

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 rectangular poster measures 60 cm by 40 cm. It is scaled down proportionally so that its longer side becomes 45 cm. What is the length, in cm, of its shorter side after scaling?

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

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Q2. In typography, 1 pica equals 12 points. A text column is set to a width of 8 picas. What is this width expressed in points?

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

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Q3. A wooden cube of side 5 cm is painted on all six faces and then cut into 1 cm cubes. How many of the small cubes have exactly two painted faces?

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

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Q4. A digital image is 1200 pixels wide and is printed at a resolution of 300 pixels per inch (ppi). What is the printed width of the image, in inches?

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

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Q5. A studio mixes a paint colour using red and white in the ratio 3:5. To prepare 40 litres of this mix, how many litres of red paint are needed?

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

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Q6. Look at the number series: 2, 6, 12, 20, 30, ... What number comes next in the series?

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

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Q7. Perform the following steps. Step 1: Start with $x = 1, y = 2$. Step 2: Replace x by x multiplied by y . Step 3: Replace y by $y + 1$. Step 4: If



$y = 5$, then go to Step 6, otherwise go to Step 5. Step 5: Go to Step 2.
Step 6: Stop. What is the value of x ?

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

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Q8. A floor measuring 8 m by 4 m is to be fully covered with square tiles of side 0.5 m each. How many tiles are needed?

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

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Q9. Using the code where $A = 1$, $B = 2$, $C = 3$, and so on up to $Z = 26$, what is the sum of the letter values of the word DESIGN?

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

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Q10. On an analog clock, through how many degrees does the minute hand turn in 25 minutes?

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

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Q11. A print run produces 500 posters. On quality check, 12% of them are rejected. How many posters are accepted?

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

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Q12. On a map drawn to a scale of 1:50000, two towns are 6 cm apart. What is the actual distance between the towns, in kilometres?



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

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Q13. A cube of side 5 cm is painted on all faces and cut into 1 cm cubes.
How many of the small cubes have no painted face at all?

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

[View Solution](#)

Q14. How many diagonals does a regular octagon (8 sides) have?

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

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Section 2: Multiple Select Questions (MSQ)

Q15. Which of the following statements about aperture (the f-number) in photography is/are TRUE?

(One or more options may be correct.)

- (A) A larger f-number such as $f/16$ lets in more light than $f/2.8$.
- (B) A smaller f-number gives a shallower depth of field.
- (C) The f-number is the ratio of the lens focal length to the diameter of the aperture.
- (D) The aperture setting has no effect on depth of field.

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Q16. Which of the following are renewable sources of energy?

(One or more options may be correct.)

- (A) Solar energy



- (B) Wind energy
- (C) Hydro (flowing water) energy
- (D) Tidal energy

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Q17. Which of the following statements about Madhubani painting is/are correct?

(One or more options may be correct.)

- (A) It originated in the deserts of Rajasthan.
- (B) It is a form of metal sculpture.
- (C) It traditionally comes from the Mithila region of Bihar.
- (D) It is done strictly in black and white only.

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Q18. Which of the following are serif typefaces?

(One or more options may be correct.)

- (A) Helvetica
- (B) Times New Roman
- (C) Futura
- (D) Garamond

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Q19. Which of the following statements about the CMYK colour model is/are correct?

(One or more options may be correct.)



- (A) It is a subtractive colour model used mainly in printing.
- (B) In CMYK, the letters stand for Cyan, Magenta, Yellow and Kelvin.
- (C) The letter K in CMYK stands for Key, which is the black plate.
- (D) CMYK is the standard colour model for computer and phone displays.

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Q20. Sundays are longer than Mondays. Mondays are shorter than Fridays. Wednesdays are shorter than Saturdays, which are in turn shorter than Sundays. Thursdays are shorter than Saturdays. Tuesdays are longer than Saturdays. Wednesdays and Thursdays are both longer than Fridays. If all of these are true, which of the options is/are also TRUE?

(One or more options may be correct.)

- (A) Wednesdays could be as long as Thursdays.
- (B) Tuesdays could be the longest days of the week.
- (C) Mondays are the shortest days of the week.
- (D) Fridays could be as long as Sundays.

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Q21. Which of the following is a thermosetting plastic (one that hardens permanently on heating and cannot be remelted)?

(One or more options may be correct.)

- (A) Polythene
- (B) PVC (polyvinyl chloride)
- (C) Polypropylene
- (D) Bakelite



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Q22. Which of the following statements about the Bauhaus school of design is/are correct?

(One or more options may be correct.)

- (A) It was founded in the city of Paris.
- (B) It was founded by the architect Walter Gropius.
- (C) It aimed to combine crafts with the fine arts.
- (D) Its ideas strongly influenced modern design and architecture education.

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Q23. Which of the following statements about digital image file formats is/are correct?

(One or more options may be correct.)

- (A) PNG supports transparency through an alpha channel.
- (B) JPEG supports transparent backgrounds.
- (C) JPEG is a lossless format that never discards image data.
- (D) PNG uses lossless compression.

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Q24. Which of the following statements about Indian monuments is/are correct?

(One or more options may be correct.)

- (A) The Taj Mahal is built mainly of red sandstone.
- (B) The Qutub Minar is located in Mumbai.



- (C) The Konark Sun Temple is located in Odisha.
- (D) The Taj Mahal is a UNESCO World Heritage Site.

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Q25. On the traditional (red-yellow-blue) colour wheel, which of the following is a pair of complementary colours (colours placed opposite each other)?

(One or more options may be correct.)

- (A) Red and Yellow
- (B) Blue and Orange
- (C) Red and Purple
- (D) Green and Yellow

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Q26. Which of the following gases are considered greenhouse gases?

(One or more options may be correct.)

- (A) Carbon dioxide
- (B) Methane
- (C) Oxygen
- (D) Nitrous oxide

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Q27. Which of the following statements about typography measurements is/are correct?

(One or more options may be correct.)

- (A) One inch is equal to 62 points.



- (B) A pica is a smaller unit than a point.
- (C) There are 12 points in one pica.
- (D) Leading refers to the vertical space between lines of text.

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Q28. Which of the following materials are biodegradable (able to break down naturally by the action of microbes)?

(One or more options may be correct.)

- (A) A polythene shopping bag
- (B) Cotton cloth
- (C) Paper
- (D) Aluminium foil

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Q29. Which of the following are recognised principles or elements of visual design?

(One or more options may be correct.)

- (A) Balance
- (B) Contrast
- (C) Rhythm
- (D) Emphasis

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Section 3: Multiple Choice Questions (MCQ)



Q30. In colour printing, ink is deposited on white paper and each ink subtracts light from the reflected beam. Which set lists the three subtractive primary colours used in standard four-colour process printing (before black is added)?

- (A) Cyan, Magenta, Yellow
- (B) Red, Green, Blue
- (C) Red, Yellow, Blue
- (D) Orange, Green, Violet

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Q31. In typography, what does the term “leading” refer to?

- (A) The horizontal space between two adjacent letters
- (B) The vertical space between successive lines of text
- (C) The weight or thickness of a typeface
- (D) The height of the capital letters in a font

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Q32. Find the next number in the series: 2, 6, 12, 20, 30, ?

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

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Q33. The Bauhaus, founded in Germany in 1919, became one of the most influential schools in the history of modern design. Who founded it?



- (A) Le Corbusier
- (B) Mies van der Rohe
- (C) Paul Klee
- (D) Walter Gropius

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Q34. Madhubani (Mithila) painting, known for its bright natural colours and dense line-filled motifs of gods, animals and nature, is a folk art traditionally practised in which Indian state?

- (A) Bihar
- (B) Rajasthan
- (C) Odisha
- (D) West Bengal

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Q35. You need a web image file that supports full transparency (an alpha channel) and lossless compression, so a logo can sit cleanly over any coloured background without quality loss. Which format best fits?

