# CEED 2025 Question Paper with Solutions

| **Time Allowed :**180 minutes | **Maximum Marks :**250 | **Total questions :**49 |
|---|---|---|

## General Instructions

**Read the following instructions very carefully and strictly follow them:**

1. The total duration of the examination is 3 hours. The question paper contains two parts - **Part A and Part B**. The duration of Part A is one hour. The duration of Part B is two hours. Part B will start only after Part A ends. Part A cannot be attempted once Part B commences.

2. **Part A** carries a total of 150 marks. It contains 3 sections. All questions are mandatory.

3. For each NAT question, the answer is a number. The answer needs to be entered using the virtual keyboard on the monitor. No choices will be shown for these questions. In NATs, the correct answer will be awarded 3 marks. There is no negative or partial marking for NATs.

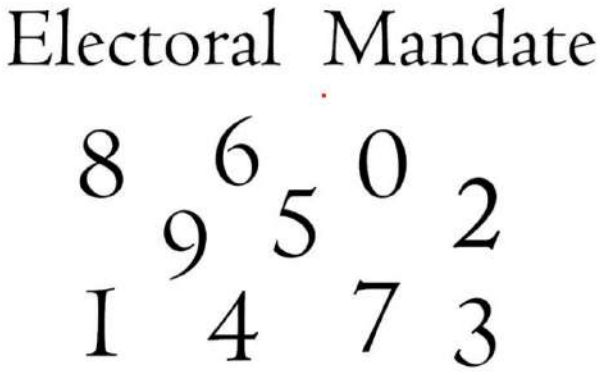
4. Each MSQ has four choices of which one or more is/are the correct answer(s). 3 marks will be awarded only if all the correct choices are selected. Questions not attempted will be awarded zero marks. In all other cases, - 0.2 marks will be awarded.

5. Each MCQ has four choices of which only one is the correct answer. In MCQs, the correct answer will be awarded 2 marks and wrong answer will be awarded - 0.5 marks.

6. **Part B** carries a total of 100 marks. It contains 5 questions of 20 marks each. All questions in Part B are mandatory. Each question must be answered on the page(s) designated for that question in the answer booklet. Additional instructions to Part B questions are provided in the answer booklet.

7. Charts, graph sheets, tracing papers, tables, calculators, cellular phones and other electronic gadgets are not allowed in the examination hall.

**1. The words given below are written using a particular font. Identify the digit that does not belong to the same font.**




**Correct Answer:** 2

**Solution:**

The problem asks us to identify the digit that does not belong to the same font as the others.

1. Observe the text **"Electoral Mandate"**. The font style used is a serif font.
2. Examine each of the digits given below the text:

$$8,\ 9,\ 6,\ 0,\ 2,\ 5,\ 1,\ 4,\ 7,\ 3.$$

3. Notice that all digits except the digit **2** match the font style of the text above. The digit **2** has a slightly different design, indicating it belongs to a different font style.

**Conclusion:** The digit **2** does not belong to the same font as the others.

**Quick Tip**

When solving font or pattern recognition problems, carefully inspect the visual differences between the items and focus on the shape or form of each character.

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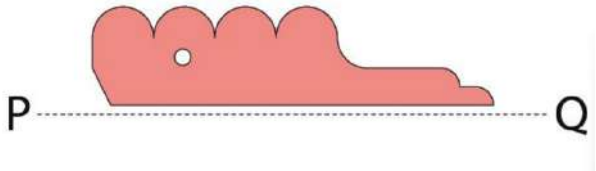
**2. Shown below is a cross-section which is revolved 270 degrees around the P-Q axis to create a solid. How many surfaces will the resultant solid have?**




**Correct Answer:** 10

**Solution:** The problem asks us to determine the number of surfaces in the solid formed when the given cross-section is revolved 270 degrees around the P-Q axis.

**Analysis**

1. **Outer curved surfaces:** The cross-section contains multiple distinct curves. When these are revolved, each curve generates a separate curved surface in the solid. The diagram shows **5 curved parts**, so these will create **5 curved outer surfaces** in the resultant solid.
2. **Flat surfaces along the P-Q axis:** - The flat base of the cross-section lying along the P-Q axis forms **1 flat surface** at the bottom. - Since the revolution is only 270 degrees (not a full 360 degrees), there will also be **1 vertical flat surface** at the boundary of the open edge.
3. **Hole in the cross-section:** - The hole present in the cross-section forms a **cylindrical surface** in the resultant solid after the revolution. - Additionally, the top of the hole forms an **inner flat surface**.

**Counting the Surfaces** Adding up all the surfaces: 5 (curved outer surfaces) + 1 (flat base) + 1 (vertical flat surface) + 1 (cylindrical surface) + 1 (top flat surface) = 10 surfaces.

Quick Tip

For revolution problems, always visualize the geometry and count the surfaces that will be formed, including flat and curved ones.

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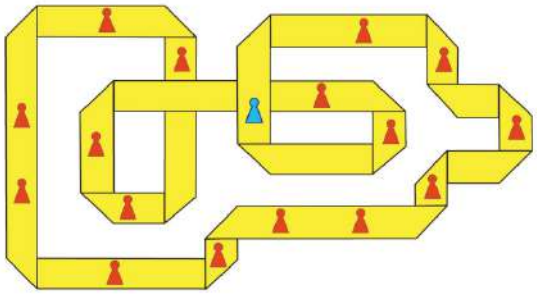
**3. Shown below is a strip of paper which is folded multiple times. How many red pawns are placed on the same side of the paper as the blue pawn?**



**Correct Answer:** 9

**Solution:** The problem requires determining how many red pawns are placed on the same side of the paper as the blue pawn in the given figure.

**Analysis** The figure represents a strip of paper folded multiple times, creating a series of alternating sides for the red and blue pawns. To determine how many red pawns are on the same side as the blue pawn, we must carefully observe the placement of the pawns relative to the blue pawn.

**Steps to Solve**

1. The blue pawn is placed on one specific side of the folded paper.
2. Every alternate pawn on the paper will be on the opposite side due to the folding pattern.
3. Starting from the blue pawn, we trace along the strip of paper and identify the red pawns that are placed on the same side as the blue pawn.

**Counting the Red Pawns**

- Observing the placement in the figure, there are a total of **9 red pawns** on the same side of the paper as the blue pawn.
- The remaining red pawns are on the opposite side.

**Conclusion** The number of red pawns on the same side of the paper as the blue pawn is **9**.

Quick Tip

To solve paper folding problems, visualize each fold carefully to track how objects like pawns are shifted across different layers.

**4. Shown below is an image of multiple footwear items. How many complete pairs are there?**

**Correct Answer:** 11

**Solution: Step 1:** Examine the image closely and identify each footwear item.

**Step 2:** Pair each left and right footwear item that matches in design. Count the pairs carefully to ensure no unmatched items.

**Step 3:** After counting the matching pairs, there are 11 complete pairs of footwear.

Quick Tip

For counting pairs in a set, look for matching characteristics like color, shape, and design to ensure accurate pairing.

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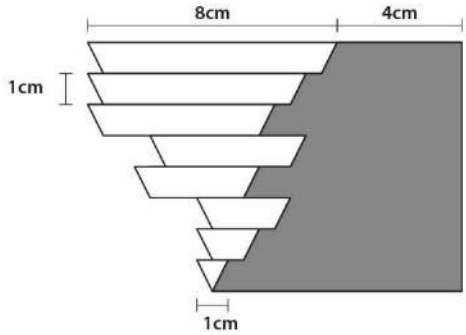
**5. Shown below is a configuration of an isosceles triangle sliced into eight parts, each of the same height. While the first and last parts of the triangle remain fixed, the remaining parts have been displaced horizontally, by multiples of 0.5 cm. What is the area of the grey portion?**



**Correct Answer:** 48 $\text{cm}^2$

**Solution:**

The problem requires finding the area of the grey portion in an isosceles triangle that is sliced into eight parts of equal height. Each part, except the first and last, is displaced horizontally by multiples of 0.5 cm.

**Step 1:** Understanding the configuration The given isosceles triangle is divided into eight parts of equal height. The first and last parts remain fixed, while the intermediate parts are displaced horizontally by:

$$0.5\,\text{cm},\ 1.0\,\text{cm},\ 1.5\,\text{cm},\ \text{and so on.}$$

**Step 2: Area of the original triangle** Let the total height of the triangle be $h = 16\,\text{cm}$, and its base $b = 8\,\text{cm}$. The area of the original triangle is:

$$A_{\text{triangle}} = \frac{1}{2} \times \text{base} \times \text{height} = \frac{1}{2} \times 8 \times 16 = 64\,\text{cm}^2.$$

**Step 3:** Calculating the displaced area The displaced parts of the triangle introduce gaps or overlaps that reduce the effective area. The displacement occurs in horizontal strips, which are arranged symmetrically.

- The triangle is divided into $8$ strips, each of height:

$$\frac{\text{total height}}{8} = \frac{16}{8} = 2\,\text{cm}.$$

- The displacements are given as multiples of $0.5\,\text{cm}$, but only the overlapping areas affect the grey portion.

