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 family of four - grandfather, father, son and daughter - are caught in heavy rain and are stranded at a bus stop close to their home. They have only one umbrella, which can take a maximum of two people at a time without either getting wet. The four members take different times to walk from the bus stop to home: the grandfather is slowest, taking 10 minutes, followed by the father who takes 5 minutes, the son who

takes 2 minutes, and the daughter who takes only 1 minute. When two walk together, they move at the slower person's speed, and the umbrella must be carried back for the next pair. What is the minimum total time (in minutes) for all four members to reach home without any of them getting wet?

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

View Solution

Q2. A wooden cube of side five centimetres is painted on all six faces and then cut into small cubes of side one centimetre each. How many of the small cubes have exactly two painted faces?

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

View Solution

Q3. In the ISO A-series of paper sizes, A0 has an area of exactly 1 square metre, and each next size (A1, A2, A3, and so on) has half the area of the one before it. What is the area of an A4 sheet in square centimetres?

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

View Solution

Q4. A rectangular floor measuring twelve metres by eight metres is to be fully covered with square tiles of side forty centimetres, with no cutting and no gaps. How many tiles are needed?

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

View Solution

Q5. A ribbon two metres long is cut into equal pieces, each twenty-five

centimetres long. How many complete pieces are obtained?

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

View Solution

Q6. A logo is enlarged so that every linear dimension becomes three times the original. If the original logo covers an area of twenty square centimetres, what is the area of the enlarged logo in square centimetres?

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

View Solution

Q7. What is the measure, in degrees, of each interior angle of a regular hexagon?

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

View Solution

Q8. A colour palette contains five distinct colours. How many unique pairs of colours can be selected from this palette?

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

View Solution

Q9. A poster measures fifty centimetres by seventy centimetres. What is its perimeter in centimetres?

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

View Solution

Q10. Consider a three-by-three grid made of nine unit squares. Counting squares of every possible size, how many squares are there in total?

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

View Solution

Q11. A wheel has a diameter of seventy centimetres. Taking the value of pi as twenty-two over seven, what distance in centimetres does the wheel cover in one full rotation?

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

View Solution

Q12. A book has its pages numbered from one to one hundred. How many times does the digit nine appear across all these page numbers?

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

View Solution

Q13. An architect builds a scale model at a ratio of one to twenty. If the real object is five metres tall, what is the height of the model in centimetres?

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

View Solution

Q14. A layout is proportioned using the golden ratio, taken here as one point six. If the shorter segment is ten units long, what is the length of the longer segment in units?

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

View Solution

Section 2: Multiple Select Questions (MSQ)

Q15. Which of the following statements is/are TRUE about the Ellora and Elephanta caves?

(One or more options may be correct.)

(A) Ellora caves contain Hindu Shaivaite sculptures.

(B) Elephanta caves contain only Hindu Vaishnavaite sculptures.

(C) Ellora caves contain only Hindu Shaivaite sculptures.

(D) Elephanta caves contain Hindu Shaivaite sculptures.

View Solution

Q16. In the additive (RGB) colour model used by screens, which of the following is/are primary colours?

(One or more options may be correct.)

(A) Red

(B) Yellow

(C) Green

(D) Blue

View Solution

Q17. Which of the following statements about image file formats is/are TRUE?

(One or more options may be correct.)

(A) JPEG is a vector format that stays sharp at any size.

(B) SVG stores an image as scalable paths and shapes.

(C) PNG supports transparency through an alpha channel.

(D) Enlarging a raster (bitmap) image far beyond its size can make it look pixelated.

View Solution

Q18. Which of the following statements about the Bauhaus school is/are TRUE?

(One or more options may be correct.)

(A) It was founded by Walter Gropius.

(B) It began in Weimar and later moved to Dessau.

(C) It was founded in Paris in the year 1919.

(D) It was closed in 1933 under pressure from the Nazi regime.

View Solution

Q19. Which of the following is/are Indian resist-dyeing or tie-and-dye textile traditions?

(One or more options may be correct.)

(A) Bandhani of Gujarat and Rajasthan

(B) Warli of Maharashtra

(C) Ikat (Bandha) of Odisha and Telangana

(D) Madhubani of Bihar

View Solution

Q20. Which of the following statements about the colour wheel is/are TRUE?

(One or more options may be correct.)

(A) Red and green sit right next to each other on the colour wheel.

(B) Orange is a primary colour in the traditional pigment colour wheel.

(C) Complementary colours sit opposite each other on the colour wheel.

(D) Mixing the three subtractive primaries in equal full amounts ideally gives pure white.

View Solution

Q21. Which of the following statements about proportion and composition is/are TRUE?

(One or more options may be correct.)

(A) The golden ratio is approximately 2.618.

(B) The Fibonacci sequence runs 1, 1, 2, 3, 5, 8, 13, and so on.

(C) The rule of thirds divides a frame into nine equal parts using two horizontal and two vertical lines.

(D) The golden ratio is denoted by the Greek letter pi.

View Solution

Q22. Which of the following is/are Indian heritage monuments or sites?

(One or more options may be correct.)

(A) The Taj Mahal at Agra

(B) The Sun Temple at Konark

(C) The Meenakshi Temple at Madurai

(D) The Ajanta caves, known for Buddhist rock-cut art and paintings

View Solution

Q23. Which of the following statements about famous designers is/are TRUE?

(One or more options may be correct.)

(A) Charles and Ray Eames were primarily fashion photographers.

(B) The Eames Lounge Chair is a piece of runway fashion.

(C) Dieter Rams is known for his ten principles of good design.

(D) The Wassily chair was designed by Le Corbusier.

View Solution

Q24. Which of the following statements about digital images is/are TRUE?

(One or more options may be correct.)

(A) DPI stands for dots per inch.

(B) A pixel is the smallest unit of a vector graphic.

(C) Higher resolution generally means more pixels packed into the same area.

(D) RGB is the standard colour model used for printing.

View Solution

Q25. Which of the following statements about Indian painters and art schools is/are TRUE?

(One or more options may be correct.)

(A) Raja Ravi Varma is best known for his cubist abstractions.

(B) The Bengal School of Art was led by Abanindranath Tagore.

(C) Nandalal Bose was associated with the Bengal School and Santiniketan.

(D) Madhubani painting originates in Kerala.

View Solution

Q26. Which of the following statements about paper sizes and print is/are TRUE?

(One or more options may be correct.)

(A) A4 paper is physically larger than A3 paper.

(B) A4 paper measures 210 millimetres by 297 millimetres.

(C) Folding an A4 sheet in half across its longer side gives A5 size.

(D) In the A-series, each smaller size has half the area of the previous size.

View Solution

Q27. Which of the following statements about logos and branding is/are TRUE?

(One or more options may be correct.)

(A) A wordmark logo is always an abstract symbol with no text at all.

(B) A monogram or lettermark logo is built from initials, as in IBM or HP.

(C) The FedEx logo is famous for a hidden number between two letters.

(D) A mascot logo uses only geometric shapes and never a character.

View Solution

Q28. Which of the following statements about sustainable and environmental design is/are TRUE?

(One or more options may be correct.)

(A) Upcycling turns waste materials into products of higher value.

(B) Biodegradable materials break down naturally over time.

(C) The three Rs stand for Reduce, Reuse and Recycle.

(D) Planned obsolescence is a strategy to make products last as long as possible.

View Solution

Q29. Which of the following statements about perspective and technical drawing is/are TRUE?

(One or more options may be correct.)

(A) One-point perspective uses three vanishing points.

(B) Orthographic projection shows an object without perspective distortion.

(C) An isometric drawing keeps its three main axes at 120 degrees to one another.