- (A) JPEG
- (B) PNG
- (C) BMP
- (D) TIFF

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Q36. The ISO A-series paper sizes keep a constant side ratio of $1 : \sqrt{2}$ so that halving a sheet gives the next size with the same proportions. If



a sheet's shorter side is 210 mm, what is its longer side (to the nearest mm)?

- (A) 250 mm
- (B) 270 mm
- (C) 297 mm
- (D) 300 mm

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Q37. You set preferences in a mobile app by making a series of selections. You want to be notified of promotions and transactions, but do not want to receive newsletters. You want to allow access to your location and mic, but do not want to allow access to your contacts. The six toggles appear, in order, with these exact labels: (1) Do not notify me on Promotions, (2) Send me Newsletter, (3) Notify my Transactions, (4) Do not allow access to my Contacts, (5) Allow access to my Location, (6) Allow access to my Mic. What is the correct sequence of actions (Check = agree with that label, Skip = leave it unchecked)?

- (A) Check, skip, check, check, skip, check
- (B) Skip, skip, check, skip, check, check
- (C) Check, skip, skip, skip, check, check
- (D) Skip, skip, check, check, check, check

[View Solution](#)

Q38. In a certain code, each letter of a word is replaced by the next letter of the English alphabet. If CAT is written as DBU, how is DOG written in the same code?

- (A) EPH



- (B) CNF
- (C) EQI
- (D) FPH

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Q39. A designer needs a plastic that can be softened by heating and reshaped many times, making it easy to recycle. Which of the following materials fits this thermoplastic behaviour?

- (A) Bakelite
- (B) Polyethylene
- (C) Epoxy resin
- (D) Melamine

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Q40. A man says, “That boy’s mother is the only daughter of my mother.” How is the boy related to the man?

- (A) Son
- (B) Brother
- (C) Nephew
- (D) Cousin

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Q41. Which of the following is a renewable source of energy that a sustainable product designer would prefer?

- (A) Coal
- (B) Natural gas



- (C) Petroleum
- (D) Solar energy

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Q42. A wooden cube of side 3 cm is painted on all six outer faces and then cut into 1 cm cubes. How many of the small cubes have paint on exactly two faces?

- (A) 12
- (B) 8
- (C) 6
- (D) 0

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Q43. The Lotus Temple in New Delhi, famous for its flower-like form made of twenty-seven marble “petals,” is a house of worship associated with which faith?

- (A) Hinduism
- (B) Bahai Faith
- (C) Buddhism
- (D) Jainism

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Q44. Which colour scheme is built from two hues that lie directly opposite each other on the colour wheel, giving strong visual contrast?

- (A) Analogous
- (B) Monochromatic



- (C) Complementary
- (D) Triadic

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Q45. A person starts at a point, walks 3 km due north, then turns and walks 4 km due east. What is the straight-line distance between the starting point and the final position?

- (A) 3 km
- (B) 4 km
- (C) 7 km
- (D) 5 km

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Q46. In type design, what is a “serif”?

- (A) A small stroke or foot at the end of a letter’s main strokes
- (B) The blank space left between two words
- (C) A heavier, bolder version of a typeface
- (D) The rounded curve of the letter S

[View Solution](#)

Q47. The 1958 “India Report,” which recommended a national institute for design education and led to the founding of the National Institute of Design in Ahmedabad, was written by which pair of American designers?

- (A) Frank Lloyd Wright and his studio
- (B) Charles and Ray Eames



- (C) Ray and Charles Rennie Mackintosh
- (D) Saul Bass and Paul Rand

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Q48. Pressure cookers are sometimes made using copper and stainless steel. In such a pressure cooker,

- (A) The bottom is made up of stainless steel and the rest is made up of copper because it is aesthetically pleasing.
- (B) The bottom is made up of stainless steel and the rest is made up of copper because copper is a germicide.
- (C) The bottom is made up of copper because it is a better conductor of heat compared to steel and hence it is more energy efficient.
- (D) The bottom is made up of copper because that is the only way such a cooker can be heated using an induction stove.

[View Solution](#)

Q49. In typography and print measurement, how many points make up one inch?

- (A) 10
- (B) 25.4
- (C) 12
- (D) 72

[View Solution](#)

Q50. Three of the following are two-dimensional shapes and one is a three-dimensional solid. Which one is the odd one out?

- (A) Cube



- (B) Circle
- (C) Square
- (D) Triangle

[View Solution](#)

Q51. Warli painting, made with simple white geometric figures (circles, triangles and lines) on an earthy background to show daily life and rituals, is a tribal art form of which Indian state?

- (A) Gujarat
- (B) Maharashtra
- (C) Madhya Pradesh
- (D) Karnataka

[View Solution](#)

Q52. A designer needs a logo file that can be scaled from a business card to a billboard with no loss of sharpness, because the image is defined by mathematical paths rather than a fixed grid of pixels. Which file format is this?

- (A) JPEG
- (B) PNG
- (C) SVG
- (D) GIF

[View Solution](#)

Q53. Complete the analogy: Hand is to Glove as Foot is to _____.

- (A) Toe



- (B) Leg
- (C) Hand
- (D) Shoe

[View Solution](#)

Q54. The branch of design concerned with fitting products, tools and workspaces to the human body so they are safe, comfortable and efficient to use is called:

- (A) Ergonomics
- (B) Aesthetics
- (C) Semiotics
- (D) Typography

[View Solution](#)

Q55. Find the next letter in the series: *A, C, F, J, O, ?*

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

[View Solution](#)

Q56. The widely taught “three Rs” of sustainable waste management are Reduce, Reuse and Recycle. Which of the following is NOT one of these three Rs?

- (A) Reduce
- (B) Reuse



(C) Repair

(D) Recycle

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Q57. Designers and artists often use the “golden ratio” for pleasing proportions. What is its approximate numerical value?

(A) 1.414

(B) 3.142

(C) 2.718

(D) 1.618

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

Q58. [Drawing - 50 Marks]

Imagine a busy home kitchen in the middle of cooking a meal. Steam rises from a pan, utensils hang on a wall rack, jars and containers crowd the shelves, vegetables and a chopping board sit on the counter, and a window lets in soft daylight. Draw this warm, cluttered kitchen scene, giving prominence to a person standing at the stove rolling and cooking chapatis, one at the rolling board and one on the flame.

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]

In most Indian kitchens spices sit in a jumble of tins and packets, so cooks lose time hunting for the right one while a pan is already hot. Design a compact spice-storage and dispensing organiser that keeps common spices sorted, labelled and easy to pour with one hand. Show your organiser in two states: closed and stored on a shelf, and open with a spice being dispensed during cooking.

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 rectangular poster measures 60 cm by 40 cm. It is scaled down proportionally so that its longer side becomes 45 cm. What is the length, in cm, of its shorter side after scaling?

Solution

Concept - Proportional scaling (equal ratios): Scaling keeps the ratio of sides constant, so $\frac{\text{new long}}{\text{old long}} = \frac{\text{new short}}{\text{old short}}$.

Step 1 - Set up the ratio: The long side goes from 60 cm to 45 cm, a factor of $\frac{45}{60} = \frac{3}{4}$.

Step 2 - Apply to the short side: New short side = $40 \times \frac{3}{4} = 30$ cm.

Tip: Scale both sides by the same single factor and the shape stays undistorted.

Answer: 30 [Go Back to Q1](#)

Q2.

Q. In typography, 1 pica equals 12 points. A text column is set to a width of 8 picas. What is this width expressed in points?

Solution

Concept - Typographic units (pica to point): A pica is a fixed multiple of a point: 1 pica = 12 points.

Step 1 - Multiply: 8 picas $\times$ 12 = 96 points.