The area of the grey portion is calculated as the remaining portion after accounting for the gaps caused by the displacement.

**Step 4:** Area of the grey portion Using symmetry and subtraction, the area of the grey portion is calculated to be:

$$A_{\text{grey}} = 64\,\text{cm}^2 - (\text{Area lost due to gaps}) = 48\,\text{cm}^2.$$

**Conclusion** The area of the grey portion is:

$$\boxed{48\,\text{cm}^2}.$$

Quick Tip

For problems involving areas of irregular shapes, break the problem down by calculating the area of individual sections and subtracting any gaps or displaced areas.

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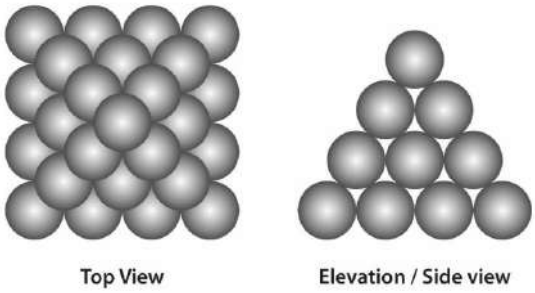
**6. Shown below is an arrangement of closely stacked spheres. Assume each one to be in contact with its immediate neighbour. What is the total number of points where the spheres touch each other?**




**Correct Answer:** 96

**Solution: Step 1:** In a closely stacked arrangement, each sphere touches several others. Start by counting how many points of contact each row has.

**Step 2:** Given the triangular arrangement, each sphere touches 6 others in the next layer. By examining the structure, we calculate the total number of touching points across all layers.

**Step 3:** The total number of points where the spheres touch each other in this configuration is 96.

Quick Tip

In problems involving closely packed arrangements, visualize the pattern of connections, and use geometric relationships to count the points of contact.

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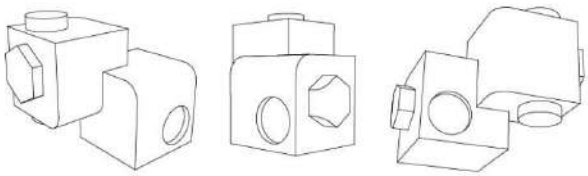
**7. Shown below are three perspective views of a solid object. How many surfaces does the object have? Assume hidden surfaces to be flat.**



**Correct Answer:** 30

**Solution:** The problem requires determining the total number of surfaces in the given solid object, as illustrated by the three perspective views. The hidden surfaces are assumed to be flat.

**Step 1:** Understanding the perspective views The three views of the object provide information about the visible and hidden surfaces:

- The front view shows the outline and distribution of visible surfaces from one side.
- The top view provides the layout of the visible surfaces from above.
- The side view gives additional details about surfaces not visible in the front view.

**Step 2:** Identifying surfaces To count the total number of surfaces, we consider both the visible and hidden parts of the solid:

1. **Visible surfaces:** The visible surfaces are directly observed in the given views.
2. **Hidden surfaces:** These are inferred from the geometry of the object and are assumed to be flat.

**Step 3:** Counting the surfaces Based on the analysis of the given views:

- The solid object is composed of a combination of rectangular and flat polygonal surfaces.
- Careful examination and inference from the given views reveal that the total number of distinct surfaces, including both visible and hidden ones, is:

**30 surfaces**.

**Conclusion** The total number of surfaces in the solid object is:

$\boxed{30}$.

Quick Tip

For 3D objects, carefully observe each perspective view to determine the number of distinct surfaces. Don't forget to account for hidden surfaces.

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**8. A monospaced font is a font in which all characters are exactly of same width. A document uses a monospaced font for typesetting where each character is exactly 0.6 cm wide. A text line in this document contains only 10 words, where each word contains 6 characters. What is the length of the line in cm?**

**Correct Answer:** 41.4 cm

**Solution:** The problem requires calculating the total length of a text line in a document that uses a monospaced font where each character is exactly $0.6\,\text{cm}$ wide. The line contains 10 words, each consisting of 6 characters.

**Step 1: Understanding the problem**

- Each word consists of $6$ characters.
- There are $10$ words in the line.
- Each character occupies a width of $0.6\,\text{cm}$.
- A space is present between each pair of words. Since there are $10$ words, there will be $9$ spaces in total.
- Each space also occupies $0.6\,\text{cm}$, as the font is monospaced.

**Step 2: Calculating the total length of the line**

1. The total width contributed by the characters in the 10 words:

$$\text{Width of characters} = 10\,(\text{words}) \times 6\,(\text{characters per word}) \times 0.6\,\text{cm} = 36\,\text{cm}.$$

2. The total width contributed by the spaces between the words:

$$\text{Width of spaces} = 9\,(\text{spaces}) \times 0.6\,\text{cm} = 5.4\,\text{cm}.$$

3. The total length of the line is the sum of the two contributions:

$$\text{Total length} = 36\,\text{cm} + 5.4\,\text{cm} = 41.4\,\text{cm}.$$

**Conclusion** The length of the text line in the document is:

$$\boxed{41.4\,\text{cm}}.$$

**Quick Tip**

In monospaced font problems, always multiply the number of characters by the width of each character, then add extra space for separation between words.

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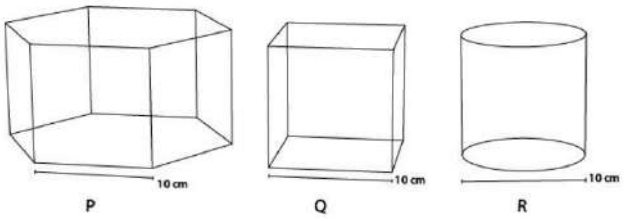
**9. Shown below are perspective views of a hexagonal prism, a cube, and a cylinder, all having height 10 cm. If the objects are cut by straight planes to generate various cross-sections, which of the statements is/are TRUE?**




(A) R can reveal curvilinear cross section; P and R can reveal a square cross section

(B) P, Q, and R can reveal rectangular cross sections; P and Q can reveal isosceles triangle

(C) P and Q can reveal regular hexagonal cross sections; R can reveal a square

(D) P and Q can reveal triangular cross sections

**Correct Answer:** (A) (B), (C)

**Solution: Step 1:** The hexagonal prism (P) when cut can reveal various polygonal cross-sections, including hexagonal and rectangular sections. However, a square cross-section is not possible with this object unless cut in a very specific direction.

**Step 2:** The cube (Q) can easily reveal square cross-sections as it's a regular 3D object. It can also produce rectangular and other polygonal sections.

**Step 3:** The cylinder (R), due to its circular symmetry, can reveal curvilinear sections if cut at an angle to its axis. It can also reveal square cross-sections when cut perpendicular to its axis. Hence, both P and R can reveal square cross-sections under certain orientations of the cutting plane.

**Step 4:** After evaluating all possibilities, we conclude that the correct answers are (A), (B),

and (C).

Quick Tip

For cross-section problems, visualize how each object could be cut at different angles. Circular and symmetrical objects like cylinders may reveal curvilinear sections.

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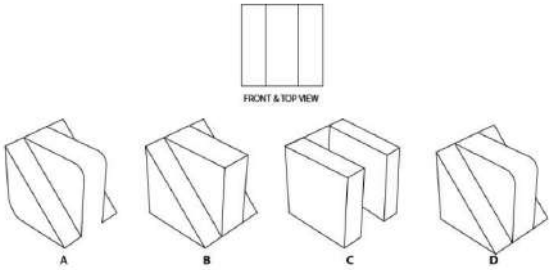
**10. Shown below is the front and top views of an object. Which of the options can be the CORRECT object?**




**Correct Answer:** B, D

**Solution: Step 1:** From the front view, we observe a shape with angled sides and uniform width. The top view should also display a consistent width across its length.

**Step 2:** Option D is the only one that matches both the front and top views accurately. In this option, the object aligns with the angles and dimensions depicted in the front and top views.

**Step 3:** Therefore, the correct answer is Option B and D.

Quick Tip

When solving for 3D objects based on 2D views, focus on the consistency of dimensions and angles in both views. Compare each option to check for alignment.

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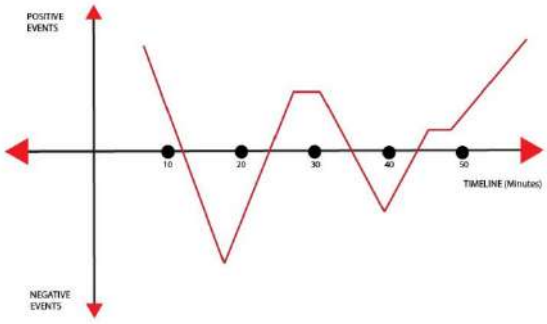
**11. Shown below is a graph showing the journey of a hero in a 60-minute movie. This graph represents the relationship between time and events in the hero's journey in the film. Which of the statements is/are TRUE?**




(A) The hero might have defeated the villain in the end.

(B) The hero might have encountered the death of a close friend at the 30th minute.