(D) A vanishing point is where receding parallel lines appear to meet.

View Solution

Section 3: Multiple Choice Questions (MCQ)

Q30. Read the statements and decide which conclusions definitely follow. Statements: All Surrealists are melted clocks. Some melted clocks are Dalis. All Dalis are macabre works. Conclusions: (i) Some macabre works are Dalis. (ii) Some macabre works are melted clocks. (iii) Some Dalis are Surrealist.

(A) None follows

(B) Only (i) follows

(C) Only (i) and (ii) follow

(D) Only (iii) follows

View Solution

Q31. The steps for tying a shoelace bow (numbered 1 to 8) are jumbled. Choose the correct order. Steps: 1. Pass one end under the other. 2.

Pull tight. 3. Hold one end in each hand. 4. Cross them, making an X. 5. Bend it into a flat loop and pull through, making a bow. 6. Fold one shoelace in half (make the first loop). 7. Grasp it in the middle after pulling it around the folded end. 8. Wrap the other end around the folded end.

(A) $6, 2, 3, 5, 3, 5, 8$

(B) $3, 4, 1, 2, 6, 8, 7, 5$

(C) $6, 4, 3, 1, 8, 5, 7, 2$

(D) $5, 6, 4, 2, 7, 8, 3, 1$

View Solution

Q32. A solid cube of side four centimetres is painted on all its faces and then cut into unit cubes of side one centimetre. How many of the unit cubes have exactly two painted faces?

(A) 12

(B) 24

(C) 8

(D) 36

View Solution

Q33. Which Indian city, known for the indigo-washed walls of its old town, is popularly called the Blue City?

(A) Jodhpur

(B) Jaipur

(C) Udaipur

(D) Jaisalmer

View Solution

Q34. Find the next term in the letter series: A, C, F, J, O, ?

(A) S

(B) T

(C) U

(D) V

View Solution

Q35. In a certain code, FLOWER is written as GMPXFS. Using the same rule, how is GARDEN written?

(A) GBSEFO

(B) HBSFEO

(C) HBTEFO

(D) HBSEFO

View Solution

Q36. A person walks 5 km north, then turns right and walks 3 km, then turns right and walks 5 km, and finally turns left and walks 2 km. How far is the person from the starting point?

(A) 5 km

(B) 7 km

(C) 3 km

(D) 8 km

View Solution

Q37. Pointing to a photograph, a man says, "She is the daughter of my grandfather's only son." How is the girl in the photograph related to the man?

(A) Mother

(B) Sister

(C) Daughter

(D) Aunt

View Solution

Q38. Choose the odd one out from the following shapes.

(A) Circle

(B) Square

(C) Triangle

(D) Cube

View Solution

Q39. A rectangular poster measuring 60 cm by 90 cm is scaled down proportionally so that its width becomes 20 cm. What is the new height of the poster?

(A) 20 cm

(B) 45 cm

(C) 30 cm

(D) 25 cm

View Solution

Q40. In typography, 12 points make one pica. How many points are there in 3 picas?

(A) 36

(B) 30

(C) 24

(D) 12

View Solution

Q41. Find the next term in the number series: 2, 6, 12, 20, 30, ?

(A) 40

(B) 42

(C) 44

(D) 36

View Solution

Q42. In the six-digit hexadecimal colour system used on the web, which code represents pure blue?

(A) #FF0000

(B) #00FF00

(C) #FFFF00

(D) #0000FF

View Solution

Q43. Which colour model is standard for full-colour printing on paper?

(A) RGB

(B) HSB

(C) CMYK

(D) RYB

View Solution

Q44. How many spokes does the Ashoka Chakra in the centre of the Indian national flag have?

(A) 24

(B) 12

(C) 16

(D) 8

View Solution

Q45. The painter Piet Mondrian, known for grids of black lines and blocks of primary colour, is most closely associated with which movement?

(A) Cubism

(B) De Stijl

(C) Surrealism

(D) Bauhaus

View Solution

Q46. In the ISO A-series of paper sizes, which size has an area of exactly one square metre?

(A) A4

(B) A2

(C) A1

(D) A0

View Solution

Q47. What is the angle between the hour hand and the minute hand of a clock at exactly 3 o'clock?

(A) 30 degrees

(B) 60 degrees

(C) 90 degrees

(D) 120 degrees

View Solution

Q48. When reflected in a vertical mirror placed beside it, which of the following capital letters looks exactly the same as the original?

(A) A

(B) F

(C) G

(D) J

View Solution

Q49. If the letters of the word DESIGN are arranged in alphabetical order, which letter comes third?

(A) E

(B) G

(C) I

(D) N

View Solution

Q50. What is the area of a circle of radius 7 cm? Take the value of pi as twenty-two over seven.

(A) 44 sq cm

(B) 88 sq cm

(C) 121 sq cm

(D) 154 sq cm

View Solution

Q51. The Lotus Temple in New Delhi, famous for its flower-shaped white marble petals, is a house of worship of which faith?

(A) Hindu

(B) Sikh

(C) Bahá'í

(D) Jain

View Solution

Q52. On a map drawn to a scale of 1:50,000, two places are 3 cm apart on the map. What is the actual distance between them on the ground?

(A) 1.5 km

(B) 15 km

(C) 0.15 km

(D) 150 km

View Solution

Q53. Which of the following is a sans-serif typeface?

(A) Times New Roman

(B) Helvetica

(C) Garamond

(D) Georgia

View Solution

Q54. On a standard six-sided die, the numbers on opposite faces always add up to seven. If the top face shows 2, what number is on the bottom face?

(A) 4

(B) 6

(C) 3

(D) 5

View Solution

Q55. The town of Channapatna in Karnataka is known for a GI-tagged traditional craft. What is it famous for making?

(A) Pashmina shawls

(B) Blue pottery

(C) Lacquered wooden toys

(D) Bidriware metalwork

View Solution

Q56. In pigment or paint mixing, blue and yellow are combined. What colour is produced?

(A) Green

(B) Orange

(C) Purple

(D) Brown

View Solution

Q57. Counting the week as starting on Monday as the first day, which day is the fifth day of the week?

(A) Wednesday

(B) Thursday

(C) Saturday

(D) Friday

View Solution

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

Q58. [Drawing - 50 Marks]

It is just before sunrise at a busy roadside tea stall on a city street corner. Steam rises from a large kettle on a kerosene stove, glass tumblers sit stacked in a wire rack, and a few early customers wait with newspapers folded under their arms. The focal subject is the chaiwala, standing behind his wooden counter, pouring tea in a long stream from a tumbler held high down into a second tumbler held low, so the tea foams. Imagine this scene and draw it with the chaiwala and his pour as the clear centre of interest. Show the stall counter, the stove and kettle, the stacked glasses, at least two waiting customers, and the street behind fading into the early light.

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]

School children who walk or cycle to school get caught in sudden rain, and their cloth or nylon backpacks soak through, spoiling books and notebooks inside. Umbrellas do not cover a bag worn on the back. Design a rain cover that lives permanently with the school backpack, is quick for a child to deploy alone, and packs away small when not needed. Show your design in two states: (1) packed and stored on or in the bag when the weather is dry, and (2) fully deployed and protecting the loaded backpack in the rain.

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 family of four - grandfather, father, son and daughter - are caught in heavy rain and are stranded at a bus stop close to their home. They have only one umbrella, which can take a maximum of two people at a time without either getting wet. The four members take different times to walk from the bus stop to home: the grandfather is slowest, taking 10 minutes, followed by the father who takes 5 minutes, the son who takes 2 minutes, and the daughter who takes only 1 minute. When two walk together, they move at the slower person's speed, and the umbrella must be carried back for the next pair. What is the minimum total time (in minutes) for all four members to reach home without any of them getting wet?