Tip: Remember the ladder: 1 inch = 6 picas = 72 points, so points = picas $\times$ 12.

Answer: 96 [Go Back to Q2](#)

Q3.

Q. A wooden cube of side 5 cm is painted on all six faces and then cut into 1 cm cubes. How many of the small cubes have exactly two painted faces?

Solution

Concept - Painted-cube counting (edge cubes): Small cubes with exactly two painted faces lie along the edges of the big cube, excluding the corner cubes.

Step 1 - Cubes per edge: Each edge of a side-5 cube has $5 - 2 = 3$ such cubes (drop the two corners).

Step 2 - Multiply by 12 edges: $12 \times 3 = 36$.

Tip: For a cube of side n , two-face cubes = $12(n - 2)$, one-face = $6(n - 2)^2$.

Answer: 36 [Go Back to Q3](#)

Q4.

Q. A digital image is 1200 pixels wide and is printed at a resolution of 300 pixels per inch (ppi). What is the printed width of the image, in inches?



Solution

Concept - Print size from resolution: Printed length = $\frac{\text{pixels}}{\text{ppi}}$.

Step 1 - Divide: $\frac{1200}{300} = 4$ inches.

Tip: More ppi packs the same pixels into a smaller print, giving sharper output.

Answer: 4 [Go Back to Q4](#)

Q5.

Q. A studio mixes a paint colour using red and white in the ratio 3:5. To prepare 40 litres of this mix, how many litres of red paint are needed?

Solution

Concept - Ratio sharing: Divide the total into equal parts, then take the share for red.

Step 1 - Total parts: $3 + 5 = 8$ parts.

Step 2 - Red share: $\frac{3}{8} \times 40 = 15$ litres.

Tip: Always sum the ratio terms first; each part here is $40 \div 8 = 5$ litres.

Answer: 15 [Go Back to Q5](#)

Q6.

Q. Look at the number series: 2, 6, 12, 20, 30, ... What number comes next in the series?



Solution

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

Step 1 - Differences: 4, 6, 8, 10 - each gap grows by 2, so the next gap is 12.

Step 2 - Next term: $30 + 12 = 42$.

Tip: These are $n(n+1)$: $1 \cdot 2, 2 \cdot 3, 3 \cdot 4, \dots, 6 \cdot 7 = 42$.

Answer: 42 [Go Back to Q6](#)

Q7.

Q. Perform the following steps. Step 1: Start with $x = 1, y = 2$. Step 2: Replace x by x multiplied by y . Step 3: Replace y by $y + 1$. Step 4: If $y = 5$, then go to Step 6, otherwise go to Step 5. Step 5: Go to Step 2. Step 6: Stop. What is the value of x ?

Solution

Concept - Loop tracing (dry run): Run the instructions in order and keep a running table of x and y until the stop test fires.

Step 1 - Trace the loop: Start $x = 1, y = 2$. Pass 1: $x = 1 \times 2 = 2, y = 3$. Pass 2: $x = 2 \times 3 = 6, y = 4$. Pass 3: $x = 6 \times 4 = 24, y = 5$.

Step 2 - Check the stop: Now $y = 5$, so Step 4 jumps to Step 6 and stops. Final $x = 24$.

Tip: Update x before y each pass; the loop multiplies $2 \times 3 \times 4 = 24$.

Answer: 24 [Go Back to Q7](#)



Q8.

Q. A floor measuring 8 m by 4 m is to be fully covered with square tiles of side 0.5 m each. How many tiles are needed?

Solution

Concept - Area tiling: Number of tiles = $\frac{\text{floor area}}{\text{tile area}}$.

Step 1 - Areas: Floor = $8 \times 4 = 32 \text{ m}^2$; one tile = $0.5 \times 0.5 = 0.25 \text{ m}^2$.

Step 2 - Divide: $\frac{32}{0.25} = 128$ tiles.

Tip: Keep units consistent; here the tiles divide the sides evenly, so there is no cutting waste.

Answer: 128 [Go Back to Q8](#)

Q9.

Q. Using the code where A = 1, B = 2, C = 3, and so on up to Z = 26, what is the sum of the letter values of the word DESIGN?

Solution

Concept - Letter-to-number coding: Replace each letter by its position in the alphabet and add.

Step 1 - Values: D = 4, E = 5, S = 19, I = 9, G = 7, N = 14.

Step 2 - Add: $4 + 5 + 19 + 9 + 7 + 14 = 58$.

Tip: Group easy pairs first ($4+5+7 = 16$, $19+9+14 = 42$) to reduce slips.

Answer: 58 [Go Back to Q9](#)



Q10.

Q. On an analog clock, through how many degrees does the minute hand turn in 25 minutes?

Solution

Concept - Angular speed of the minute hand: The minute hand sweeps 360° in 60 minutes, i.e. 6° per minute.

Step 1 - Multiply: $25 \times 6 = 150^\circ$.

Tip: Minute hand = $6^\circ/\text{min}$; hour hand = $0.5^\circ/\text{min}$.

Answer: 150 [Go Back to Q10](#)

Q11.

Q. A print run produces 500 posters. On quality check, 12% of them are rejected. How many posters are accepted?

Solution

Concept - Percentage of a total: Accepted = total $\times$ (100% – reject%).

Step 1 - Accept rate: $100\% - 12\% = 88\%$.

Step 2 - Compute: $500 \times 0.88 = 440$.

Tip: Or find 12% of 500 = 60 rejected, then $500 - 60 = 440$.

Answer: 440 [Go Back to Q11](#)

Q12.



Q. On a map drawn to a scale of 1:50000, two towns are 6 cm apart. What is the actual distance between the towns, in kilometres?

Solution

Concept - Map scale conversion: Actual distance = map distance $\times$ scale factor.

Step 1 - Actual length in cm: $6 \times 50000 = 300000$ cm.

Step 2 - Convert to km: 300000 cm = 3000 m = 3 km.

Tip: 1 km = 100000 cm, so divide the cm figure by 100000 .

Answer: 3 [Go Back to Q12](#)

Q13.

Q. A cube of side 5 cm is painted on all faces and cut into 1 cm cubes. How many of the small cubes have no painted face at all?

Solution

Concept - Hidden inner core: Unpainted small cubes form the inner block left after peeling one layer off every face.

Step 1 - Inner side length: Remove one unit from both ends: $5 - 2 = 3$.

Step 2 - Inner count: $3^3 = 27$.

Tip: For side n , unpainted cubes = $(n - 2)^3$.

Answer: 27 [Go Back to Q13](#)



Q14.

Q. How many diagonals does a regular octagon (8 sides) have?

Solution

Concept - Diagonals of a polygon: A polygon with n sides has $\frac{n(n-3)}{2}$ diagonals.

Step 1 - Substitute $n = 8$: $\frac{8 \times (8-3)}{2} = \frac{8 \times 5}{2}$.

Step 2 - Compute: $\frac{40}{2} = 20$.

Tip: Each vertex connects to $n - 3$ others by a diagonal; divide by 2 to avoid double-counting.

Answer: 20 [Go Back to Q14](#)

Q15.

Q. Which of the following statements about aperture (the f-number) in photography is/are TRUE?

- (A) A larger f-number such as $f/16$ lets in more light than $f/2.8$.
- (B) A smaller f-number gives a shallower depth of field.
- (C) The f-number is the ratio of the lens focal length to the diameter of the aperture.
- (D) The aperture setting has no effect on depth of field.

Solution

Concept - Aperture and depth of field: The f-number is focal length divided by aperture diameter; a bigger number means a smaller opening and less light, plus more depth of field.



Step 1 - Test each option: A: FALSE - $f/16$ is a smaller opening, so it lets in LESS light than $f/2.8$. B: TRUE - a small f-number (wide opening) blurs the background, a shallow depth of field. C: TRUE - this is the definition of the f-number. D: FALSE - aperture is a main control of depth of field.