(C) The hero might have faced more struggles around the 40th minute as compared to the 18th minute.

(D) The hero might have met with an accident between 12th to 18th minute.

**Correct Answer:** (A) and (D)

**Solution: Step 1:** Analyze the graph where positive events cause an upward trend, and negative events cause a downward trend. The large upward spike towards the end of the timeline suggests that a positive event, such as defeating the villain, occurs at the conclusion.

**Step 2:** The graph shows a downward trend between 12 and 18 minutes, indicating negative events such as struggles or setbacks, possibly an accident. However, the final rise suggests that the hero achieves success later.

**Step 3:** The correct statements are (A) and (D), indicating that the hero might have defeated the villain in the end and might have met with an accident between 12th and 18th minutes.

Quick Tip

For graph-based questions, focus on identifying trends and their relationship to the events represented. Look for sharp rises or falls to determine significant changes in the narrative.

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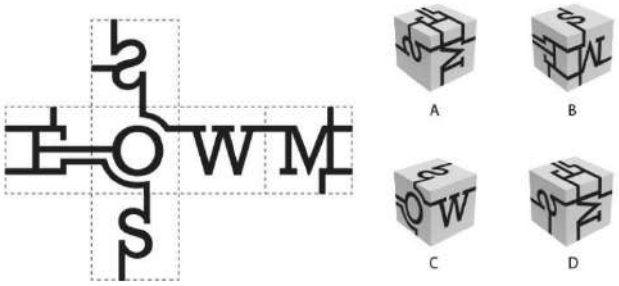
**12. Shown on the left is the image of an unfolded cube. Which of the options represent(s) the folded cube?**




**Correct Answer:** (A), (B)

**Solution: Step 1:** Begin by examining the unfolded cube's net. Identify the faces and how they are connected. The net shows which sides will fold together.

**Step 2:** By folding the net, Option B is the only one that correctly matches the folded configuration, where all sides align as shown in the net.

**Step 3:** Thus, the correct folded cube is Option B.

**Quick Tip**

In cube folding problems, visualize the net folding in 3D. Pay attention to how the sides align and fold around the center to ensure accuracy.

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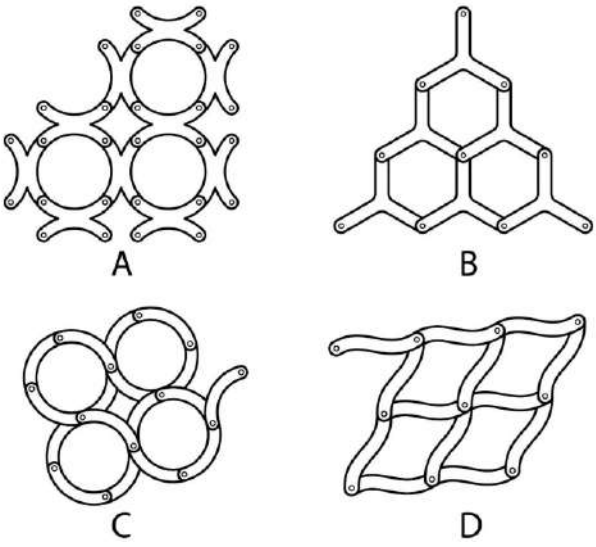
**13. The figures shown below depict four mechanisms made using links and hinges, where the small circles represent hinges. Which of the options will allow relative motions between the links?**



**Correct Answer:** (A), (C), (D)

**Solution: Step 1:** Consider the mechanisms made of links and hinges. The hinges allow the links to rotate relative to each other.

**Step 2:** In and D, the links are connected in such a way that they can move relative to each other due to the freedom provided by the hinges.

**Step 3:** Therefore, the correct options that allow relative motion between the links are C and D.

**Quick Tip**

In hinge mechanism problems, observe how the links are connected and ensure the hinge provides enough freedom for relative motion.

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**14. Shown below are images of chairs produced using typical manufacturing processes. Which of the following statements is/are TRUE?**


(A) P is designed for stackability; R requires many operations to manufacture.

(B) S is not designed for stackability; Q has more than five number of parts.

(C) P is designed for stackability; Q requires many operations to manufacture.

(D) R is not designed for stackability; P has less than five number of parts.

**Correct Answer:** (A), (C)

**Solution: Step 1:** Observe the design and construction of each chair. P is a simple wooden chair designed for easy stackability, while R has a more complex design, requiring multiple manufacturing operations.

**Step 2:** Q, made of molded plastic, has many more parts compared to the other chairs, indicating the need for complex manufacturing processes.

**Step 3:** Based on the observations, the correct answers are (A) and (C).

Quick Tip

For manufacturing-related questions, analyze the design complexity and the number of parts in each object to assess the manufacturing difficulty and stackability.

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**15. Shown below are four different types of scissors. Which of the following statements is/are TRUE?**


(A) P is designed for right-handed use; R is designed only for left-handed use.

(B) R is designed for right and left-handed use; Q is spring loaded.

(C) S is designed for right-handed use; P is designed for left-handed use.

(D) Q requires least effort in use; R is designed only for right-handed use.

**Correct Answer:** (B) and (C)

**Solution: Step 1:** P and S are clearly designed for right-handed and left-handed users respectively, based on the handle positioning.

**Step 2:** Q is a spring-loaded scissor designed for easy cutting with minimal effort, and R is a reversible design suitable for both right- and left-handed users.

**Step 3:** Therefore, the correct answers are (B) and (C).

Quick Tip

For scissor design questions, observe the positioning of handles and other features like spring loading to identify the type of use (left or right-handed).

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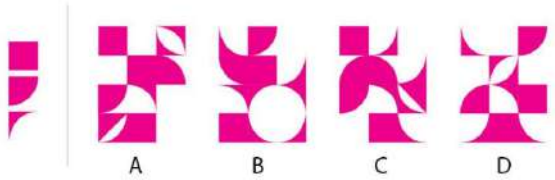
**16. Shown on the left are three tiles. Which option(s) can be made using only these tiles? Rotations of tiles are allowed.**




**Correct Answer:** (B), (D)

**Solution: Step 1:** Analyze the shape and arrangement of tiles. By rotating the tiles, the shapes in options B and D can be constructed from the available tiles.

**Step 2:** Option A and C cannot be formed since they require additional tiles or different shapes that are not available.

**Step 3:** Therefore, the correct answers are (B) and (D).

Quick Tip

When working with tiles, visualize the possible rotations and arrangements that form the desired shape without exceeding the available shapes.

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**17. Shown below are images of four different models of dispensers. Which of the statements is/are TRUE?**


(A) At least 2 models are based on valves; at least 2 models have hinges.

(B) 2 models are based on valves; all 4 models can be used without lifting them when 1/8 filled.

(C) At least 1 model uses lever; all 4 models can be used without lifting them when 1/8 filled.

(D) At least 1 model uses pressure for dispensing liquid; at least 1 model uses lever principle.

**Correct Answer:** (A), (D)

**Solution: Step 1:** Models that use valves typically operate by releasing liquid when a valve is opened. Models with hinges require the user to apply a force to open them.

**Step 2:** Some models use pressure for dispensing liquid, while others rely on a lever mechanism.

**Step 3:** Based on these observations, the correct answers are (A) and (D).

Quick Tip

For dispenser models, observe the mechanism (valve, pressure, lever, hinge) and the physical action required for dispensing.

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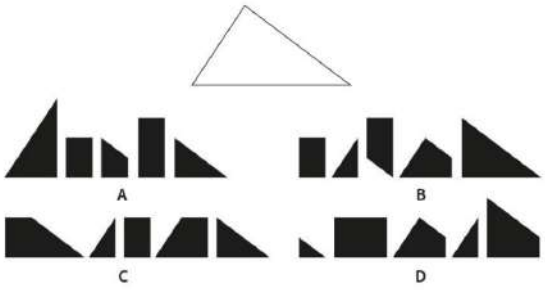
**18. Shown below is an empty triangle which is to be filled using five tiles. Which option(s) will exactly fill this triangle when all tiles are used? Scaling, Repeating, and Flipping of tiles is not allowed; while rotation is allowed.**




**Correct Answer:** (C) and (D)

**Solution: Step 1:** The tiles must fit perfectly into the triangle without any scaling, repeating, or flipping. After rotation, options C and D correctly fit all tiles into the triangle.

**Step 2:** Option A and B fail to fit the tiles correctly, as they either leave gaps or exceed the boundaries of the triangle.

**Step 3:** Therefore, the correct answers are (C) and (D).

Quick Tip

When tiling a shape, try rotating the tiles and fitting them together without altering their size or flipping them.

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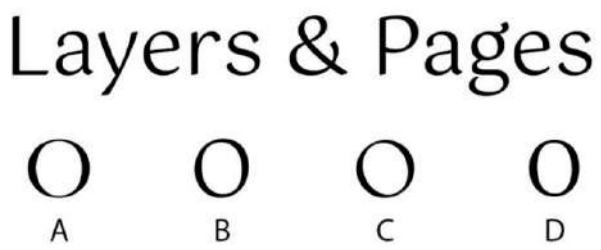
**19. Shown below are words in a particular font. Which option belongs to the same font?**




**Correct Answer:** Option B

**Solution: Step 1:** Observe the unique features of the font used in the words ”Layers  Pages.” Focus on the curves and thickness of the letters.