Solution

Concept - Bridge and torch crossing: With one umbrella and pairs limited to two, the trick is to move the two slowest people together so their times overlap, using the fastest person as the shuttle.

Step 1 - Send the two fastest across first: Daughter (1) and son (2) cross together, taking 2 minutes. Daughter returns with the umbrella, taking 1 minute. Running total $= 3$ minutes.

Step 2 - Send the two slowest together: Grandfather (10) and father (5) cross together, taking 10 minutes. The son (already across) returns, taking 2 minutes. Running total $= 3 + 10 + 2 = 15$ minutes.

Step 3 - Reunite the two fast walkers: Daughter (1) and son (2) cross together, taking 2 minutes. Total $= 15 + 2 = 17$ minutes.

Tip: Pairing the two slowest so they walk at once beats shuttling them one by one; compare 17 against the naive 1+10+... routes to confirm.

Answer: 17 Go Back to Q1

Q2.

Q. A wooden cube of side five centimetres is painted on all six faces and then cut into small cubes of side one centimetre each. How many of the small cubes have exactly two painted faces?

Solution

Concept - Painted cube edges: Small cubes with exactly two painted faces lie along the edges of the big cube, but not at the corners.

Step 1 - Count per edge: On each edge, remove the two corner cubes, leaving $5 - 2 = 3$ two-face cubes.

Step 2 - Multiply by edges: A cube has 12 edges, so $12 \times 3 = 36$.

Tip: For a cube of side n, two-face cubes $= 12(n - 2)$.

Answer: 36 Go Back to Q2

Q3.

Q. In the ISO A-series of paper sizes, A0 has an area of exactly 1 square metre, and each next size (A1, A2,

A3, and so on) has half the area of the one before it.
What is the area of an A4 sheet in square centimetres?

Solution

Concept - A-series paper areas (repeated halving): Each step down the A-series halves the area, so A_n has area $\frac{1}{2^n}$ square metres.

Step 1 - Count the halvings to A4: Going from A0 to A4 is 4 halvings, so the area is $\frac{1}{2^4} = \frac{1}{16}$ square metres.

Step 2 - Convert to square centimetres: Since 1 square metre $= 100 \times 100 = 10000$ square cm, the A4 area is $\frac{10000}{16} = 625$ square cm.

Tip: This is why A4 feels standard - it is exactly one-sixteenth of a square-metre sheet, about 21 cm by 29.7 cm.

Answer: 625 Go Back to Q3

Q4.

Q. A rectangular floor measuring twelve metres by eight metres is to be fully covered with square tiles of side forty centimetres, with no cutting and no gaps. How many tiles are needed?

Solution

Concept - Tiling by counting rows and columns: Convert everything to the same unit, then count tiles along each side.

Step 1 - Convert to centimetres: Floor $= 1200$ cm by 800 cm; tile side $= 40$ cm.

Step 2 - Tiles per side and multiply: Along the length $1200/40 =$

30; along the width $800/40 = 20$. Total $= 30 \times 20 = 600$.

Tip: Counting rows times columns is safer than dividing total areas when tiles must fit whole.

Answer: 600 Go Back to Q4

Q5.

Q. A ribbon two metres long is cut into equal pieces, each twenty-five centimetres long. How many complete pieces are obtained?

Solution

Concept - Division with matching units: Number of pieces equals total length divided by piece length.

Step 1 - Same unit: 2 m $= 200$ cm.

Step 2 - Divide: $200/25 = 8$.

Tip: Always convert to a single unit before dividing lengths.

Answer: 8 Go Back to Q5

Q6.

Q. A logo is enlarged so that every linear dimension becomes three times the original. If the original logo covers an area of twenty square centimetres, what is the area of the enlarged logo in square centimetres?

Solution

Concept - Area scales with the square of the linear factor: If lengths scale by k, area scales by k^2.

Step 1 - Square the factor: $k = 3 \Rightarrow k^2 = 9$.

Step 2 - Multiply: $20 \times 9 = 180$.

Tip: Doubling a design's width quadruples its ink area, not doubles it.

Answer: 180 Go Back to Q6

Q7.

Q. What is the measure, in degrees, of each interior angle of a regular hexagon?

Solution

Concept - Interior angle of a regular polygon: Each interior angle $= \dfrac{(n-2) \times 180}{n}$.

Step 1 - Plug in six sides: $\dfrac{(6-2) \times 180}{6} = \dfrac{720}{6}$.

Step 2 - Simplify: $= 120$.

Tip: Regular hexagons tile flat surfaces exactly because $120^\circ \times 3 = 360^\circ$.

Answer: 120 Go Back to Q7

Q8.

Q. A colour palette contains five distinct colours. How many unique pairs of colours can be selected from this palette?

Solution

Concept - Combinations (order does not matter): Number of pairs $= \binom{n}{2} = \dfrac{n(n-1)}{2}$.

Step 1 - Substitute five: $\dfrac{5 \times 4}{2}$.

Step 2 - Compute: $= 10$.

Tip: A pair red-blue is the same as blue-red, so use combinations, not permutations.

Answer: 10 Go Back to Q8

Q9.

Q. A poster measures fifty centimetres by seventy centimetres. What is its perimeter in centimetres?

Solution

Concept - Perimeter of a rectangle: $P = 2(l + b)$.

Step 1 - Add the sides: $50 + 70 = 120$.

Step 2 - Double it: $2 \times 120 = 240$.

Tip: Perimeter tells you the length of border tape or framing needed.

Answer: 240 Go Back to Q9

Q10.

Q. Consider a three-by-three grid made of nine unit squares. Counting squares of every possible size, how many squares are there in total?

Solution

Concept - Counting squares of all sizes in an n by n grid: Total $= 1^2 + 2^2 + \cdots + n^2$.

Step 1 - List by size: One-by-one squares $= 9$; two-by-two squares $= 4$; three-by-three square $= 1$.

Step 2 - Add: $9 + 4 + 1 = 14$.

Tip: The count is the sum of the first n square numbers, here $n = 3$.

Answer: 14 Go Back to Q10

Q11.

Q. A wheel has a diameter of seventy centimetres. Taking the value of pi as twenty-two over seven, what distance in centimetres does the wheel cover in one full rotation?

Solution

Concept - One rotation equals the circumference: Distance $= \pi d$.

Step 1 - Substitute values: $\frac{22}{7} \times 70$.

Step 2 - Simplify: $22 \times 10 = 220$.

Tip: Distance travelled = number of rotations $\times$ circumference.

Answer: 220 Go Back to Q11

Q12.

Q. A book has its pages numbered from one to one hundred. How many times does the digit nine appear across all these page numbers?

Solution

Concept - Count digit occurrences by place value: Count nines in the units place and the tens place separately.

Step 1 - Units place: 9, 19, 29, 39, 49, 59, 69, 79, 89, 99 give 10 nines.

Step 2 - Tens place: 90 to 99 give another 10 nines; 100 has none. Total $= 10 + 10 = 20$.

Tip: The number 99 is counted twice on purpose - once for each nine it contains.

Answer: 20 Go Back to Q12

Q13.

Q. An architect builds a scale model at a ratio of one to twenty. If the real object is five metres tall, what is the height of the model in centimetres?

Solution

Concept - Scale ratio: Model size $=$ real size divided by the scale factor.

Step 1 - Convert to centimetres: 5 m $= 500$ cm.

Step 2 - Divide by twenty: $500/20 = 25$.

Tip: A one-to-twenty model means every real centimetre shrinks to one twentieth.

Answer: 25 Go Back to Q13

Q14.