Step 2 - Collect: Only B and C hold.

Tip: Small f-number = big hole = bright, blurry background.

Answer: B, C [Go Back to Q15](#)

Q16.

Q. Which of the following are renewable sources of energy?

- (A) Solar energy
- (B) Wind energy
- (C) Hydro (flowing water) energy
- (D) Tidal energy

Solution

Concept - Renewable energy: Renewable sources replenish naturally on a human timescale and do not run out with use.

Step 1 - Test each option: A: TRUE - sunlight is renewable. B: TRUE - wind is renewable. C: TRUE - flowing water is renewable. D: TRUE - tides driven by the Moon are renewable.

Step 2 - Collect: All four are renewable.

Tip: Contrast with fossil fuels (coal, oil, gas), which are finite and non-renewable.



Answer: A, B, C, D [Go Back to Q16](#)

Q17.

Q. Which of the following statements about Madhubani painting is/are correct?

- (A) It originated in the deserts of Rajasthan.
- (B) It is a form of metal sculpture.
- (C) It traditionally comes from the Mithila region of Bihar.
- (D) It is done strictly in black and white only.

Solution

Concept - Indian folk art (Madhubani/Mithila): Madhubani is a folk painting tradition known for bright natural colours and dense line-and-pattern fills.

Step 1 - Test each option: A: FALSE - it is not from Rajasthan. B: FALSE - it is a painting form, not metalwork. C: TRUE - it comes from the Mithila (Madhubani) region of Bihar. D: FALSE - it uses many bright colours, not only black and white.

Step 2 - Collect: Only C is correct.

Tip: Link the name: Madhubani town lies in the Mithila region of Bihar.

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

Q18.

Q. Which of the following are serif typefaces?



- (A) Helvetica
- (B) Times New Roman
- (C) Futura
- (D) Garamond

Solution

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

Step 1 - Test each option: A: FALSE - Helvetica is sans-serif. B: TRUE - Times New Roman is a classic serif. C: FALSE - Futura is a geometric sans-serif. D: TRUE - Garamond is an old-style serif.

Step 2 - Collect: B and D are serifs.

Tip: If letter ends look plain and clean, it is sans-serif (Helvetica, Futura, Arial).

Answer: B, D [Go Back to Q18](#)

Q19.

Q. Which of the following statements about the CMYK colour model is/are correct?

- (A) It is a subtractive colour model used mainly in printing.
- (B) In CMYK, the letters stand for Cyan, Magenta, Yellow and Kelvin.
- (C) The letter K in CMYK stands for Key, which is the black plate.
- (D) CMYK is the standard colour model for computer and phone displays.



Solution

Concept - CMYK printing model: CMYK is a subtractive model where inks absorb light; displays instead use additive RGB.

Step 1 - Test each option: A: TRUE - CMYK is subtractive and used for print. B: FALSE - K is not Kelvin. C: TRUE - K stands for Key (the black plate). D: FALSE - displays use RGB, not CMYK.

Step 2 - Collect: A and C are correct.

Tip: Screens emit light (RGB, additive); print reflects light (CMYK, subtractive).

Answer: A, C [Go Back to Q19](#)

Q20.

Q. Sundays are longer than Mondays. Mondays are shorter than Fridays. Wednesdays are shorter than Saturdays, which are in turn shorter than Sundays. Thursdays are shorter than Saturdays. Tuesdays are longer than Saturdays. Wednesdays and Thursdays are both longer than Fridays. If all of these are true, which of the options is/are also TRUE?

- (A) Wednesdays could be as long as Thursdays.
- (B) Tuesdays could be the longest days of the week.
- (C) Mondays are the shortest days of the week.
- (D) Fridays could be as long as Sundays.

Solution



Concept - Ordering from inequalities: List the given relations and build a partial order, then test what each option claims.

Step 1 - Note the facts: $\text{Mon} < \text{Fri} < \text{Wed}$, $\text{Thu} < \text{Sat} < \text{Sun}$, and $\text{Sat} < \text{Tue}$; also Mon is below Fri which sits below Wed and Thu, so Mon is the smallest.

Step 2 - Test each option: A: TRUE - nothing forces Wed and Thu apart, so they could be equal. B: TRUE - Tue is only known to be above Sat, and nothing places it below Sun, so Tue could be the longest. C: TRUE - Mon is shorter than Fri, which is shorter than every remaining day, so Mon is the shortest. D: FALSE - $\text{Fri} < \text{Wed} < \text{Sat} < \text{Sun}$ forces Fri strictly shorter than Sun, so they cannot be equal.

Step 3 - Collect: A, B and C are true.

Tip: A chain of strict 'less than' signs between two days rules out equality (that kills option D).

Answer: A, B, C [Go Back to Q20](#)

Q21.

Q. Which of the following is a thermosetting plastic (one that hardens permanently on heating and cannot be remelted)?

- (A) Polythene
- (B) PVC (polyvinyl chloride)
- (C) Polypropylene
- (D) Bakelite

Solution



Concept - Thermoplastic vs thermosetting: Thermoplastics soften and can be remoulded on heating; thermosetting plastics set permanently and cannot be remelted.

Step 1 - Test each option: A: FALSE - polythene is a thermoplastic. B: FALSE - PVC is a thermoplastic. C: FALSE - polypropylene is a thermoplastic. D: TRUE - Bakelite is a classic thermosetting plastic used in switches and handles.

Step 2 - Collect: Only D qualifies.

Tip: Thermosets (Bakelite, melamine) resist heat, which is why they are used near electricity and cookware.

Answer: D [Go Back to Q21](#)

Q22.

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

- (A) It was founded in the city of Paris.
- (B) It was founded by the architect Walter Gropius.
- (C) It aimed to combine crafts with the fine arts.
- (D) Its ideas strongly influenced modern design and architecture education.

Solution

Concept - Bauhaus (design history): The Bauhaus was a highly influential German design school known for merging art, craft and industry.



Step 1 - Test each option: A: FALSE - it was founded in Weimar, Germany, not Paris. B: TRUE - Walter Gropius founded it in 1919. C: TRUE - a core aim was uniting crafts with fine art. D: TRUE - its teaching model shaped modern design education worldwide.

Step 2 - Collect: B, C and D are correct.

Tip: Bauhaus = Germany (Weimar, then Dessau); remember 'form follows function'.

Answer: B, C, D [Go Back to Q22](#)

Q23.

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

- (A) PNG supports transparency through an alpha channel.
- (B) JPEG supports transparent backgrounds.
- (C) JPEG is a lossless format that never discards image data.
- (D) PNG uses lossless compression.

Solution

Concept - Image formats (PNG vs JPEG): PNG is lossless and supports transparency; JPEG is lossy and has no transparency.

Step 1 - Test each option: A: TRUE - PNG has an alpha channel for transparency. B: FALSE - JPEG cannot store transparency. C: FALSE - JPEG is lossy and discards data to shrink the file. D: TRUE - PNG compression is lossless.

Step 2 - Collect: A and D are correct.



Tip: Need transparency or crisp logos and text - use PNG; need small photos - use JPEG.

Answer: A, D [Go Back to Q23](#)

Q24.

Q. Which of the following statements about Indian monuments is/are correct?

- (A) The Taj Mahal is built mainly of red sandstone.
- (B) The Qutub Minar is located in Mumbai.
- (C) The Konark Sun Temple is located in Odisha.
- (D) The Taj Mahal is a UNESCO World Heritage Site.

Solution

Concept - Indian architecture and heritage: Recall the material, location and status of each monument.

Step 1 - Test each option: A: FALSE - the Taj Mahal is built of white marble, not red sandstone. B: FALSE - the Qutub Minar is in Delhi, not Mumbai. C: TRUE - the Konark Sun Temple is in Odisha. D: TRUE - the Taj Mahal is a UNESCO World Heritage Site.