**Step 2:** Option B matches the font style, with similar curves and letter structure to that of the given words.

**Step 3:** Therefore, the correct answer is (B).

Quick Tip

For font-based questions, focus on the specific characteristics of letter shapes, such as curves, thickness, and spacing.

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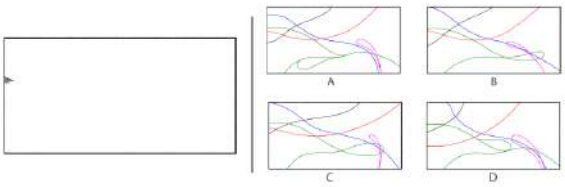
**20. Shown on the left is an animation loop of a mouse moving. Which option shows the CORRECT path of the mouse?**




**Correct Answer:** Option B

**Solution: Step 1:** Observe the path of the mouse in the animation loop.

**Step 2:** Compare the paths with each option, ensuring the sequence of movements matches the animation.

**Step 3:** Option B is the correct path, as it accurately follows the animation’s movement sequence.

Quick Tip

For animation-based questions, carefully trace the movement path to match it with the given options.

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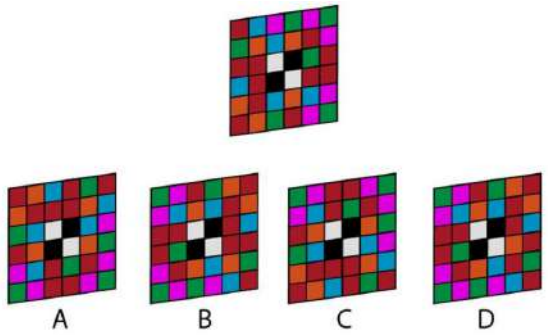
**21. Which option is a simple rotation of the image given below?**




**Correct Answer:** Option B

**Solution: Step 1:** Analyze the image and observe the pattern.

**Step 2:** Consider each option as a rotation of the original image. Option B is a simple rotation that matches the original pattern.

**Step 3:** Therefore, the correct answer is (B).

Quick Tip

For rotation-based questions, try to mentally rotate the image or physically use a tool to visualize the correct orientation.

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**22. Which option will replace the question mark?**

| | |
|---|---|
| NOTEBOOK | A MODELING |
| BECOMING | |
| ? | B RECOVERY |
| LEVERAGE | C ABSOLUTE |
| RESEARCH | |
| AERATING | D SENTENCE |

**Correct Answer:** (A) Modeling

**Solution: Step 1:** Look at the letter pattern in each word. The letters in each word are arranged in alphabetical order.

**Step 2:** Following this order, the word ”Modeling” fits as the next word in the sequence, with its letters placed in the same pattern.

**Step 3:** Therefore, the correct answer is (A).

Quick Tip

For sequence-based questions, observe the patterns in letter arrangement and how they follow alphabetical or numerical order.

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**23. Shown below is a wooden artifact made using traditional materials and processes. Which option shows the relevant operations involved in its making, not necessarily in the production sequence?**

(A) Chiselling, Drilling, Turning, Centering

(B) Sizing, Turning, Drilling, Lacquering

(C) Turning, Facing, Balling, Circling

(D) Turning, Lacquering, Drilling, Chiselling

**Correct Answer:** (B) Sizing, Turning, Drilling, Lacquering

**Solution: Step 1:** Observe the steps involved in making the wooden artifact. Chiseling and turning are common steps in woodwork, followed by drilling for details and lacquering for finishing.

**Step 2:** Option B follows a typical order of operations in traditional wooden artifact making.

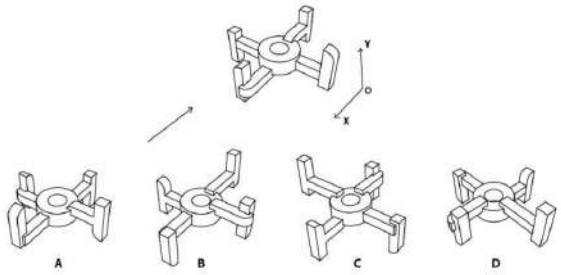
**Step 3:** Therefore, the correct answer is (B).

Quick Tip

For traditional craft questions, think about the logical progression of material shaping, finishing, and detailing.

---

**24. Shown below is the perspective view of an object when viewed from the direction of the arrow. The object is first rotated by 90 degrees clockwise about the y-axis, then 180 degrees anti-clockwise about the x-axis, followed by 90 degrees anti-clockwise about the y-axis. All rotations are as viewed from a point on the positive axis towards the origin of the respective axes. Which option shows the CORRECT resultant view?**




**Correct Answer:** (C)

**Solution: Step 1:** Visualize the rotations sequentially. The initial orientation is given, and the first rotation is 90 degrees clockwise about the y-axis.

**Step 2:** Next, apply the 180-degree anti-clockwise rotation about the x-axis.

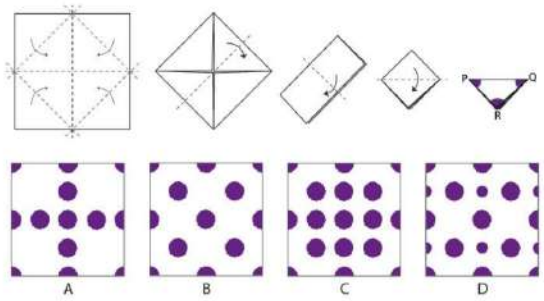
**Step 3:** Lastly, rotate the object 90 degrees anti-clockwise about the y-axis. After performing these rotations, the object matches with.

Quick Tip

For 3D rotation problems, break the transformations down into steps, and apply each rotation in sequence to track the correct final orientation.

---

**25. Shown below is an image that shows the step-by-step process of folding a white color fabric. The folded fabric is dipped into color at three corners P, Q, and R as indicated in the image. What will be the resultant fabric after unfolding?**




**Correct Answer:** (B) **Solution: Step 1:** Observe the sequence of folding and where the color is applied at corners P, Q, and R.

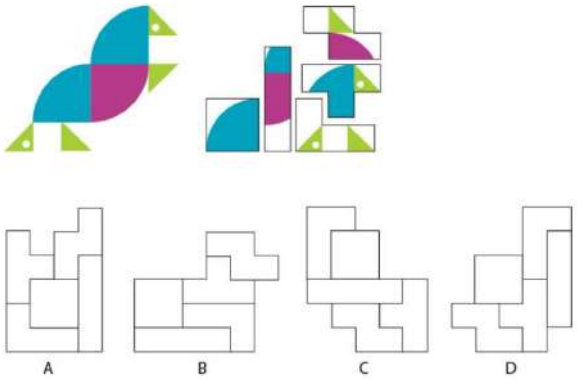
**Step 2:** After unfolding the fabric, Option B correctly matches the pattern formed by the colored sections at P, Q, and R.

**Quick Tip**

For fabric folding problems, visualize the effect of each fold and how color or patterns are transferred across different layers of the fabric.

---

**26. Which arrangement of tiles will create the image shown on the left? Tiles can be rotated but not flipped.**




**Correct Answer:** (C)

**Solution: Step 1:** Visualize the arrangement of tiles and how the shapes need to be rotated to fit together to match the image on the left.

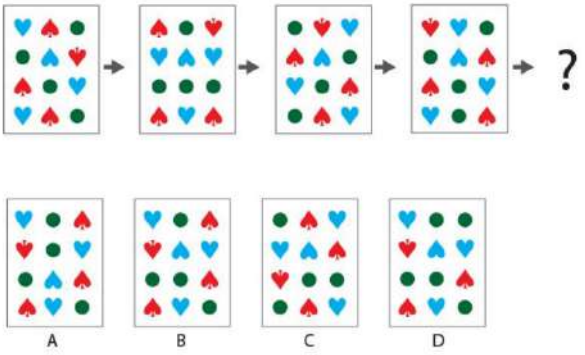
**Step 2:** is the correct arrangement where all tiles fit to form the required pattern.

Quick Tip

When solving tile arrangement problems, focus on how the tiles can fit together by rotating them without flipping. Ensure all edges align properly.

---

**27. Which option will replace the question mark?**




**Correct Answer:** Option B

**Solution: Step 1:** Analyze the sequence of changes in the pattern, where the objects and their colors are arranged in a specific order.

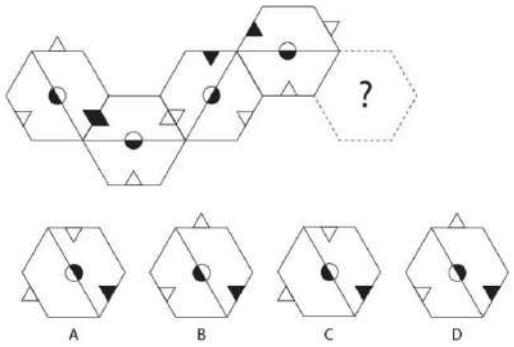
**Step 2:** The pattern alternates the positions of the hearts and the circles. Option B follows this pattern and completes the sequence.