Q. A layout is proportioned using the golden ratio, taken here as one point six. If the shorter segment is ten units long, what is the length of the longer segment in units?

Solution

Concept - Golden ratio proportion: The longer segment $=$ shorter segment $\times$ the ratio.

Step 1 - Multiply: 10×1.6.

Step 2 - Result: $= 16$.

Tip: The golden ratio, about 1.618, is denoted by the Greek letter phi and recurs in balanced design.

Answer: 16 Go Back to Q14

Q15.

Q. Which of the following statements is/are TRUE about the Ellora and Elephanta caves?

(A) Ellora caves contain Hindu Shaivaite sculptures.

(B) Elephanta caves contain only Hindu Vaishnavaite sculptures.

(C) Ellora caves contain only Hindu Shaivaite sculptures.

(D) Elephanta caves contain Hindu Shaivaite sculptures.

Solution

Concept - Rock-cut heritage of Maharashtra: Ellora is a mixed Hindu, Buddhist and Jain complex, while Elephanta is dominated by Shaivaite (Shiva) imagery such as the Trimurti.

Option A: Ellora does contain Hindu Shaivaite sculptures, including the Kailasa temple dedicated to Shiva. TRUE.

Option B: Elephanta is Shaivaite, not exclusively Vaishnavaite. FALSE.

Option C: Ellora is not only Shaivaite; it also holds Buddhist and Jain caves. FALSE.

Option D: Elephanta is famous for Shaivaite sculptures like the three-headed Maheshamurti. TRUE.

Tip: Watch the word only - it usually makes a broad heritage claim false. Correct: A and D.

Answer: A, D Go Back to Q15

Q16.

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

(A) Red

(B) Yellow

(C) Green

(D) Blue

Solution

Concept - Additive colour mixing: Screens emit light and mix Red, Green and Blue to make all other colours; equal full amounts give white.

Option A: Red is an additive primary. TRUE.

Option B: Yellow is a secondary in the additive model (red plus green) and a primary only in subtractive systems. FALSE.

Option C: Green is an additive primary. TRUE.

Option D: Blue is an additive primary. TRUE.

Tip: Additive primaries are R, G, B; subtractive (print) primaries are cyan, magenta, yellow. Correct: A, C and D.

Answer: A, C, D Go Back to Q16

Q17.

Q. Which of the following statements about image file formats is/are TRUE?

(A) JPEG is a vector format that stays sharp at any size.
(B) SVG stores an image as scalable paths and shapes.
(C) PNG supports transparency through an alpha channel.
(D) Enlarging a raster (bitmap) image far beyond its size can make it look pixelated.

Solution

Concept - Raster versus vector: Raster formats store a grid of pixels; vector formats store mathematical shapes that scale cleanly.

Option A: JPEG is a raster (pixel) format, not vector, and loses quality when enlarged. FALSE.

Option B: SVG is a vector format built from paths and shapes. TRUE.

Option C: PNG supports an alpha channel for transparency. TRUE.

Option D: Blowing up a bitmap beyond its resolution shows visible pixels. TRUE.

Tip: Use vectors for logos, rasters for photos. Correct: B, C and D.

Answer: B, C, D Go Back to Q17

Q18.

Q. Which of the following statements about the Bauhaus school is/are TRUE?

(A) It was founded by Walter Gropius.
(B) It began in Weimar and later moved to Dessau.
(C) It was founded in Paris in the year 1919.
(D) It was closed in 1933 under pressure from the Nazi regime.

Solution

Concept - Bauhaus, the modern design movement: The German school (1919 to 1933) unified art, craft and industry and shaped

modern design education.

Option A: Walter Gropius founded the Bauhaus. TRUE.

Option B: It started in Weimar and shifted to Dessau in 1925. TRUE.

Option C: It was founded in Weimar, Germany, not Paris. FALSE.

Option D: It shut down in 1933 under Nazi pressure. TRUE.

Tip: Remember the arc Weimar to Dessau to Berlin. Correct: A, B and D.

Answer: A, B, D Go Back to Q18

Q19.

Q. Which of the following is/are Indian resist-dyeing or tie-and-dye textile traditions?

(A) Bandhani of Gujarat and Rajasthan
(B) Warli of Maharashtra
(C) Ikat (Bandha) of Odisha and Telangana
(D) Madhubani of Bihar

Solution

Concept - Resist-dyeing crafts: In resist dyeing, parts of the yarn or cloth are tied or covered so dye cannot reach them, forming patterns.

Option A: Bandhani is a tie-and-dye craft of Gujarat and Rajasthan. TRUE.

Option B: Warli is a folk wall-painting tradition, not a dyeing technique. FALSE.

Option C: Ikat (Bandha) resist-dyes the yarn before weaving. TRUE.

Option D: Madhubani is a painting tradition, not textile dyeing. FALSE.

Tip: Separate painting crafts (Warli, Madhubani) from dyeing crafts (Bandhani, Ikat). Correct: A and C.

Answer: A, C Go Back to Q19

Q20.

Q. Which of the following statements about the colour wheel is/are TRUE?

(A) Red and green sit right next to each other on the colour wheel.
(B) Orange is a primary colour in the traditional pigment colour wheel.
(C) Complementary colours sit opposite each other on the colour wheel.
(D) Mixing the three subtractive primaries in equal full amounts ideally gives pure white.

Solution

Concept - Colour relationships: On a colour wheel, complementary pairs sit opposite, and mixing pigments darkens the result.

Option A: Red and green are roughly opposite, not adjacent. FALSE.

Option B: Orange is a secondary colour (red plus yellow), not primary. FALSE.

Option C: Complementary colours are opposite one another. TRUE.

Option D: Mixing cyan, magenta and yellow pigments gives a dark, near-black colour, not white. FALSE.

Tip: Adding light lightens (toward white); mixing pigment darkens (toward black). Correct: C only.

Answer: C Go Back to Q20

Q21.

Q. Which of the following statements about proportion and composition is/are TRUE?

(A) The golden ratio is approximately 2.618.
(B) The Fibonacci sequence runs 1, 1, 2, 3, 5, 8, 13, and so on.
(C) The rule of thirds divides a frame into nine equal parts using two horizontal and two vertical lines.
(D) The golden ratio is denoted by the Greek letter pi.

Solution

Concept - Design proportion tools: The golden ratio (about 1.618, phi) and the rule of thirds guide balanced layouts.

Option A: The golden ratio is about 1.618, not 2.618. FALSE.

Option B: The Fibonacci sequence is 1, 1, 2, 3, 5, 8, 13, and each

term is the sum of the two before it. TRUE.

Option C: The rule of thirds uses two horizontal and two vertical lines to make nine parts. TRUE.

Option D: The golden ratio is denoted by phi, not pi. FALSE.

Tip: Phi is about 1.618; pi is about 3.14. Correct: B and C.

Answer: B, C Go Back to Q21

Q22.

Q. Which of the following is/are Indian heritage monuments or sites?

(A) The Taj Mahal at Agra
(B) The Sun Temple at Konark
(C) The Meenakshi Temple at Madurai
(D) The Ajanta caves, known for Buddhist rock-cut art and paintings

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Solution

Concept - Indian architectural heritage: India has a rich mix of Mughal, temple and rock-cut monuments across regions.

Option A: The Taj Mahal is a Mughal mausoleum at Agra. TRUE.

Option B: The Sun Temple at Konark, Odisha, is shaped like a chariot. TRUE.

Option C: The Meenakshi Temple is a large temple complex at Madurai. TRUE.

Option D: The Ajanta caves hold Buddhist rock-cut art and murals. TRUE.

Tip: When every option names a genuine site, all four can be correct - read them individually. Correct: A, B, C and D.