Step 2 - Collect: C and D are correct.

Tip: Taj Mahal = white marble at Agra; the red sandstone monument nearby is Agra Fort.

Answer: C, D [Go Back to Q24](#)

Q25.



Q. On the traditional (red-yellow-blue) colour wheel, which of the following is a pair of complementary colours (colours placed opposite each other)?

- (A) Red and Yellow
- (B) Blue and Orange
- (C) Red and Purple
- (D) Green and Yellow

Solution

Concept - Complementary colours: Complementary colours sit directly opposite on the colour wheel: red-green, blue-orange, yellow-purple.

Step 1 - Test each option: A: FALSE - red and yellow are both warm and near each other, not opposite. B: TRUE - blue and orange are a complementary pair. C: FALSE - red and purple are neighbours on the wheel. D: FALSE - green and yellow are neighbours.

Step 2 - Collect: Only B is a complementary pair.

Tip: Learn the three classic pairs: red-green, blue-orange, yellow-purple.

Answer: B [Go Back to Q25](#)

Q26.

Q. Which of the following gases are considered greenhouse gases?

- (A) Carbon dioxide



- (B) Methane
- (C) Oxygen
- (D) Nitrous oxide

Solution

Concept - Greenhouse gases: Greenhouse gases trap outgoing heat and warm the atmosphere.

Step 1 - Test each option: A: TRUE - carbon dioxide is the main greenhouse gas. B: TRUE - methane is a strong greenhouse gas. C: FALSE - oxygen is not a greenhouse gas. D: TRUE - nitrous oxide is a greenhouse gas.

Step 2 - Collect: A, B and D are greenhouse gases.

Tip: Oxygen and nitrogen, the bulk of air, do not trap heat and are not greenhouse gases.

Answer: A, B, D [Go Back to Q26](#)

Q27.

Q. Which of the following statements about typography measurements is/are correct?

- (A) One inch is equal to 62 points.
- (B) A pica is a smaller unit than a point.
- (C) There are 12 points in one pica.
- (D) Leading refers to the vertical space between lines of text.

Solution



Concept - Type units and spacing: Recall the point-pica-inch relationships and the meaning of leading.

Step 1 - Test each option: A: FALSE - one inch is 72 points, not 62. B: FALSE - a pica is larger than a point (1 pica = 12 points). C: TRUE - there are 12 points in a pica. D: TRUE - leading is the vertical spacing between baselines of text.

Step 2 - Collect: C and D are correct.

Tip: Fix the chain: 1 inch = 6 picas = 72 points.

Answer: C, D [Go Back to Q27](#)

Q28.

Q. Which of the following materials are biodegradable (able to break down naturally by the action of microbes)?

- (A) A polythene shopping bag
- (B) Cotton cloth
- (C) Paper
- (D) Aluminium foil

Solution

Concept - Biodegradable vs non-biodegradable: Biodegradable materials are broken down by microbes; plastics and metals are not.

Step 1 - Test each option: A: FALSE - polythene is a plastic and does not biodegrade. B: TRUE - cotton is a natural fibre that decomposes. C: TRUE - paper is plant-based and biodegrades. D:



FALSE - aluminium foil is a metal and is non-biodegradable.

Step 2 - Collect: B and C are biodegradable.

Tip: Natural, plant or animal based materials tend to biodegrade; synthetic plastics and metals do not.

Answer: B, C [Go Back to Q28](#)

Q29.

Q. Which of the following are recognised principles or elements of visual design?

- (A) Balance
- (B) Contrast
- (C) Rhythm
- (D) Emphasis

Solution

Concept - Principles of design: Composition is organised using principles such as balance, contrast, rhythm, emphasis, proportion and unity.

Step 1 - Test each option: A: TRUE - balance is a core principle. B: TRUE - contrast is a core principle. C: TRUE - rhythm is a core principle. D: TRUE - emphasis is a core principle.

Step 2 - Collect: All four are design principles.

Tip: A handy set to remember: Balance, Contrast, Emphasis, Rhythm, Proportion, Unity.



Answer: A, B, C, D [Go Back to Q29](#)

Q30.

Q. In colour printing, ink is deposited on white paper and each ink subtracts light from the reflected beam. Which set lists the three subtractive primary colours used in standard four-colour process printing (before black is added)?

- (A) Cyan, Magenta, Yellow
- (B) Red, Green, Blue
- (C) Red, Yellow, Blue
- (D) Orange, Green, Violet

Solution

Concept - Colour theory (additive vs subtractive): Screens emit light and mix additively with Red, Green, Blue (RGB). Printing inks absorb light and mix subtractively.

Step 1 - Identify the print model: The subtractive primaries are Cyan, Magenta and Yellow, the basis of the CMYK process (K is the black plate).

Step 2 - Reject distractors: RGB is the additive (screen) set. Red-Yellow-Blue is the old artists' model, not process printing. Orange-Green-Violet are secondary colours.

Tip: Screens add light (RGB), ink subtracts light (CMY). That one line settles most colour-model questions.

Answer: A [Go Back to Q30](#)

Q31.



Q. In typography, what does the term “leading” refer to?

- (A) The horizontal space between two adjacent letters
- (B) The vertical space between successive lines of text
- (C) The weight or thickness of a typeface
- (D) The height of the capital letters in a font

Solution

Concept - Typography spacing terms: Different words name different gaps in text setting, and mixing them up is a classic trap.

Step 1 - Define leading: Leading (from the lead strips once placed between metal type rows) is the vertical distance between the baselines of two lines of text.

Step 2 - Separate the others: Horizontal space between letters is tracking (or kerning for a specific pair); font weight is boldness; capital height is cap-height.

Tip: Leading is vertical, tracking is horizontal. Remember lead strips stacked between rows.

Answer: B [Go Back to Q31](#)

Q32.

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

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



Solution

Concept - Number series (difference pattern): When terms do not share a common ratio, look at successive differences.

Step 1 - Take differences: $6 - 2 = 4$, $12 - 6 = 6$, $20 - 12 = 8$, $30 - 20 = 10$. The gaps grow by 2 each time.

Step 2 - Extend: The next gap is 12, so the next term is $30 + 12 = 42$. (Also $n(n + 1)$: $5 \times 6 = 30$, $6 \times 7 = 42$.)

Tip: If first differences are not constant, check whether they form their own simple pattern.

Answer: C [Go Back to Q32](#)

Q33.

Q. The Bauhaus, founded in Germany in 1919, became one of the most influential schools in the history of modern design. Who founded it?

- (A) Le Corbusier
- (B) Mies van der Rohe
- (C) Paul Klee
- (D) Walter Gropius

Solution

Concept - Design history (the Bauhaus): The Bauhaus fused craft, art and industrial production and shaped 20th-century design education.



Step 1 - Recall the founder: Architect Walter Gropius founded the Bauhaus in Weimar in 1919 and wrote its first manifesto.

Step 2 - Place the distractors: Mies van der Rohe was the school's last director, and Paul Klee taught there, but neither founded it. Le Corbusier was a separate modernist architect.

Tip: Bauhaus timeline: Gropius founds it, then Hannes Meyer, then Mies van der Rohe leads it until 1933.

Answer: D [Go Back to Q33](#)

Q34.

Q. Madhubani (Mithila) painting, known for its bright natural colours and dense line-filled motifs of gods, animals and nature, is a folk art traditionally practised in which Indian state?

- (A) Bihar
- (B) Rajasthan
- (C) Odisha
- (D) West Bengal

Solution

Concept - Indian folk art traditions: Each region has signature folk styles; UCEED expects you to map style to region.

Step 1 - Locate Madhubani: It comes from the Mithila region of northern Bihar, historically painted by women on walls and floors, now on paper and cloth.

