: A wireframe is a low-detail skeleton used early in design.

Step 1 - Recall its role: It shows where content and elements go - the layout and structure - before visual styling.

Step 2 - Rule out others: Colour, typography and realistic rendering are added later, in higher-fidelity mockups.

Tip: Wireframes are deliberately plain so feedback stays on structure, not looks.

Answer: B Go Back to Q47

Q48.

Q. You are facing North. You turn 90 degrees clockwise, then turn a further 180 degrees. Which direction are you now facing?

(A) East
(B) South
(C) West
(D) North

Solution

Concept - Turning directions: Track the heading after each turn on the compass.

Step 1 - First turn: From North, 90 degrees clockwise faces East.

Step 2 - Second turn: A further 180 degrees from East faces West.

Tip: 90 plus 180 is 270 degrees clockwise, which from North lands on West.

Answer: C Go Back to Q48

Q49.

Q. Which traditional Indian folk painting style originates from the Mithila region of Bihar?

(A) Warli
(B) Pattachitra
(C) Gond
(D) Madhubani

Solution

Concept - Folk art regions: Each Indian folk style is rooted in a particular region and community.

Step 1 - Match Bihar: Madhubani, also called Mithila painting, comes from the Mithila region of Bihar.

Step 2 - Rule out others: Warli is from Maharashtra, Pattachitra from Odisha and Bengal, and Gond from Madhya Pradesh.

Tip: Madhubani uses bold outlines, natural dyes and dense fill patterns.

Answer: D Go Back to Q49

Q50.

Q. How many edges does a cube have?

(A) 12

(B) 8

(C) 6

(D) 16

Solution

Concept - Parts of a cube: A cube has faces, edges and vertices in fixed numbers.

Step 1 - Count edges: A cube has 6 faces, 8 vertices and 12 edges.

Tip: Check with Euler: $V - E + F = 8 - 12 + 6 = 2$.

Answer: A Go Back to Q50

Q51.

Q. On the traditional RYB colour wheel, the complementary colour of red is:

(A) Blue

(B) Green

(C) Orange

(D) Yellow

Solution

Concept - Complementary pairs: Complementary colours sit directly opposite on the wheel.

Step 1 - Find red's opposite: Opposite red is green, the mix of the

other two primaries (blue and yellow).

Tip: Placing complementaries side by side makes each look more vivid.

Answer: B Go Back to Q51

Q52.

Q. The golden ratio, often used in design for pleasing proportions, is approximately equal to:

(A) 1.414
(B) 1.732
(C) 1.618
(D) 2.718

Solution

Concept - The golden ratio: It is the special constant ϕ where a line split so the whole is to the larger part as the larger is to the smaller.

Step 1 - Recall the value: $\phi \approx 1.618$.

Step 2 - Rule out others: $1.414 \approx \sqrt{2}$, $1.732 \approx \sqrt{3}$, and $2.718 \approx e$.

Tip: $\phi = \frac{1+\sqrt{5}}{2}$.

Answer: C Go Back to Q52

Q53.

Q. Which of the following is an element of design rather than a principle of design?

(A) Balance
(B) Contrast
(C) Emphasis
(D) Line

Solution

Concept - Elements vs principles: Elements are the raw visual parts; principles govern how those parts are arranged.

Step 1 - Sort the options: Balance, contrast and emphasis are principles; line is a basic element.

Tip: If it is a thing you draw (line, shape, colour) it is an element; if it is how you arrange things, it is a principle.

Answer: D Go Back to Q53

Q54.

Q. How many primary colours are there in the traditional RYB colour model?

(A) 3
(B) 4
(C) 5
(D) 2

Solution

Concept - RYB primaries: The painters' model is built on three base colours.

Step 1 - Name them: Red, yellow and blue - three primaries.

Tip: All other RYB colours are mixed from these three.

Answer: A Go Back to Q54

Q55.

Q. In typography, adjusting the space between two specific individual letters is called:

(A) Leading
(B) Kerning
(C) Tracking
(D) Baseline shift

Solution

Concept - Spacing terms: Different terms describe spacing between letters, lines and groups.

Step 1 - Match the definition: Kerning adjusts the gap between a specific pair of letters.

Step 2 - Rule out others: Leading is line spacing, tracking is uniform spacing across a run of text, and baseline shift moves a character up or down.

Tip: Think "kerning = pair" and "tracking = whole word or line".

Answer: B Go Back to Q55

Q56.

Q. In typography, the vertical space between consecutive lines of text is called:

(A) Kerning
(B) Tracking
(C) Leading
(D) Weight

Solution

Concept - Line spacing: The gap from one line's baseline to the next has its own name.

Step 1 - Match the definition: Leading is the vertical spacing between lines of text.

Step 2 - Rule out others: Kerning and tracking are horizontal letter spacing, and weight is the thickness of the strokes.

Tip: The name comes from strips of lead once placed between lines in metal type.

Answer: C Go Back to Q56

Q57.