Answer: A, B, C, D Go Back to Q22

Q23.

Q. Which of the following statements about famous designers is/are TRUE?

(A) Charles and Ray Eames were primarily fashion photographers.
(B) The Eames Lounge Chair is a piece of runway fashion.
(C) Dieter Rams is known for his ten principles of good design.
(D) The Wassily chair was designed by Le Corbusier.

Solution

Concept - Modern product and furniture designers: Knowing who made landmark objects is common in design GK.

Option A: The Eameses were furniture and industrial designers, not fashion photographers. FALSE.

Option B: The Eames Lounge Chair is furniture, not runway fashion. FALSE.

Option C: Dieter Rams gave the ten principles of good design at Braun. TRUE.

Option D: The Wassily chair was designed by Marcel Breuer, not Le Corbusier. FALSE.

Tip: Pair the object with its maker: Wassily to Breuer, Barcelona chair to Mies van der Rohe. Correct: C only.

Answer: C Go Back to Q23

Q24.

Q. Which of the following statements about digital images is/are TRUE?

(A) DPI stands for dots per inch.
(B) A pixel is the smallest unit of a vector graphic.
(C) Higher resolution generally means more pixels packed into the same area.
(D) RGB is the standard colour model used for printing.

Solution

Concept - Resolution and colour models: Raster images are made of pixels; print and screen use different colour models.

Option A: DPI means dots per inch. TRUE.

Option B: A pixel is the smallest unit of a raster image, not a vector graphic. FALSE.

Option C: Higher resolution means more pixels per unit area. TRUE.

Option D: Printing uses CMYK, while RGB is for screens. FALSE.

Tip: Screens are RGB; print is CMYK. Correct: A and C.

Answer: A, C Go Back to Q24

Q25.

Q. Which of the following statements about Indian painters and art schools is/are TRUE?

(A) Raja Ravi Varma is best known for his cubist abstractions.
(B) The Bengal School of Art was led by Abanindranath Tagore.
(C) Nandalal Bose was associated with the Bengal School and Santiniketan.
(D) Madhubani painting originates in Kerala.

Solution

Concept - Modern Indian art history: The Bengal School revived Indian themes in the early twentieth century.

Option A: Raja Ravi Varma painted in an academic, realistic style, not cubism. FALSE.

Option B: Abanindranath Tagore led the Bengal School. TRUE.

Option C: Nandalal Bose worked with the Bengal School and taught at Santiniketan. TRUE.

Option D: Madhubani painting is from the Mithila region of Bihar, not Kerala. FALSE.

Tip: Link Nandalal Bose to the Constitution's illustrated pages. Correct: B and C.

Answer: B, C Go Back to Q25

Q26.

Q. Which of the following statements about paper sizes and print is/are TRUE?

(A) A4 paper is physically larger than A3 paper.
(B) A4 paper measures 210 millimetres by 297 millimetres.
(C) Folding an A4 sheet in half across its longer side gives A5 size.
(D) In the A-series, each smaller size has half the area of the previous size.

Solution

Concept - ISO A-series paper: Sizes halve in area as the number rises, keeping the same aspect ratio.

Option A: A4 is smaller than A3, not larger. FALSE.

Option B: A4 is 210×297 mm. TRUE.

Option C: Folding A4 in half across the long side yields A5. TRUE.

Option D: Each step down (A4 to A5) halves the area. TRUE.

Tip: A0 has an area of one square metre; every larger number halves it. Correct: B, C and D.

Answer: B, C, D Go Back to Q26

Q27.

Q. Which of the following statements about logos and branding is/are TRUE?

(A) A wordmark logo is always an abstract symbol with no text at all.

(B) A monogram or lettermark logo is built from initials, as in IBM or HP.

(C) The FedEx logo is famous for a hidden number between two letters.

(D) A mascot logo uses only geometric shapes and never a character.

Solution

Concept - Types of logos: Logos are grouped as wordmarks, lettermarks, symbols, mascots and combination marks.

Option A: A wordmark is the full name in styled text, not a text-free abstract symbol. FALSE.

Option B: A monogram or lettermark uses initials, such as IBM or HP. TRUE.

Option C: The FedEx logo hides an arrow, not a number, between the E and the x. FALSE.

Option D: A mascot logo is built around a character, not just shapes. FALSE.

Tip: Wordmark equals full name; lettermark equals initials. Correct: B only.

Answer: B Go Back to Q27

Q28.

Q. Which of the following statements about sustainable and environmental design is/are TRUE?

(A) Upcycling turns waste materials into products of higher value.
(B) Biodegradable materials break down naturally over time.
(C) The three Rs stand for Reduce, Reuse and Recycle.
(D) Planned obsolescence is a strategy to make products last as long as possible.

Solution

Concept - Design for sustainability: Reducing waste and extending useful life are core green-design ideas.

Option A: Upcycling raises the value of waste, like turning tyres into furniture. TRUE.

Option B: Biodegradable materials decompose naturally. TRUE.

Option C: The three Rs are Reduce, Reuse, Recycle. TRUE.

Option D: Planned obsolescence deliberately shortens product life, the opposite of what is stated. FALSE.

Tip: If a definition sounds like the reverse of a known term, it is usually the false option. Correct: A, B and C.

Answer: A, B, C Go Back to Q28

Q29.

Q. Which of the following statements about perspective and technical drawing is/are TRUE?

(A) One-point perspective uses three vanishing points.
(B) Orthographic projection shows an object without perspective distortion.

(C) An isometric drawing keeps its three main axes at 120 degrees to one another.

(D) A vanishing point is where receding parallel lines appear to meet.

Solution

Concept - Ways to represent 3D on paper: Perspective adds depth cues, while orthographic and isometric drawings keep measurable relationships.

Option A: One-point perspective uses one vanishing point, not three. FALSE.

Option B: Orthographic projection shows true, undistorted views. TRUE.

Option C: Isometric drawings set the three axes at 120 degrees apart. TRUE.

Option D: A vanishing point is where parallel lines seem to converge. TRUE.

Tip: The number in one, two, three-point perspective is the count of vanishing points. Correct: B, C and D.

Answer: B, C, D Go Back to Q29

Q30.

Q. Read the statements and decide which conclusions definitely follow. Statements: All Surrealists are melted clocks. Some melted clocks are Dalis. All Dalis are macabre works. Conclusions: (i)

Some macabre works are Dalis. (ii) Some macabre works are melted clocks. (iii) Some Dalis are Surrealist.

(A) None follows
(B) Only (i) follows
(C) Only (i) and (ii) follow
(D) Only (iii) follows

Solution

Concept - Syllogism, valid conclusions only: A conclusion follows only if it must be true in every case allowed by the statements.

Step 1 - Test (i): All Dalis are macabre works, so some macabre works are Dalis. This follows.

Step 2 - Test (ii): Some melted clocks are Dalis, and all Dalis are macabre; so those Dalis are macabre works that are melted clocks. Hence some macabre works are melted clocks. This follows.

Step 3 - Test (iii): Nothing forces any Dali to be a Surrealist; the overlap is not guaranteed. This does not follow.

Tip: A universal plus an existential can yield an existential conclusion, but two loose overlaps do not. Correct: C.

Answer: C Go Back to Q30

Q31.

Q. The steps for tying a shoelace bow (numbered 1 to 8) are jumbled. Choose the correct order. Steps: 1. Pass one end under

the other. 2. Pull tight. 3. Hold one end in each hand. 4. Cross them, making an X. 5. Bend it into a flat loop and pull through, making a bow. 6. Fold one shoelace in half (make the first loop). 7. Grasp it in the middle after pulling it around the folded end. 8. Wrap the other end around the folded end.