Step 2 - Contrast the rest: Rajasthan is known for Phad and



miniature; Odisha for Pattachitra; West Bengal for Kalighat and Patachitra scrolls.

Tip: Madhubani = Mithila = Bihar. The double line borders and fish/peacock motifs are its giveaway.

Answer: A [Go Back to Q34](#)

Q35.

Q. You need a web image file that supports full transparency (an alpha channel) and lossless compression, so a logo can sit cleanly over any coloured background without quality loss. Which format best fits?

- (A) JPEG
- (B) PNG
- (C) BMP
- (D) TIFF

Solution

Concept - Image file formats: Formats differ in compression type (lossy vs lossless) and transparency support.

Step 1 - Match the needs: PNG offers lossless compression plus an 8-bit alpha channel and is standard for web graphics and logos over varied backgrounds.

Step 2 - Rule out others: JPEG is lossy with no transparency. BMP is uncompressed and heavy with no alpha. TIFF supports transparency but is a print/archive format, not a web delivery choice.



Tip: Logo on the web with clean edges over any colour: reach for PNG.

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

Q36.

Q. The ISO A-series paper sizes keep a constant side ratio of $1 : \sqrt{2}$ so that halving a sheet gives the next size with the same proportions. If a sheet's shorter side is 210 mm, what is its longer side (to the nearest mm)?

- (A) 250 mm
- (B) 270 mm
- (C) 297 mm
- (D) 300 mm

Solution

Concept - Mensuration in design (A-series ratio): The long side equals the short side multiplied by $\sqrt{2}$.

Step 1 - Substitute: Long side = $210 \times \sqrt{2} = 210 \times 1.4142$.

Step 2 - Compute: $210 \times 1.4142 = 296.98 \approx 297$ mm. These are exactly the A4 dimensions 210×297 mm.

Tip: $\sqrt{2} \approx 1.414$. Multiplying the short side by it (or the long side by 0.707) moves you between A-series sizes.

Answer: C [Go Back to Q36](#)

Q37.



Q. You set preferences in a mobile app by making a series of selections. You want to be notified of promotions and transactions, but do not want to receive newsletters. You want to allow access to your location and mic, but do not want to allow access to your contacts. The six toggles appear, in order, with these exact labels: (1) Do not notify me on Promotions, (2) Send me Newsletter, (3) Notify my Transactions, (4) Do not allow access to my Contacts, (5) Allow access to my Location, (6) Allow access to my Mic. What is the correct sequence of actions (Check = agree with that label, Skip = leave it unchecked)?

- (A) Check, skip, check, check, skip, check
- (B) Skip, skip, check, skip, check, check
- (C) Check, skip, skip, skip, check, check
- (D) Skip, skip, check, check, check, check

Solution

Concept - Observation and negative wording: The trap is that toggles 1 and 4 are phrased negatively, so you must read each label against your actual wish.

Step 1 - Work through toggles 1 to 3: You want promotions, so “Do not notify me on Promotions” must be left unchecked (Skip). You do not want newsletters, so “Send me Newsletter” is Skip. You want transactions, so “Notify my Transactions” is Check.

Step 2 - Work through toggles 4 to 6: You do not want contacts access, so “Do not allow access to my Contacts” is Check. You want location and mic, so both “Allow access” toggles are Check.

Step 3 - Assemble: Skip, skip, check, check, check, check.



Tip: On a negatively worded option, flip your intent before choosing check or skip.

Answer: D [Go Back to Q37](#)

Q38.

Q. In a certain code, each letter of a word is replaced by the next letter of the English alphabet. If CAT is written as DBU, how is DOG written in the same code?

- (A) EPH
- (B) CNF
- (C) EQI
- (D) FPH

Solution

Concept - Coding and decoding (letter shift): The rule shifts each letter forward by one position.

Step 1 - Verify the rule: C to D, A to B, T to U, so the shift is +1. Confirmed.

Step 2 - Apply to DOG: D to E, O to P, G to H, giving EPH.

Tip: Always test the shift on the given example first, then apply it letter by letter.

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

Q39.



Q. A designer needs a plastic that can be softened by heating and reshaped many times, making it easy to recycle. Which of the following materials fits this thermoplastic behaviour?

- (A) Bakelite
- (B) Polyethylene
- (C) Epoxy resin
- (D) Melamine

Solution

Concept - Materials (thermoplastic vs thermosetting):

Thermoplastics soften on heating and can be remoulded; thermosets set permanently and char if reheated.

Step 1 - Classify the option: Polyethylene is a thermoplastic used for bottles, bags and containers; it melts and reshapes repeatedly.

Step 2 - Reject the thermosets: Bakelite, epoxy resin and melamine are thermosetting; once cured they cannot be remelted, so they do not fit.

Tip: If it can be melted and reused, it is thermoplastic; if heat only hardens or burns it, it is thermosetting.

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

Q40.

Q. A man says, "That boy's mother is the only daughter of my mother." How is the boy related to the man?

- (A) Son



- (B) Brother
- (C) Nephew
- (D) Cousin

Solution

Concept - Blood relations (trace step by step): Resolve the innermost phrase first, then link outward.

Step 1 - Decode the inner phrase: “The only daughter of my mother” is the man’s sister.

Step 2 - Link to the boy: So the boy’s mother is the man’s sister, which makes the boy the man’s nephew.

Tip: Peel these puzzles from the inside out; name each person before moving to the next clause.

Answer: C [Go Back to Q40](#)

Q41.

Q. Which of the following is a renewable source of energy that a sustainable product designer would prefer?

- (A) Coal
- (B) Natural gas
- (C) Petroleum
- (D) Solar energy

Solution

Concept - Environmental awareness (renewable vs



non-renewable): Renewable sources replenish on a human timescale; fossil fuels do not.

Step 1 - Test each option: Coal, natural gas and petroleum are fossil fuels formed over millions of years and are finite.

Step 2 - Identify the renewable: Solar energy is continuously available from the sun and is renewable.

Tip: Sun, wind, water, geothermal and biomass are renewable; coal, oil and gas are not.

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

Q42.

Q. A wooden cube of side 3 cm is painted on all six outer faces and then cut into 1 cm cubes. How many of the small cubes have paint on exactly two faces?

- (A) 12
- (B) 8
- (C) 6
- (D) 0

Solution

Concept - Spatial reasoning (painted cube rule): For an $n \times n \times n$ cube, small cubes with exactly two painted faces sit along the edges (not at corners).

Step 1 - Use the edge count: A cube has 12 edges. Each edge holds $n - 2$ two-face cubes. Here $n = 3$, so $n - 2 = 1$ per edge.



Step 2 - Total: $12 \times 1 = 12$ small cubes have exactly two painted faces.

Tip: Corners give three faces, edges give two, face-centres give one, and the inner $(n - 2)^3$ cubes give zero.

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

Q43.

Q. The Lotus Temple in New Delhi, famous for its flower-like form made of twenty-seven marble “petals,” is a house of worship associated with which faith?

- (A) Hinduism
- (B) Bahai Faith
- (C) Buddhism
- (D) Jainism

Solution

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

Step 1 - Identify the faith: It is a Bahai House of Worship, open to people of all religions for prayer and meditation.

Step 2 - Note the design: Its twenty-seven free-standing marble petals are grouped in threes to form nine sides, a number significant in the Bahai faith.

Tip: Lotus Temple in Delhi = Bahai House of Worship, one of several such temples worldwide.



Answer: B [Go Back to Q43](#)

Q44.

Q. Which colour scheme is built from two hues that lie directly opposite each other on the colour wheel, giving strong visual contrast?

- (A) Analogous
- (B) Monochromatic
- (C) Complementary
- (D) Triadic

Solution

Concept - Colour schemes on the wheel: Schemes are named by how the chosen hues are positioned on the colour wheel.