Q. Which shape has all four sides equal and all four interior angles equal to 90 degrees?

(A) Rectangle
(B) Rhombus
(C) Trapezium
(D) Square

Solution

Concept - Quadrilateral properties: Each quadrilateral is defined by its sides and angles.

Step 1 - Apply both conditions: Equal sides and all right angles together describe a square.

Step 2 - Rule out others: A rectangle has right angles but unequal adjacent sides; a rhombus has equal sides but not all right angles; a trapezium has just one pair of parallel sides.

Tip: A square is both a special rectangle and a special rhombus.

Answer: D Go Back to Q57

Q58.

Q (Drawing). It is a bright winter afternoon on a city rooftop during the Makar Sankranti kite festival. Kites of many shapes dot the sky, string spools lie about, and neighbours on nearby terraces shout and point upward. The focal subject is a teenage boy standing near the parapet, leaning back with both arms raised, gripping a large wooden charkha (string spool) as he tugs a kite high overhead, while a younger child beside him holds the loose string and looks up. Imagine this scene and draw it with the boy and his charkha as the clear centre of interest. Show the rooftop floor and parapet, the child helper, snacks or a water bottle on the ground, several kites at different distances in the sky, and the neighbouring terraces below.

Note: Make pencil sketches only. Do not use colour.

Evaluation criteria: observation; composition; perspective and proportion; quality of lines; attention to detail.

Model Approach and Evaluation

Read this as an action pose set against open sky, so body language and depth matter most. Plan the boy's lean before anything else.

Step 1 - Set perspective and the rooftop: Pick a slightly low eye level so the boy reads as tall against the sky. Let the parapet and the neighbouring terraces recede to a vanishing point so the roofscape has depth. Keep a firm floor line under the two figures.

Step 2 - Compose in layers: Use three depths - the boy and charkha up front, the child helper in the middle, the terraces and distant kites behind. Scatter the sky kites large-near to small-far so the sky itself carries perspective, not just the ground.

Step 3 - Make the focal subject win: Place the boy on a strong third and give the charkha and his tensed arms the sharpest, darkest lines. Let the taut kite string shoot from his hands up into open sky, guiding the eye upward and outward.

Step 4 - Fix proportion, then refine line quality: Check the backward lean and that the raised arms, the charkha and the child all sit at believable sizes. Then vary weight - bold lines on the two figures and the spool, feather-light lines for far kites and distant rooftops.

Tip: Capture the balance of the pose. A body leaning back against a pulling string, weight on the back foot, sells the whole action more than any amount of surface detail. **Go Back to Q58**

Q59.

Q (Design Aptitude). Office workers and students carry a lunch of three or four separate items - rice, a curry, a dry sabzi, a sweet - but ordinary tiffins mix flavours, leak curry into the bag, and are awkward to open and eat from at a desk. Design a lunch carrier that keeps several dishes separate and leak-free while being carried, and then converts into a stable set of plates or bowls to eat from at a desk without needing extra dishes. Show your design in two states: (1) closed, stacked and locked for carrying, and (2) opened out and arranged as separate serving containers ready to eat from.

Note: Make pencil sketches only. Do not use colour. Explain your design only through visuals and short labels; do not write separate explanations.

Model Approach and Evaluation

Approach this as a transform problem - one object carried, then rearranged to serve. Sketch how the parts stack and how they separate.

Step 1 - Nail the requirements: Fix the constraints - each dish sealed and leak-proof, a compact stack for the bag, an easy unlock, and containers that sit stable on a desk to eat from. Every drawn feature should serve one of these.

Step 2 - Show the two required states: Draw state one as the tiers stacked and clamped into one tidy tower with a carry handle. Draw state two as the same tiers unstacked and set side by side as bowls, with lids doubling as flat plates. Keep the parts clearly

identical across both drawings.

Step 3 - Label features, do not write essays: Use short leader labels - "silicone seal ring", "side clamp", "nesting tier", "lid becomes plate", "carry handle". Two or three words each.

Step 4 - Prove it works: Add a small exploded view showing the tiers separating in order, and a section through one seal showing why curry cannot escape when stacked. This proves both the leak-free carry and the clean conversion to serving.

Tip: The clever move is making the lids earn a second job as plates. Show that dual use plainly so the design reads as smart, not just as another stacked tiffin. **Go Back to Q59**

Answer Key (Part A)

Section 1 - NAT (Numerical Answer Type)

Q1	Q2	Q3	Q4	Q5	Q6	Q7
48	20	108	9	8	30	18

Q8	Q9	Q10	Q11	Q12	Q13	Q14
24	15	80	154	16	25	16

Section 2 - MSQ (Multiple Select - one or more correct)

Q15	Q16	Q17	Q18	Q19
B, C	B, C, D	B, C, D	A, C	B, C, D

Q20	Q21	Q22	Q23	Q24
B, C	A, B, D	A, C	B, C, D	A, C

Q25	Q26	Q27	Q28	Q29
A, B, C	A, C, D	B	A, B, C, D	A, B, D

Section 3 - MCQ (single correct)