(A) $6, 2, 3, 5, 3, 5, 8$

(B) $3, 4, 1, 2, 6, 8, 7, 5$

(C) $6, 4, 3, 1, 8, 5, 7, 2$

(D) $5, 6, 4, 2, 7, 8, 3, 1$

Solution

Concept - Process sequencing: Order the steps by the natural flow of the action from start to finish.

Step 1 - Find the start: You first hold one end in each hand (3), so the sequence should open with 3. Options starting with 6 or 5 begin mid-task.

Step 2 - Build the knot then the bow: Cross into an X (4), pass one end under (1), pull tight (2) to fix the base knot, then form the loop (6), wrap around (8), pull through and grasp (7), and finish the bow (5).

Step 3 - Match: This gives 3, 4, 1, 2, 6, 8, 7, 5.

Tip: Anchor on the true first action to eliminate wrong-start options fast. Correct: B.

Answer: B Go Back to Q31

Q32.

Q. A solid cube of side four centimetres is painted on all its faces and then cut into unit cubes of side one centimetre. How many of the unit cubes have exactly two painted faces?

(A) 12
(B) 24
(C) 8
(D) 36

Solution

Concept - Two-face cubes lie on edges: Cubes with exactly two painted faces sit along the edges but not at the corners.

Step 1 - Per edge: Each edge has $4 - 2 = 2$ such cubes.

Step 2 - Total: 12 edges $\times\ 2 = 24$.

Tip: Formula $12(n - 2)$ with $n = 4$ gives 24. Correct: B.

Answer: B Go Back to Q32

Q33.

Q. Which Indian city, known for the indigo-washed walls of its old town, is popularly called the Blue City?

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

Solution

Concept - Indian cities by colour nickname: Several Rajasthani cities are nicknamed after the dominant colour of their old quarters.

Step 1 - Match the clue: Jodhpur's old town is painted in shades of blue (indigo), which gives it the name Blue City.

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

Tip: Keep the set together: Jaipur is pink, Jodhpur is blue, Jaisalmer is golden, Udaipur is lakes/white.

Answer: A Go Back to Q33

Q34.

Q. Find the next term in the letter series: A, C, F, J, O, ?

(A) S
(B) T
(C) U
(D) V

Solution

Concept - Increasing gaps in an alphabet series: Convert letters to positions and study the differences.

Step 1 - Positions: A=1, C=3, F=6, J=10, O=15; gaps are +2, +3, +4, +5.

Step 2 - Next gap: Add +6 to 15 to get 21, which is the letter U.

Tip: When gaps grow by one each time, the pattern is triangular numbers. Correct: C.

Answer: C Go Back to Q34

Q35.

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

(A) GBSEFO
(B) HBSFEO
(C) HBTEFO
(D) HBSEFO

Solution

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

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

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

Tip: Check two or three letters to confirm the shift before coding the whole word. Correct: D.

Answer: D Go Back to Q35

Q36.

Q. A person walks 5 km north, then turns right and walks 3 km, then turns right and walks 5 km, and finally turns left and walks 2 km. How far is the person from the starting point?

(A) 5 km
(B) 7 km
(C) 3 km
(D) 8 km

Solution

Concept - Direction tracking with coordinates: Track position on a grid, taking north as up and east as right.

Step 1 - Plot the moves: Start at $(0, 0)$. North 5 to $(0, 5)$; right (east) 3 to $(3, 5)$; right (south) 5 to $(3, 0)$; left (east) 2 to $(5, 0)$.

Step 2 - Distance: The end point $(5, 0)$ is 5 km due east of the start.

Tip: After two right turns you face the opposite of the start direction; coordinates keep it error-free. Correct: A.

Answer: A Go Back to Q36

Q37.

Q. Pointing to a photograph, a man says, "She is the daughter of my grandfather's only son." How is the girl in the photograph related to the man?

(A) Mother
(B) Sister

(C) Daughter

(D) Aunt

Solution

Concept - Blood relations, work inward: Resolve the phrase step by step from the man outward.

Step 1 - Grandfather's only son: The only son of the man's grandfather is the man's own father.

Step 2 - Daughter of the father: The daughter of the man's father is the man's sister.

Tip: Replace each relation phrase with a single person before moving on. Correct: B.

Answer: B Go Back to Q37

Q38.

Q. Choose the odd one out from the following shapes.

(A) Circle

(B) Square

(C) Triangle

(D) Cube

Solution

Concept - Grouping by a shared property: Find the property that three share but the fourth breaks.

Step 1 - Classify: Circle, square and triangle are two-dimensional (flat) shapes.

Step 2 - Spot the outlier: A cube is a three-dimensional solid.

Tip: Look for a dimension or category shift, not just size. Correct: D.

Answer: D Go Back to Q38

Q39.

Q. A rectangular poster measuring 60 cm by 90 cm is scaled down proportionally so that its width becomes 20 cm. What is the new height of the poster?

(A) 20 cm
(B) 45 cm
(C) 30 cm
(D) 25 cm

Solution

Concept - Keeping aspect ratio: Scaling proportionally multiplies both dimensions by the same factor.

Step 1 - Scale factor: New width over old width $= 20/60 = 1/3$.

Step 2 - New height: $90 \times 1/3 = 30$ cm.

Tip: Apply the single scale factor to every dimension to avoid distortion. Correct: C.

Answer: C Go Back to Q39

Q40.

Q. In typography, 12 points make one pica. How many points are there in 3 picas?

(A) 36
(B) 30
(C) 24
(D) 12

Solution

Concept - Typographic units: A pica equals 12 points, a fixed print measure.

Step 1 - Multiply: 3×12.

Step 2 - Result: $= 36$ points.

Tip: Six picas make one inch, so three picas is half an inch.
Correct: A.

Answer: A Go Back to Q40

Q41.

Q. Find the next term in the number series: 2, 6, 12, 20, 30, ?

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

Solution

Concept - Series with growing differences: Study the gaps between consecutive terms.

Step 1 - Differences: $4, 6, 8, 10$; each rises by 2.

Step 2 - Next term: The next gap is 12, so $30 + 12 = 42$.

Tip: These terms equal $n(n+1)$: $6 \times 7 = 42$. Correct: B.

Answer: B Go Back to Q41

Q42.

Q. In the six-digit hexadecimal colour system used on the web, which code represents pure blue?

(A) #FF0000
(B) #00FF00
(C) #FFFF00
(D) #0000FF

Solution

Concept - Hex colour codes: A web hex colour is written as pairs for Red, Green and Blue, each from 00 to FF.

Step 1 - Read the pairs: The order is RRGGBB. Pure blue needs zero red, zero green and full blue.

Step 2 - Match: That is 00 00 FF, written #0000FF. FF0000 is red and 00FF00 is green.

Tip: FF means full intensity; the last pair controls blue. Correct: D.

Answer: D Go Back to Q42

Q43.

Q. Which colour model is standard for full-colour printing on paper?

(A) RGB

(B) HSB

(C) CMYK

(D) RYB

Solution

Concept - Print versus screen colour: Printing lays down inks that subtract light, so it uses a subtractive model.

Step 1 - Rule out screen models: RGB is additive and meant for screens; HSB is a way to pick colours, not print them.

Step 2 - Choose the print model: CMYK (Cyan, Magenta, Yellow, Key/black) is the standard for printing.

Tip: The K in CMYK is the black plate that adds depth and text sharpness. Correct: C.

Answer: C Go Back to Q43

Q44.

Q. How many spokes does the Ashoka Chakra in the centre of the Indian national flag have?

(A) 24

(B) 12

(C) 16

(D) 8

Solution

Concept - National symbol design: The navy-blue wheel on the tricolour is the Ashoka Chakra from the Sarnath Lion Capital.