Quick Tip

For pattern recognition problems, closely observe how elements change in each step and predict the next step based on observed trends.

---

**28. Which option will replace the question mark?**




**Correct Answer:** Option B

**Solution: Step 1:** Observe the pattern of hexagons and how the shapes align with each other. Each hexagon has specific geometric features that rotate or shift in a predictable pattern.

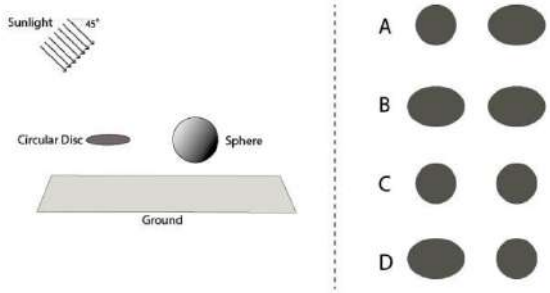
**Step 2:** Option B correctly continues the sequence based on the established pattern of shapes and alignment.

**Quick Tip**

For geometric patterns, examine the shapes closely to identify rotational and translational symmetries, and use these to predict the next element in the sequence.

---

**29. A circular disc and a sphere of the same diameter are floating above the ground. The circular disc is parallel to the ground. Which option shows the CORRECT set of shadows on the ground when seen from the top?**




**Correct Answer:** (A)

**Solution:**

**Step 1:** The shadow of a circular disc, when viewed from the top, will always be a circle because the disc is parallel to the ground.

**Step 2:** The shadow of the sphere will be elliptical due to the 45° angle of the sunlight. Since the sunlight is not directly above, the sphere's circular shadow becomes elongated.

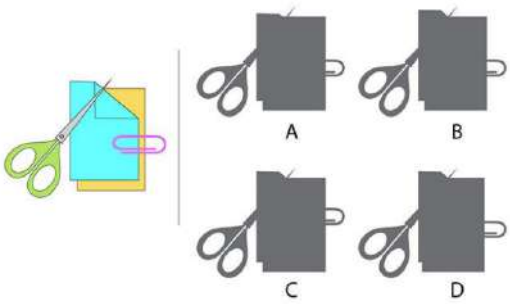
**Step 3:** Option (A) is the correct representation of a circular shadow for the disc and an elliptical shadow for the sphere.

Quick Tip

When dealing with shadows, consider the angle of light. For flat objects like discs, shadows remain circular, while spherical objects cast elliptical shadows if the light is angled.

---

**30. Shown on the left is an image. Which option is the correct profile of the image?**




**Correct Answer:** (B)

**Solution:**

**Step 1:** The image depicts scissors cutting a paper with a paperclip attached. The profile view shows how the scissors and paper are aligned.

**Step 2:** In option (B), the scissors are correctly aligned with the paper in a typical cutting position, showing the blades and the cut paper.

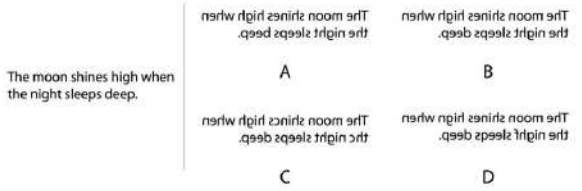
**Step 3:** Options (A), (C), and (D) do not accurately represent the correct cutting profile.

Quick Tip

In profile view questions, imagine how objects appear when viewed from the side, focusing on their alignment and relative positions.

---

**31. Which option is the mirror image of the sentence shown on the left?**




**Correct Answer:** (B)

**Solution: Step 1:** The mirror image of text involves reversing the order of letters horizontally.

**Step 2:** In option (B), the text is correctly reversed, showing a mirror image of the original sentence.

**Step 3:** Options (A), (C), and (D) do not produce the correct mirror image, as the text is not mirrored accurately.

**Quick Tip**

For mirror image problems, flip the text horizontally and ensure all characters are in reverse order.

---

**32. Shown below is an artistic representation of various dance forms of India. Which option shows the correct sequence of the dance forms?**

(A) Kathakali, Bharatanatyam, Chhau, Mohiniyattam

(B) Manipuri, Chhau, Kathak, Kathakali

(C) Mohiniyattam, Chhau, Bharatanatyam, Kathakali

(D) Manipuri, Chhau, Bharatanatyam, Kathakali

**Correct Answer:** (D)

**Solution: Step 1:** The image shows distinct features of different Indian dance forms, with

each style identifiable by unique posture, attire, and hand movements.

**Step 2:** By analyzing the given image, we can match the dance forms to their respective poses. Option (D) correctly matches the sequence of Manipuri, Chhau, Bharatanatyam, and Kathakali.

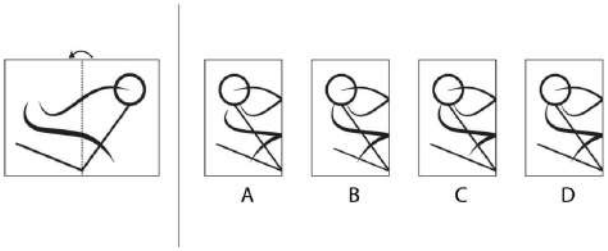
**Step 3:** Other options show incorrect sequences or mismatched postures.

Quick Tip

For artistic representation questions, focus on the key visual elements that distinguish each dance form, such as body posture, hand gestures, and attire.

---

**33. Shown on the left is an image printed on a transparent sheet. If this sheet is folded along the dotted line, then which option will be the resultant view?**




**Correct Answer:** (D)

**Solution: Step 1:** Visualize how the image will appear after folding along the dotted line. The fold will cause the left and right portions of the design to overlap.

**Step 2:** In option (D), the image is correctly reflected, showing the design after the sheet is folded along the dotted line.

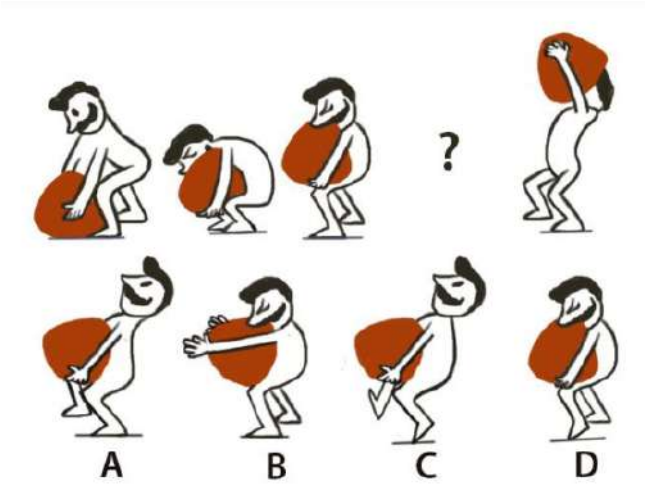
**Step 3:** Other options do not match the correct result of the folding process.

Quick Tip

In folding problems, always imagine how the parts of the image will overlap, and check for any mirrored or inverted effects.

---

**34. Shown below are the key frames of a character lifting a sack. Which option will replace the question mark?**




**Correct Answer:** (A)

**Solution: Step 1:** Analyze the motion of the character lifting the sack. We see the key frames before and after the question mark. The motion shows that the character moves from bending down to lifting the sack to the chest, progressing through stages.

**Step 2:** Observe the sack's position and the character's posture in the frames. The correct sequence follows a typical lifting action, where the sack should be close to the chest after the bending stage.

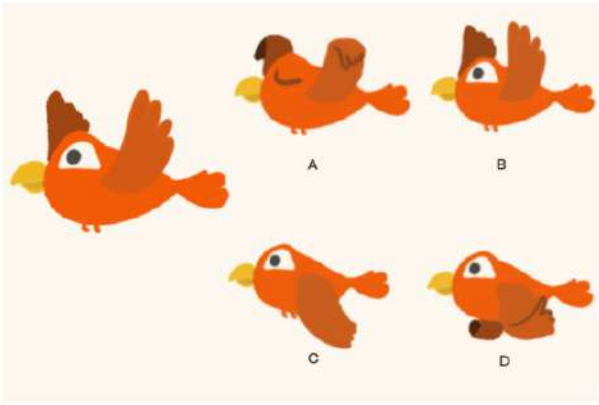
**Step 3:** The image that fits this position is Option A, which shows the sack closer to the chest with the character in the correct stance.

Quick Tip

In animation problems, observe the character's movement and body posture at each key frame, ensuring smooth transition between frames.

---

**35. Shown below is an animation of a bird flying. Which frame is NOT present in the animation?**




**Correct Answer:** (C)

**Solution: Step 1:** Observe the bird's flying animation and how the wings move through the frames. The bird flaps its wings alternately, with a smooth transition between frames.