Q30	Q31	Q32	Q33	Q34	Q35	Q36
A	B	C	D	A	B	C

Q37	Q38	Q39	Q40	Q41	Q42	Q43
D	A	B	C	D	A	B

Q44	Q45	Q46	Q47	Q48	Q49	Q50
C	D	A	B	C	D	A

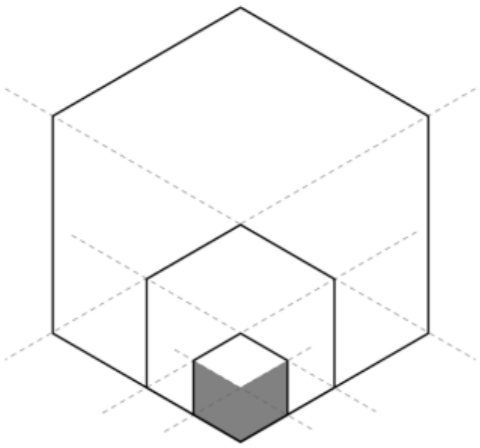
Q51	Q52	Q53	Q54	Q55	Q56	Q57
B	C	D	A	B	C	D

Part B (Q58-Q59) is subjective; see the Model Approach for each under Detailed Solutions.

Appendix: Visual Reasoning
Practice from Past UCEED Papers

These are **real questions from past UCEED papers**, included so you can practise on the actual figure style the exam uses. They are visual-reasoning questions, so work each one out yourself - no answer key is given here (this mirrors how such questions feel in the real test). A short **How to approach** note follows each figure.

P1. **(Past UCEED)** In the figure given below, the area of the largest regular hexagon is 720 units. What is the area of the shaded portion?

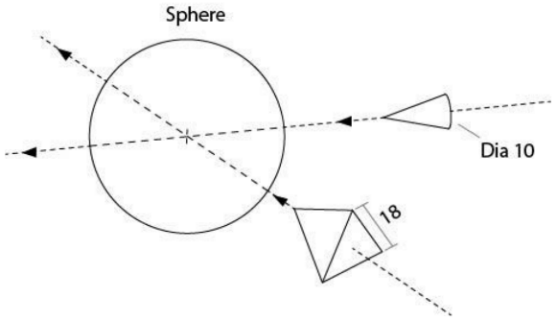


How to approach

Note the overall dimensions and find the total area first. Check the figure for symmetry: if the shaded and unshaded regions map onto each other under a rotation or reflection, the shaded area is a simple fraction of the whole. Otherwise split the shaded shape into triangles and rectangles, read each base and height off the figure, compute each area, and add them.

P2. **(Past UCEED)** A tetrahedron of side 18 units and a cone having base diameter of 10 units are cutting through a sphere as shown. Count the

total number of surfaces in the resultant sphere.



How to approach

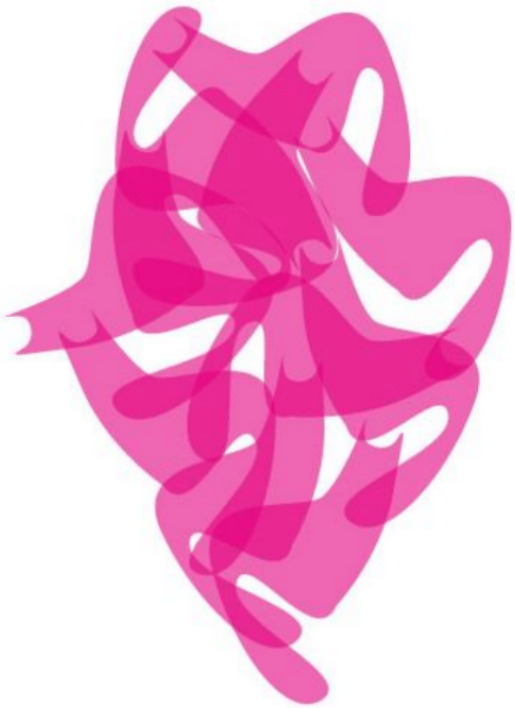
Track how the operation changes faces. Start from the number of faces of the original solid, then add the new faces created by the cut/drill/join and subtract any original faces that are removed or split. Visualise the top, front and side views to be sure no hidden face is missed.

P3. (Past UCEED) Identify the total number of differences in the images shown below.

How to approach

Study the figure carefully and note what is fixed and what changes. Break the problem into smaller parts, use any symmetry in the figure, and count or compute each part systematically before combining. A quick rough redraw usually makes the answer clear.

P4. (Past UCEED) Count the number of cats in the given image.



How to approach

Study the figure carefully and note what is fixed and what changes. Break the problem into smaller parts, use any symmetry in the figure, and count or compute each part systematically before combining. A quick rough redraw usually makes the answer clear.