Step 1 - Recall the count: The Chakra has 24 spokes.

Step 2 - Meaning: The spokes stand for the twenty-four hours of the day, symbolising motion and progress.

Tip: Twenty-four spokes, not twelve, is a favourite GK trap.
Correct: A.

Answer: A Go Back to Q44

Q45.

Q. The painter Piet Mondrian, known for grids of black lines and blocks of primary colour, is most closely associated with which movement?

(A) Cubism
(B) De Stijl
(C) Surrealism
(D) Bauhaus

Solution

Concept - Early modern art movements: Mondrian pursued pure abstraction with straight lines and primary colours.

Step 1 - Match the style: His grid paintings define De Stijl (The Style), the Dutch movement he co-founded with Theo van Doesburg.

Step 2 - Rule out others: Cubism, Surrealism and the Bauhaus are separate movements with different aims.

Tip: De Stijl means straight lines, right angles and red, blue, yellow. Correct: B.

Answer: B Go Back to Q45

Q46.

Q. In the ISO A-series of paper sizes, which size has an area of exactly one square metre?

(A) A4
(B) A2
(C) A1
(D) A0

Solution

Concept - The A-series base size: The series is defined so that its largest common size has a fixed area.

Step 1 - Base definition: A0 is defined to have an area of one square metre.

Step 2 - Halving down: Each higher number halves the area, so A1 is half a square metre, A2 a quarter, and so on.

Tip: Start from A0 equals one square metre and halve to reach any

A-size area. Correct: D.

Answer: D Go Back to Q46

Q47.

Q. What is the angle between the hour hand and the minute hand of a clock at exactly 3 o'clock?

(A) 30 degrees
(B) 60 degrees
(C) 90 degrees
(D) 120 degrees

Solution

Concept - Clock angles: A full clock face is 360 degrees, so each hour mark is $360/12 = 30$ degrees apart.

Step 1 - Hand positions at 3:00: The minute hand points at 12 and the hour hand at 3, three hour-marks apart.

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

Tip: At 3:00 and 9:00 the hands form a clean right angle. Correct: C.

Answer: C Go Back to Q47

Q48.

Q. When reflected in a vertical mirror placed beside it, which of the following capital letters looks exactly the same as the original?

(A) A

(B) F

(C) G

(D) J

Solution

Concept - Line symmetry: A letter looks unchanged in a vertical mirror only if it has a vertical axis of symmetry.

Step 1 - Test each letter: F, G and J are not symmetric left to right, so they flip.

Step 2 - Find the symmetric one: A has a vertical line of symmetry, so its mirror image is identical.

Tip: Letters like A, H, I, M, O, T, U, V, W, X, Y are vertically symmetric. Correct: A.

Answer: A Go Back to Q48

Q49.

Q. If the letters of the word DESIGN are arranged in alphabetical order, which letter comes third?

(A) E

(B) G

(C) I

(D) N

Solution

Concept - Alphabetical sorting: Rewrite the letters in dictionary

order and read off the position asked.

Step 1 - Sort: D, E, S, I, G, N become D, E, G, I, N, S.

Step 2 - Third letter: Counting D (1), E (2), G (3), the third is G.

Tip: Write the sorted list once, then just count to the required place. Correct: B.

Answer: B Go Back to Q49

Q50.

Q. What is the area of a circle of radius 7 cm? Take the value of pi as twenty-two over seven.

(A) 44 sq cm
(B) 88 sq cm
(C) 121 sq cm
(D) 154 sq cm

Solution

Concept - Area of a circle: $A = \pi r^2$.

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

Step 2 - Simplify: $22 \times 7 = 154$ sq cm.

Tip: When the radius is a multiple of 7, using 22/7 cancels neatly. Correct: D.

Answer: D Go Back to Q50

Q51.

Q. The Lotus Temple in New Delhi, famous for its flower-shaped white marble petals, is a house of worship of which faith?

(A) Hindu
(B) Sikh
(C) Bahá'í
(D) Jain

Solution

Concept - Modern Indian architecture: The Lotus Temple, designed by Fariborz Sahba and completed in 1986, is a landmark of expressive form.

Step 1 - Identify the faith: It is a Bahá'í House of Worship, open to people of all religions.

Step 2 - Rule out others: It is not a Hindu, Sikh or Jain temple.

Tip: Bahá'í houses of worship worldwide share a nine-sided, dome-like form. Correct: C.

Answer: C Go Back to Q51

Q52.

Q. On a map drawn to a scale of 1:50,000, two places are 3 cm apart on the map. What is the actual distance between them on the ground?

(A) 1.5 km
(B) 15 km
(C) 0.15 km

(D) 150 km

Solution

Concept - Map scale: A scale of 1:50,000 means 1 cm on the map equals 50,000 cm on the ground.

Step 1 - Actual length in cm: $3 \times 50{,}000 = 150{,}000$ cm.

Step 2 - Convert to km: $150{,}000$ cm $= 1.5$ km.

Tip: 100,000 cm make one kilometre, so divide the centimetre answer by that. Correct: A.

Answer: A Go Back to Q52

Q53.

Q. Which of the following is a sans-serif typeface?

(A) Times New Roman
(B) Helvetica
(C) Garamond
(D) Georgia

Solution

Concept - Serif versus sans-serif: Serif fonts have small feet at the stroke ends; sans-serif fonts do not.

Step 1 - Classify the options: Times New Roman, Garamond and Georgia are all serif faces.

Step 2 - Find the odd one: Helvetica is a clean sans-serif face.

Tip: Sans means without, so sans-serif means without the feet. Correct: B.

Answer: B Go Back to Q53

Q54.

Q. On a standard six-sided die, the numbers on opposite faces always add up to seven. If the top face shows 2, what number is on the bottom face?

(A) 4
(B) 6
(C) 3
(D) 5

Solution

Concept - Opposite faces of a die sum to seven: This fixed rule links every pair of opposite faces.

Step 1 - Set up: Top plus bottom $= 7$, and top $= 2$.

Step 2 - Solve: Bottom $= 7 - 2 = 5$.

Tip: The three opposite pairs are 1-6, 2-5 and 3-4. Correct: D.

Answer: D Go Back to Q54

Q55.

Q. The town of Channapatna in Karnataka is known for a GI-tagged traditional craft. What is it famous for making?

(A) Pashmina shawls

(B) Blue pottery
(C) Lacquered wooden toys
(D) Bidriware metalwork

Solution

Concept - Indian craft geography: Many Indian crafts carry a Geographical Indication tied to a specific town.

Step 1 - Identify Channapatna: Channapatna is nicknamed the town of toys for its colourful lacquered wooden toys.

Step 2 - Rule out others: Pashmina is from Kashmir, blue pottery from Jaipur, and Bidriware from Bidar.

Tip: Link each craft to its home town to avoid mix-ups. Correct: C.

Answer: C Go Back to Q55

Q56.

Q. In pigment or paint mixing, blue and yellow are combined. What colour is produced?

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

Solution

Concept - Subtractive (pigment) colour mixing: Mixing paints follows the traditional colour wheel, where secondaries come from

pairs of primaries.

Step 1 - Combine the primaries: Blue plus yellow gives green.

Step 2 - Rule out others: Orange is red plus yellow; purple is red plus blue.

Tip: The three pigment secondaries are green, orange and purple. Correct: A.

Answer: A Go Back to Q56

Q57.

Q. Counting the week as starting on Monday as the first day, which day is the fifth day of the week?

(A) Wednesday
(B) Thursday
(C) Saturday
(D) Friday

Solution

Concept - Ordered counting of days: List the days in order and count to the position asked.