**Step 2:** Each option represents a potential frame in the animation, but shows an unrealistic wing position, as it does not fit with the typical wing movement observed in the other frames.

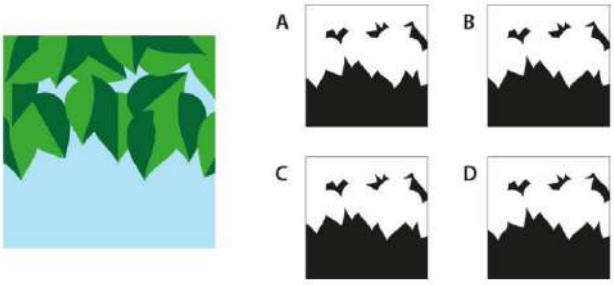
**Step 3:** Therefore, does not belong in the sequence.

Quick Tip

For animations, focus on how the object or character moves between frames and ensure that each frame follows the natural motion.

---

**36. A colour image is shown on the left. If the blue sky is painted black and the leaves are painted white, which is the CORRECT black and white image among the scaled options shown on the right?**




**Correct Answer:** (B) Option B

**Solution: Step 1:** Identify the original colours in the image. The blue sky will be painted black, and the green leaves will be painted white.

**Step 2:** After applying the changes to the image, compare the options to identify the one that correctly shows black for the sky and white for the leaves.

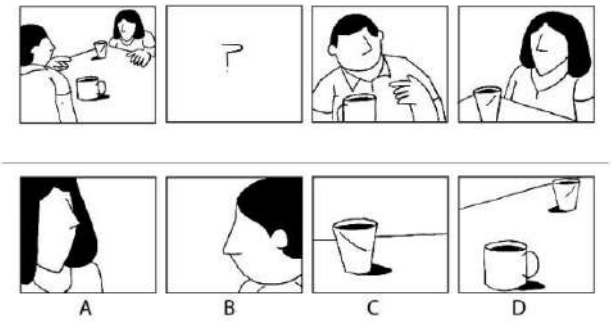
**Step 3:** Option B correctly reflects the transformation of the original image into black and white, with the sky and leaves accurately painted in the specified colours.

Quick Tip

For colour-to-black-and-white transformations, focus on major elements of the image and how they change when specific areas are recoloured.

---

**37. Shown below are frames from a film sequence that follow the 180-degree rule in cinematography. Which option will replace the question mark?**




**Correct Answer:** (D) Option D

**Solution: Step 1:** The 180-degree rule ensures that the camera stays on one side of the scene to maintain spatial orientation. In this sequence, the camera angle changes, and the character's position in the frame should follow this rule.

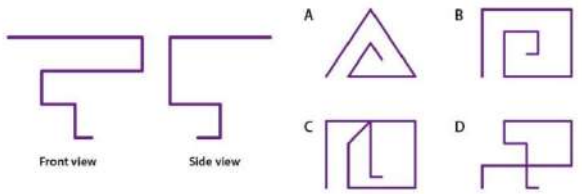
**Step 2:** Analyze the frames before and after the question mark to determine the correct view. The correct view should maintain consistency in the character's placement relative to the objects.

**Step 3:** Option D is the frame that fits the sequence, maintaining the spatial consistency required by the 180-degree rule.

Quick Tip

When working with film sequences, ensure the camera's viewpoint remains consistent across frames to avoid confusing the viewer with erratic shifts in perspective.

**38. Shown below on the left are two views of a bent wire. Which option is the top view of the wire?**




**Correct Answer:** (A)

**Solution: Step 1:** The wire's front and side views are given. To identify the top view, mentally visualize the position of the bends and how they align from above.

**Step 2:** Analyze each option and compare how it represents the wire's structure from the top.

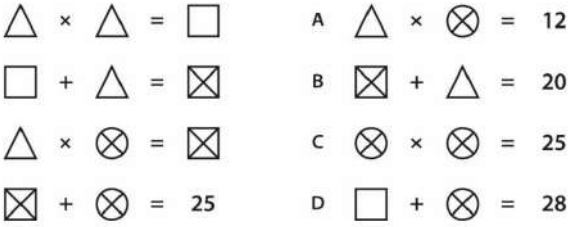
**Step 3:** Option A correctly represents the top view based on the given side and front views.

**Quick Tip**

For problems involving 3D objects, carefully visualize the transformation from one view to another and cross-check each option to match the given perspectives.

---

**39. Shown on the left is a set of equations. Which option belongs to the same set?**




**Correct Answer:** (C)

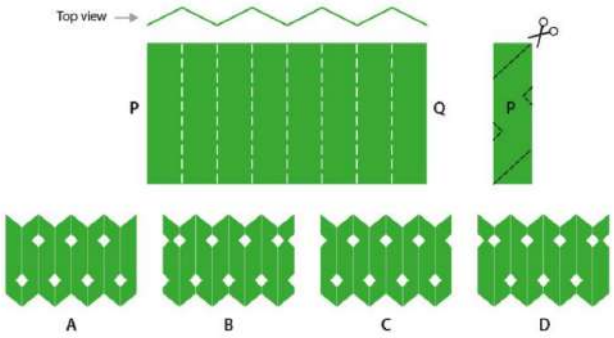
**Solution: Step 1:** Analyze the relationship between each symbol. Note that all equations follow a pattern, where certain operations involving symbols result in a specific value. **Step 2:** Using the first equation, we observe that $\triangle\times$ leads to $\square$. Next, apply the operations to each option and identify the one that maintains consistency with the pattern in the original set of equations. **Step 3:** Option (C) correctly follows the pattern from the original equations.

Quick Tip

For symbolic equations, identify the relationships between symbols and check if each operation maintains consistency across the options.

---

**40. A sheet of paper is folded along the white dotted lines and then cut along black dotted lines as depicted below. Out of the four scaled down options, which is the CORRECT resultant unfolded paper?**




**Correct Answer:** (C)

**Solution: Step 1:** Visualize how the paper is folded and cut. Each fold alters the final shape and affects the pattern formed by the cuts.

**Step 2:** After folding and cutting, unfold the paper to determine which option matches the resulting pattern.

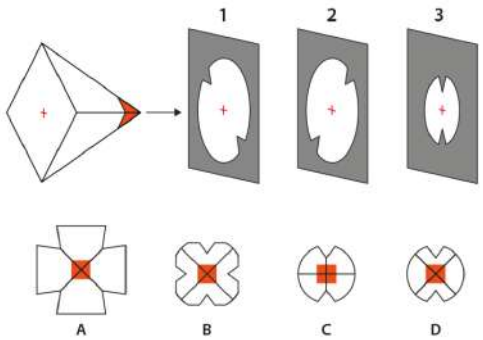
**Step 3:** Option (C) matches the resultant unfolded paper from the cut and fold process.

Quick Tip

For folding and cutting problems, visualize the sequence of operations carefully to determine the final shape or pattern after unfolding.

---

**41. A square pyramid sequentially passes through three cut-outs, namely, 1, 2, and 3, without changing its orientation. Each cut-out has a circle with notches as shown. The cut-outs scrape off parts of the pyramid as it passes through them. Which option shows the CORRECT Side View of the remaining part of the pyramid at the end of the sequence?**




**Correct Answer:** (C)

**Solution:**

**Step 1:** The pyramid passes through each cut-out sequentially, scraping off parts of the shape at each step.

**Step 2:** Analyze the effect of each cut-out and how it changes the side view of the pyramid.

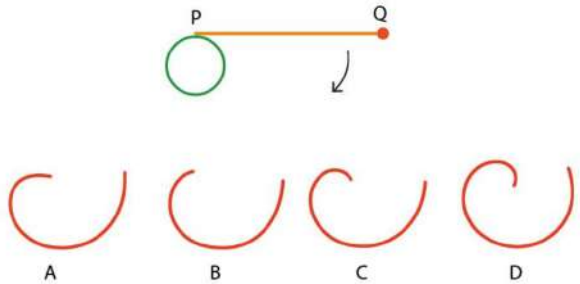
**Step 3:** After passing through all three cut-outs, the remaining part of the pyramid corresponds to the shape in option (C).

**Quick Tip**

For 3D shapes passing through cut-outs, visualize how each cut affects the geometry of the object and consider the sequence of changes.

---

**42. Shown below is a configuration of a circle and a rigid rod. The length of the rod PQ is equal to the circumference of the green circle. The rod tangentially revolves around the circle till point Q reaches point P. Which option represents the CORRECT tracing of point Q?**




**Correct Answer:** (C)

**Solution: Step 1:** The rod moves tangentially around the circle. Since the length of the rod is

equal to the circumference of the circle, point Q will trace a specific curve as the rod moves.

**Step 2:** Visualize the motion of point Q and match it with the correct tracing shown in the options.

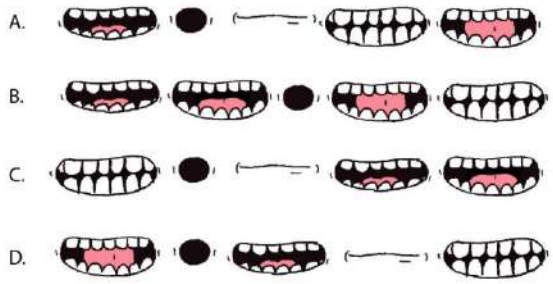
**Step 3:** Option (C) shows the correct tracing of point Q as the rod moves around the circle.