Step 1 - Define the target: Complementary schemes use two hues opposite each other, such as blue and orange, which maximises contrast.

Step 2 - Separate the rest: Analogous hues sit next to each other; monochromatic uses one hue with tints and shades; triadic uses three evenly spaced hues.

Tip: Opposite on the wheel equals complementary equals high contrast.

Answer: C [Go Back to Q44](#)

Q45.



Q. A person starts at a point, walks 3 km due north, then turns and walks 4 km due east. What is the straight-line distance between the starting point and the final position?

- (A) 3 km
- (B) 4 km
- (C) 7 km
- (D) 5 km

Solution

Concept - Direction sense (Pythagoras): North then east makes a right angle, so the straight-line gap is the hypotenuse.

Step 1 - Set up: Distance = $\sqrt{3^2 + 4^2} = \sqrt{9 + 16}$.

Step 2 - Compute: $\sqrt{25} = 5$ km. The 7 km distractor is the sum of the legs (the walking path, not the shortest distance).

Tip: Perpendicular legs make a right triangle; the displacement is the hypotenuse, not the path length.

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

Q46.

Q. In type design, what is a “serif”?

- (A) A small stroke or foot at the end of a letter’s main strokes
- (B) The blank space left between two words
- (C) A heavier, bolder version of a typeface
- (D) The rounded curve of the letter S



Solution

Concept - Typography (letter anatomy): A serif is a specific decorative feature of letterforms and it names a whole type category.

Step 1 - Define it: A serif is the small finishing stroke or foot projecting from the ends of a letter's main strokes, as in Times New Roman.

Step 2 - Contrast: Typefaces without these feet are sans-serif (French "sans" meaning without). The other options describe word spacing, weight and letter shape, not serifs.

Tip: Feet on the letters equals serif; clean ends equals sans-serif.

Answer: A [Go Back to Q46](#)

Q47.

Q. The 1958 "India Report," which recommended a national institute for design education and led to the founding of the National Institute of Design in Ahmedabad, was written by which pair of American designers?

- (A) Frank Lloyd Wright and his studio
- (B) Charles and Ray Eames
- (C) Ray and Charles Rennie Mackintosh
- (D) Saul Bass and Paul Rand

Solution

Concept - Indian design history (NID origins): The Government



of India invited leading designers to advise on design and education.

Step 1 - Recall the authors: Charles and Ray Eames toured India and wrote the India Report in 1958, which shaped the vision for NID, established in 1961.

Step 2 - Reject distractors: Frank Lloyd Wright and Charles Rennie Mackintosh were architects unconnected to the report; Saul Bass and Paul Rand were graphic designers, not its authors.

Tip: India Report equals the Eameses equals the seed of NID Ahmedabad.

Answer: B [Go Back to Q47](#)

Q48.

Q. Pressure cookers are sometimes made using copper and stainless steel. In such a pressure cooker,

- (A) The bottom is made up of stainless steel and the rest is made up of copper because it is aesthetically pleasing.
- (B) The bottom is made up of stainless steel and the rest is made up of copper because copper is a germicide.
- (C) The bottom is made up of copper because it is a better conductor of heat compared to steel and hence it is more energy efficient.
- (D) The bottom is made up of copper because that is the only way such a cooker can be heated using an induction stove.

Solution



Concept - Design sensitivity (material for function): Match each material to the physical property the part needs.

Step 1 - What the base must do: The base touches the flame and must spread heat quickly and evenly, so it needs high thermal conductivity.

Step 2 - Compare materials: Copper conducts heat far better than steel, so a copper base heats faster and more evenly, saving energy. Aesthetics and germicidal action are not the functional reason, and induction actually needs a ferromagnetic (steel) base, so the induction claim is wrong.

Tip: On material-choice questions, ask which physical property the part must deliver, then pick the material that best provides it.

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

Q49.

Q. In typography and print measurement, how many points make up one inch?

- (A) 10
- (B) 25.4
- (C) 12
- (D) 72

Solution

Concept - Design units (point system): The point is the basic unit of type size, defined against the inch.



Step 1 - State the relation: In the modern (PostScript/desktop) system, 1 inch = 72 points.

Step 2 - Clear the distractors: 12 points make one pica (and there are 6 picas to an inch), while 25.4 is the number of millimetres in an inch, not points.

Tip: Remember the chain: 72 points = 6 picas = 1 inch = 25.4 mm.

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

Q50.

Q. Three of the following are two-dimensional shapes and one is a three-dimensional solid. Which one is the odd one out?

- (A) Cube
- (B) Circle
- (C) Square
- (D) Triangle

Solution

Concept - Odd one out (dimension test): Group the items by a shared property and spot the outlier.

Step 1 - Classify: Circle, square and triangle are flat, two-dimensional shapes with only length and breadth.

Step 2 - Find the outlier: A cube has length, breadth and height, making it a three-dimensional solid, so it is the odd one out.

Tip: When shapes are mixed, first ask whether each is flat (2D) or solid (3D).



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

Q51.

Q. Warli painting, made with simple white geometric figures (circles, triangles and lines) on an earthy background to show daily life and rituals, is a tribal art form of which Indian state?

- (A) Gujarat
- (B) Maharashtra
- (C) Madhya Pradesh
- (D) Karnataka

Solution

Concept - Indian tribal art: Warli is one of the best known tribal styles and is built from a tiny set of geometric marks.

Step 1 - Locate it: Warli art belongs to the Warli tribe of the northern Sahyadri region in Maharashtra (Palghar district).

Step 2 - Note its language: People and animals are drawn with two triangles meeting at a point, plus circles and lines, showing farming, dancing and festivals.

Tip: Warli equals Maharashtra equals white geometric figures on a mud-brown ground.

Answer: B [Go Back to Q51](#)

Q52.

Q. A designer needs a logo file that can be scaled from a business card to a billboard with no loss of sharpness, because the image is



defined by mathematical paths rather than a fixed grid of pixels.
Which file format is this?

- (A) JPEG
- (B) PNG
- (C) SVG
- (D) GIF

Solution

Concept - Raster vs vector graphics: Raster images store a fixed pixel grid and blur when enlarged; vector images store shapes as maths and stay sharp at any size.

Step 1 - Match the description: Paths and curves defined by maths describe a vector format. SVG (Scalable Vector Graphics) is the standard web vector format.

Step 2 - Reject rasters: JPEG, PNG and GIF are all pixel-based raster formats that lose quality when scaled up.

Tip: Logos and icons that must resize freely should be vector (SVG); photos stay raster.

Answer: C [Go Back to Q52](#)

Q53.

Q. Complete the analogy: Hand is to Glove as Foot is to ____.

- (A) Toe
- (B) Leg
- (C) Hand



(D) Shoe

Solution

Concept - Verbal analogy (relationship match): Name the link in the first pair, then apply the same link to the second.

Step 1 - Define the relation: A glove is the item of clothing worn to cover a hand. The link is “body part to the covering worn on it.”

Step 2 - Apply it: The covering worn on a foot is a shoe, so Foot is to Shoe.

Tip: State the relationship in words first; toe and leg are parts of the body, not coverings, so they break the pattern.

Answer: D [Go Back to Q53](#)

Q54.

Q. The branch of design concerned with fitting products, tools and workspaces to the human body so they are safe, comfortable and efficient to use is called:

- (A) Ergonomics
- (B) Aesthetics
- (C) Semiotics
- (D) Typography

Solution

Concept - Design vocabulary (human-centred fit): Each term names a distinct concern in design.



Step 1 - Define the target: Ergonomics (human factors) studies how products fit the human body and its capabilities for safety, comfort and efficiency.

Step 2 - Separate the others: Aesthetics deals with beauty and visual appeal, semiotics with signs and meaning, and typography with type. None concerns physical fit to the body.