Step 1 - Number the days: Monday (1), Tuesday (2), Wednesday (3), Thursday (4), Friday (5).

Step 2 - Read the fifth: The fifth day is Friday.

Tip: Fix the starting day first, since it shifts every position. Correct: D.

Answer: D Go Back to Q57

Q58.

Q (Drawing). It is just before sunrise at a busy roadside tea stall on a city street corner. Steam rises from a large kettle on a kerosene stove, glass tumblers sit stacked in a wire rack, and a few early customers wait with newspapers folded under their arms. The focal subject is the chaiwala, standing behind his wooden counter, pouring tea in a long stream from a tumbler held high down into a second tumbler held low, so the tea foams. Imagine this scene and draw it with the chaiwala and his pour as the clear centre of interest. Show the stall counter, the stove and kettle, the stacked glasses, at least two waiting customers, and the street behind fading into the early light.

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

Treat this as a slice-of-life street scene where one clear action carries the drawing. Plan the whole frame before you commit to dark lines.

Step 1 - Set perspective and the ground plane: Fix a low eye level so students feel they are standing in the customer queue. Let the street and counter recede to a single vanishing point on the horizon. Anchor the stall counter as a solid horizontal block in the lower third so everything else has a base to sit on.

Step 2 - Build the scene in layers: Block the composition in three depths - the chaiwala and counter in front, the waiting customers in the middle, the fading street behind. Overlap the figures slightly so the eye reads near and far. Keep the busiest detail near the pour and let the background stay light and simple.

Step 3 - Make the focal subject win: Place the chaiwala and the falling stream of tea near a strong third of the frame. Give the pour the highest contrast and the sharpest lines. Point the customers' gaze and the counter edges toward him so the composition leads there.

Step 4 - Fix proportion, then refine line quality: Check head-to-body ratios and that the kettle, tumblers and stove read at believable sizes against the figures. Once shapes are right, vary your line weight - firm dark strokes on the chaiwala and counter, thin light strokes for the far street and rising steam.

Tip: The thin arcing line of tea is the story of the picture. Draw it last, in one confident stroke, so it stays crisp and unbroken. **Go Back to Q58**

Q59.

Q (Design Aptitude). School children who walk or cycle to school get caught in sudden rain, and their cloth or nylon backpacks soak through, spoiling books and notebooks inside. Umbrellas do not cover a bag worn on the back. Design a rain cover that lives permanently with the school backpack, is quick for a child to deploy alone, and packs away small when not needed. Show your design in two states: (1) packed and stored on or in the bag when the weather is dry, and (2) fully deployed and protecting the

loaded backpack in the rain.

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 product that must be idiot-proof for a hurried child and must never get left at home. Sketch the object, not a poster.

Step 1 - Nail the requirements: List the real constraints in your head first - it must attach to the bag so it is never forgotten, deploy in seconds with one hand, cover the straps and base where water creeps in, and fold into a tiny stuff-pouch. Every sketched feature should answer one of these.

Step 2 - Show the two required states: Draw state one as a small zipped pouch sewn to the base or lid of the bag. Draw state two as the elastic-hemmed cover pulled up and over the loaded bag. Make the two drawings the same bag so the examiner sees it is one object changing form.

Step 3 - Label features, do not write essays: Use short call-out labels with leader lines - "attached pouch", "elastic hem", "grab tab", "reflective strip", "drain vent". Two or three words each, pointing straight at the part.

Step 4 - Prove it works: Add one small sequence sketch of a hand pulling the cover out of the pouch and snapping it over the bag, plus a section view showing water running off the sloped top away

from the straps. This shows the deploy action and that it actually keeps books dry.

Tip: Anchoring the pouch to the bag is the smartest single idea here. Make that permanent attachment the boldest, clearest detail on the page. **Go Back to Q59**

Answer Key (Part A)

Section 1 - NAT (Numerical Answer Type)

Q1	Q2	Q3	Q4	Q5	Q6	Q7
17	36	625	600	8	180	120

Q8	Q9	Q10	Q11	Q12	Q13	Q14
10	240	14	220	20	25	16

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

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

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

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

Section 3 - MCQ (single correct)

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

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

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

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

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

Appendix: Visual Reasoning
Practice from Past UCEED Papers

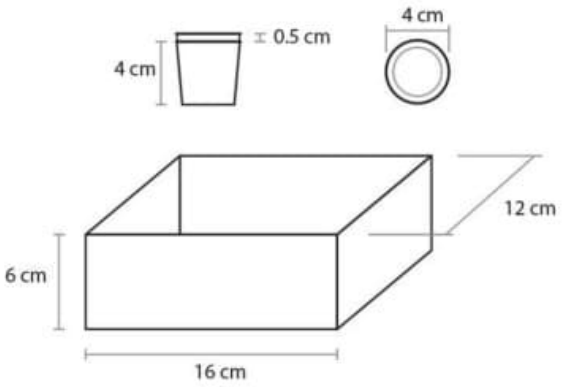
These are **real questions from past UCEED papers**, included so you can practise on the actual figure style the exam uses. They are visual-reasoning questions, so work each one out yourself - no answer key is given here (this mirrors how such questions feel in the real test). A short **How to approach**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

P1. (Past UCEED) Shown below is an image of a circle and six equilateral triangles. The circumference of the circle is 18.85 cm. What is the area of ONE equilateral triangle in cm2? Assume $\sqrt{3} = 1.732$ and $\pi = 3.14$.

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.

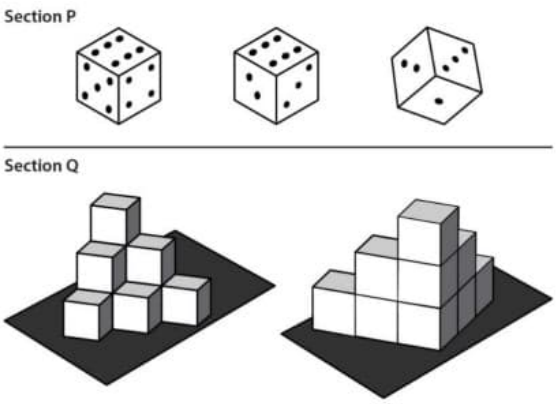
P2. (Past UCEED) Shown below are two stacked paper cups and a box with their dimensions. If stacking is allowed, then what is the maximum number of cups that can be stored in the box without deforming the cups?



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.

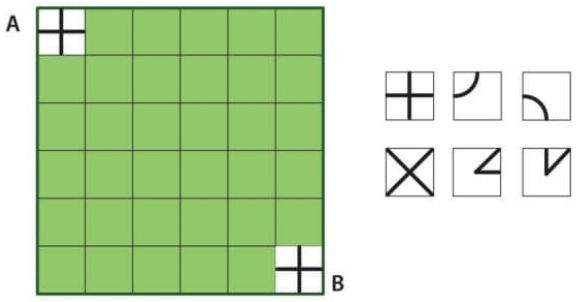
P3. (Past UCEED) Section P shows three views of a regular dice. TEN of such regular dice are stacked on an opaque table as shown in Section Q (two views of the same arrangement). What is the maximum sum that can be achieved adding the numbers on the visible surfaces from all angles?



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.

P4. (Past UCEED) What are the minimum number of tile pieces (shown on the right) that are required to create a path from tile A to tile B, such that ALL the following conditions are met: All tiles are to be used at least once. Tiles cannot overlap. The path on a tile must be connected to another path of a tile. The same type of tile cannot be used one-after-the other in a sequence. Rotation of the tiles is not allowed. Exclude tile A and tile B from the count.



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.