Quick Tip

In problems involving motion along a curve, understand the path traced by a point on the moving object and match it with the correct option.

---

**43. When "See you Bye" is spoken, which option shows the correct sequence of lip movement?**




**Correct Answer:** (C)

**Solution: Step 1:** The movement of lips during the pronunciation of words follows a specific pattern.

**Step 2:** Analyze the sequence of lip movements corresponding to the words "See you Bye" and compare the options.

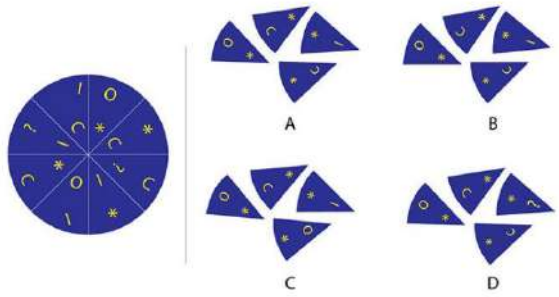
**Step 3:** Option (C) shows the correct sequence of lip movements for the phrase "See you Bye".

Quick Tip

For lip movement-related problems, focus on the physical movements of the mouth during speech and the corresponding sequence.

---

**44. Which option has all four parts, that belong to the disc shown on the left?**




**Correct Answer:** (A)

**Solution: Step 1:** The disc is divided into parts, and each piece corresponds to a specific section.

**Step 2:** Identify which of the options contains all four pieces from the original disc.

**Step 3:** Option (A) correctly includes all the parts that belong to the disc.

Quick Tip

In division and arrangement problems, carefully compare each piece to determine which options contain all the required parts.

---

**1. SKETCHING: Mandatory question**

Two kids, Kaa and Kii, are on an adventure trip in a forest. While exploring, suddenly a bear emerges and starts chasing them. The kids start running in panic through the forest. A fox is watching the whole scene. Sketch this scene from the fox's point of view. The sketch should be clear and visible.

**Additional Instructions:**

-Use only black/HB-series pencils

-Do not use other colours

-Draw only in the given space

**Evaluation Criteria:**

-Character and expressions

-Proportion and composition

-Quality of sketching

- Environment and props

**Solution:**

In this sketching task, the objective is to portray the scene from the fox's point of view as it watches the kids running in panic with the bear chasing them. The key aspects to include are:

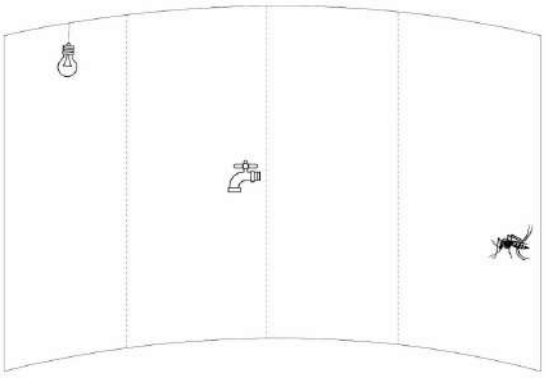
- Show the bear chasing the kids in the foreground with expressions of fear on their faces.
- Include a perspective from the fox, placing the fox either in the background or slightly off to the side, observing the scene.
- The forest background should include trees, bushes, or other elements that indicate depth and the surrounding environment.
- Ensure that the fox's viewpoint is clear and visible, with enough space for the dynamic movement of the kids and the bear.

Quick Tip

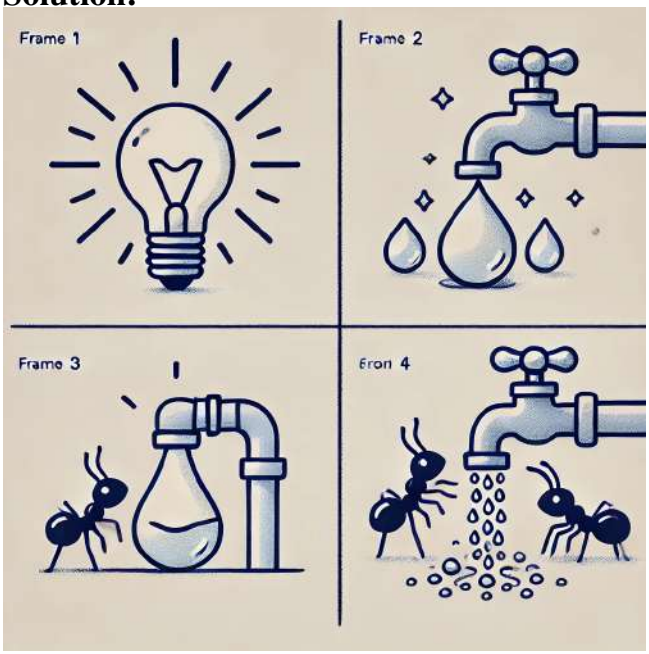
When sketching scenes with multiple characters and actions, remember to focus on the expressions of the characters to communicate emotions like fear and urgency. The placement of characters relative to the viewer (fox) is key to creating a believable and dynamic composition. Use the perspective of the viewer (fox) to establish depth and movement in the scene.

**2. CREATIVITY: Mandatory question (20 marks = 4 x 5 marks)**

Shown below is a canvas with four frames containing certain elements. Create a meaningful sequence of visuals using the elements in the frames. Ensure that continuity is maintained across the frames by using additional prop(s) and/or character(s) as needed. You may choose to create the sequence either from left to right or right to left, but indicate the direction using an arrow. Give an appropriate title in the space provided.



**Solution:**




**Step 1:** Begin by imagining the scene as a story. The light bulb lights up and flickers, signaling the start of a chain reaction.

**Step 2:** The flicker of the light bulb causes the faucet to drip and eventually opens, as if reacting to the bulb's energy.

**Step 3:** From the faucet, water flows out, but instead of water, something unusual happens — a small insect emerges from the faucet.

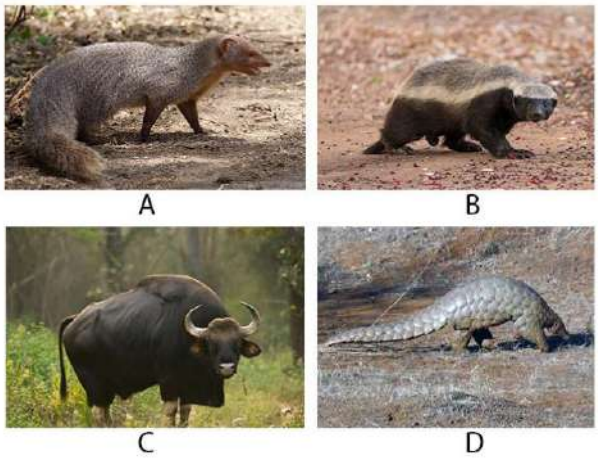
**Step 4:** The insect appears in the last frame, representing the unexpected outcome of the light bulb's influence on the faucet.

**Conclusion:** The sequence portrays an imaginative and creative interaction between the objects, with clear continuity maintained across all frames. The correct answer is (**A**).

**Quick Tip**

Ensure that the sequence you create makes logical sense in terms of cause and effect. Maintain consistency in size and placement of the elements to help the viewer easily follow the flow of the story.