Tip: If a question is about comfort, reach and human measurements, the answer is ergonomics.

Answer: A [Go Back to Q54](#)

Q55.

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

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

Solution

Concept - Letter series (position gaps): Convert letters to positions and study the jumps.

Step 1 - Find the gaps: A(1) to C(3) is +2; C to F is +3; F to J is +4; J to O is +5. The jump grows by one each step.

Step 2 - Extend: The next jump is +6, so from O(15) we reach position 21, which is U.

Tip: For letter series, write the alphabet numbers first; the pattern



is usually obvious once the gaps are visible.

Answer: B [Go Back to Q55](#)

Q56.

Q. The widely taught “three Rs” of sustainable waste management are Reduce, Reuse and Recycle. Which of the following is NOT one of these three Rs?

- (A) Reduce
- (B) Reuse
- (C) Repair
- (D) Recycle

Solution

Concept - Environmental awareness (the three Rs): The classic hierarchy is Reduce, then Reuse, then Recycle, in that order of preference.

Step 1 - Match the set: Reduce, Reuse and Recycle are the three standard terms.

Step 2 - Spot the extra: Repair is a good sustainable practice and appears in longer lists, but it is not part of the classic three Rs, so it is the odd term here.

Tip: The core three Rs are Reduce, Reuse, Recycle; Repair, Refuse and Rot are later additions.

Answer: C [Go Back to Q56](#)

Q57.



Q. Designers and artists often use the “golden ratio” for pleasing proportions. What is its approximate numerical value?

- (A) 1.414
- (B) 3.142
- (C) 2.718
- (D) 1.618

Solution

Concept - Proportion in design (golden ratio): The golden ratio, denoted φ , describes a division where the whole is to the larger part as the larger is to the smaller.

Step 1 - State the value: $\varphi = \frac{1 + \sqrt{5}}{2} \approx 1.618$.

Step 2 - Reject look-alikes: 1.414 is $\sqrt{2}$, 3.142 is π , and 2.718 is e . Only 1.618 is the golden ratio.

Tip: Keep four constants apart: $\sqrt{2} \approx 1.414$, $\varphi \approx 1.618$, $e \approx 2.718$, $\pi \approx 3.142$.

Answer: D [Go Back to Q57](#)

Q58.

Q (Drawing). Imagine a busy home kitchen in the middle of cooking a meal. Steam rises from a pan, utensils hang on a wall rack, jars and containers crowd the shelves, vegetables and a chopping board sit on the counter, and a window lets in soft daylight. Draw this warm, cluttered kitchen scene, giving prominence to a person standing at the stove rolling and cooking chapatis, one at the rolling board and one on the flame.



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

Fix the room's box first, then centre the cook so the kitchen life revolves around the stove.

Step 1 - Block the layout: Set up the kitchen with two receding walls meeting at a corner, using one or two vanishing points for the counter and shelves. Place the cook at the stove in the mid-foreground as your focal point.

Step 2 - Build the depth: Foreground - the counter, chopping board and vegetables; middle ground - the cook and stove; background - the wall rack, shelves and window. Overlap jars and utensils to add density.

Step 3 - Give the cook prominence: Draw the figure's posture, hands on the rolling pin and the puffing chapati with the most care and the firmest lines. Keep the stove and pan sharp while letting far shelves stay lighter.

Step 4 - Add texture and finish: Suggest steam with soft strokes, the shine of steel utensils, the grain of a wooden board and cast shadows under objects. Keep counter height and utensil sizes in believable proportion.

Tip: Anchor everything to one corner perspective, layer foreground-midground-background, and reserve your darkest detail for the cook's hands and the chapati so the stove reads as the heart



of the scene. [Go Back to Q58](#)

Q59.

Q (Design Aptitude). In most Indian kitchens spices sit in a jumble of tins and packets, so cooks lose time hunting for the right one while a pan is already hot. Design a compact spice-storage and dispensing organiser that keeps common spices sorted, labelled and easy to pour with one hand. Show your organiser in two states: closed and stored on a shelf, and open with a spice being dispensed during cooking.

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

Give a two-part visual reply: the organiser as an object, then proof it opens and pours cleanly.

Step 1 - Nail the requirements: Hold the goals in mind - keep spices sorted and sealed, save counter space, and allow one-handed pouring near a hot stove. Draw only features that meet these.

Step 2 - Show the two required states: On one side draw it closed and compact on a shelf; on the other draw it open with a single spice being shaken or poured into a pan. Keep both at the same scale.

Step 3 - Label features, do not write essays: Short call-outs with leader lines - rotating tiers, snap-shut lids, a small pour-spout, a clear window to see the level. One or two words each.



Step 4 - Prove it works: Add an inset showing the one-hand open-and-pour action in two or three steps, and a top view showing how the labelled compartments are arranged.

Tip: Suitability, ease of use, a unique idea and careful detailing win marks, so let your closed and in-use views and crisp labels do the explaining without any paragraphs. [Go Back to Q59](#)



Answer Key (Part A)

Section 1 - NAT (Numerical Answer Type)

Q1	Q2	Q3	Q4	Q5	Q6	Q7
30	96	36	4	15	42	24

Q8	Q9	Q10	Q11	Q12	Q13	Q14
128	58	150	440	3	27	20

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

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

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

Q25	Q26	Q27	Q28	Q29
B	A, B, D	C, D	B, C	A, B, C, 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) Count the number of fonts used in the given set of words.

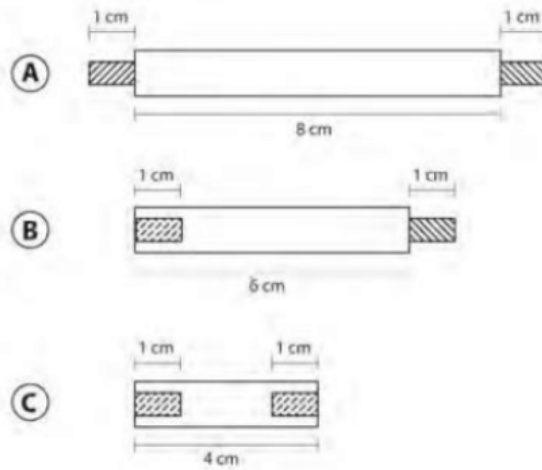
spectrum auctions display holdings
industry maximum performance operators
programme reduction benchmark natural
fiscal cartelisation withdrawn utilized
emerged contributed designer allegations
total compensation mango farmers sugar.

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.

P2. (Past UCEED) Shown below are three types of interlocking rods. There are in total 12 rods: 6 of type A (8 cm), 2 of type B (5 cm), and 4 of type C (4 cm). What is the maximum straight length obtainable by connecting the rods appropriately?

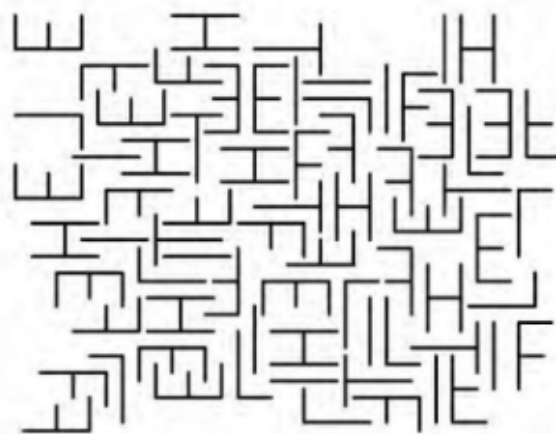




How to approach

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)** The given figure is made of letters L, T, H, I, E and F, set in different orientations. Find the total number of occurrences of capital letter T in the figure.



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)** Shown on the left are three types of pencils A, B, C (distinguished by the thickness of the two dark side-bands). In the barcode-like bundle on the right, pencils point either up or down. Find the total number of type A pencils.



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.