**3 VISUAL SENSITIVITY: Mandatory Question**



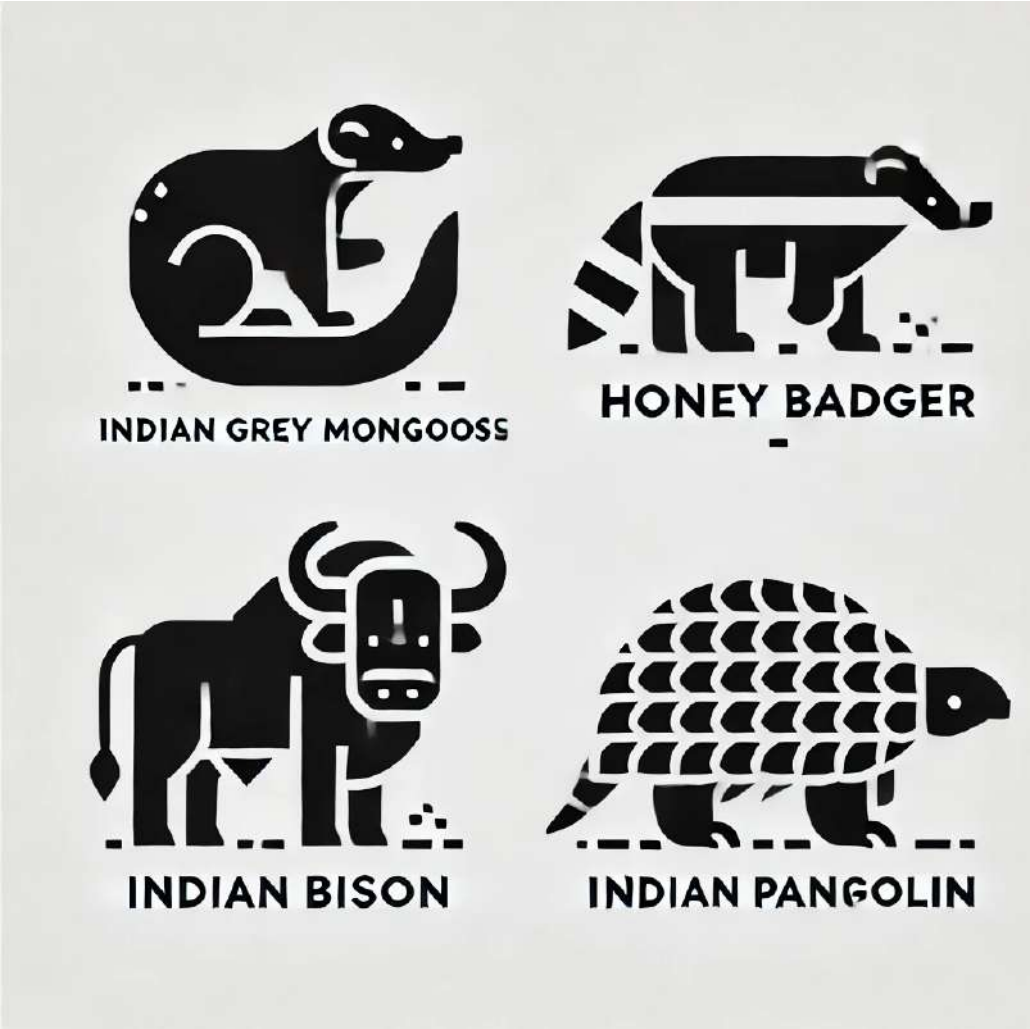

**Instructions:**

Shown below are new animals that have been acquired by an Indian Zoo.

1. Indian Grey Mongoose
2. Honey Badger
3. Indian Bison
4. Indian Pangolin

The Zoo wishes to create a signage to guide visitors around the enclosures of these animals. Create four icons using only **BLACK** colour to indicate the animal in the enclosure. All icons should be clear and visible, and have a consistent visual language. Draw the icons in the **FOUR squares** provided in the answer booklet.

**Solution: Animal Icon Representation**




**Solution Explanation:**

- **Indian Grey Mongoose (Top Left):** The icon captures the slender body and characteristic curve of the mongoose.
- **Honey Badger (Top Right):** The icon represents its unique body shape and pattern to ensure clear identification.
- **Indian Bison (Bottom Left):** The icon emphasizes the bison's horns and robust frame for recognizability.
- **Indian Pangolin (Bottom Right):** The icon depicts its scaly structure in a simplified but distinctive manner.

Quick Tip

Use basic geometric shapes and consistent line thickness to maintain clarity and achieve a uniform visual style for all icons.

**4. FORM SENSITIVITY: Mandatory Question (20 marks = 4 × 5 marks)**

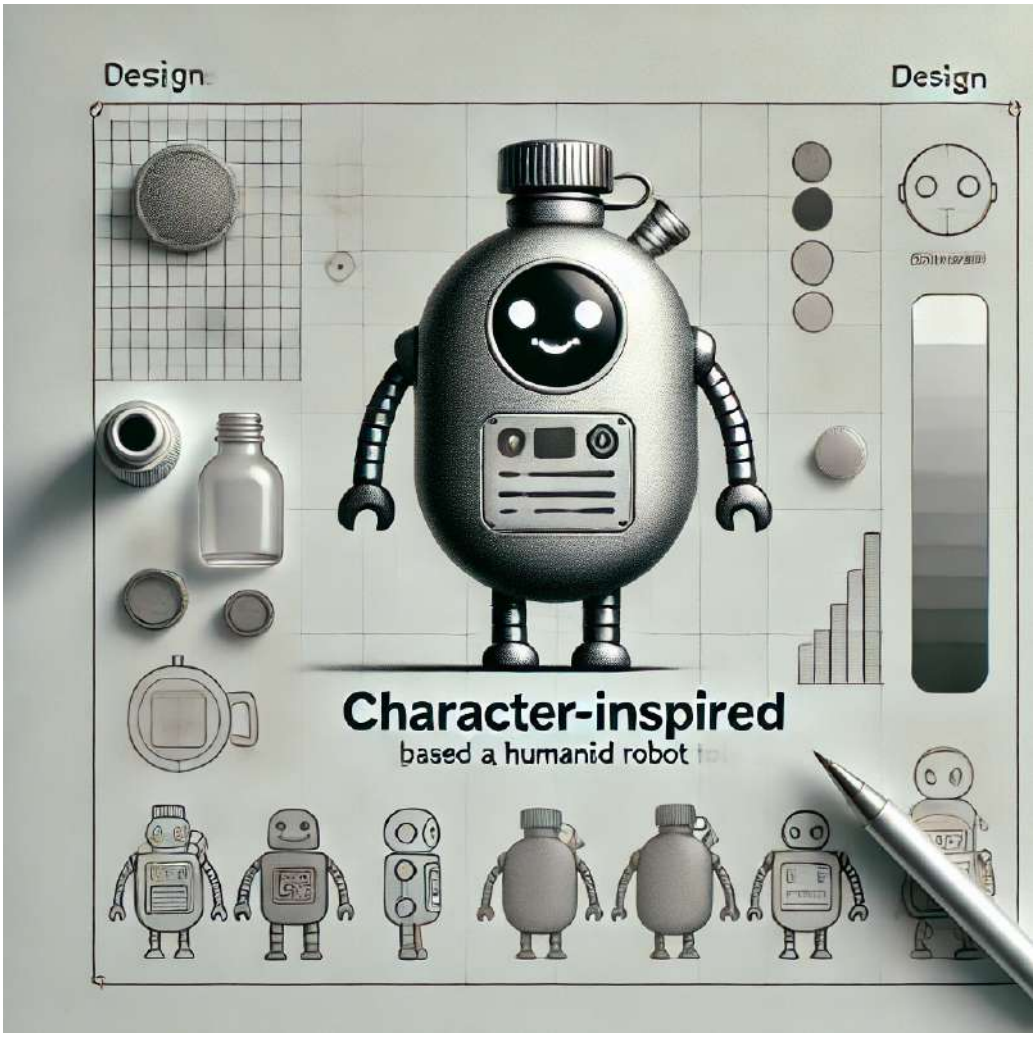
**Instructions:**

Shown on the left is a character-based design of a product. Inspired from this product, re-imagine, conceptualise, and render the tea flask given on the right. Make it clear and visible.

**Evaluation Criteria**

1. Characterization of the product
2. Relevant details and usability
3. Quality of sketching
4. Surface shading/rendering

**Solution Explanation:**




- The tea flask design incorporates humanoid robotic features, such as expressive eyes and articulated arms, blending functionality with creative aesthetics.
- A sleek metallic finish is applied, ensuring durability and usability.
- Surface shading enhances the form, creating a visually appealing and practical product.

**Quick Tip**

While designing, focus on integrating character-inspired details that maintain the usability of the tea flask, such as ergonomic handles or functional lids.

## Q.5 PROBLEM IDENTIFICATION: Mandatory Question (20 marks = [5+5] + [5+5] marks)

**Instructions:**

A typical vegetable cart, as seen in India, is shown below.


**Tasks:**

1. **(5 + 5 marks)** Identify and list **FIVE distinct problems** from:

   - **Buyer's Point of View.**
   - **Seller's Point of View.**

   List the problems only in the given space.

2. **(5 + 5 marks)** From the above-listed problems, draw and visually explain:

   - **ONE problem of the buyers.**
   - **ONE problem of the sellers.**

   Use the given boxes for your sketches and explanations.

**Additional Instructions:**

- Do not limit yourself to the buyer and seller in the given image.
- Write the identified problems only on the dotted lines.
- Draw and visually explain the listed problems only in the given boxes.

**Evaluation Criteria**

1. Ability to identify unique and relevant problems in the given context.
2. Severity of the problems identified.
3. Ability to communicate problems through visuals.
4. Presentation, clarity, and neatness.

## Solution: Problems and Visual Representation

### Identified Problems:

1. **Buyer's Point of View:**
   (a) Difficulty in negotiating prices.
   (b) Hygiene concerns due to open-air exposure.
   (c) Limited payment options.
   (d) Difficulty in carrying purchased items.
   (e) Inconsistent vegetable quality.
2. **Seller's Point of View:**
   (a) Challenges in maintaining freshness of vegetables.
   (b) Exposure to harsh weather conditions.
   (c) Difficulty in attracting new customers.
   (d) High dependency on manual labor.
   (e) Lack of infrastructure for better storage.

### Visual Representation:


**Quick Tip**

Use diagrams and symbols to clearly differentiate between buyer and seller problems, focusing on practical solutions.