



UCEED 2022

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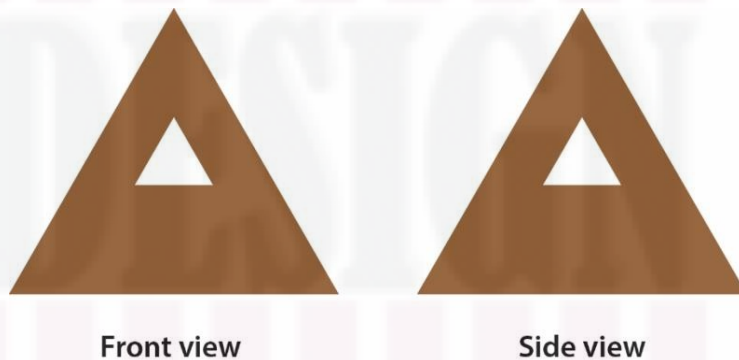
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PART-A

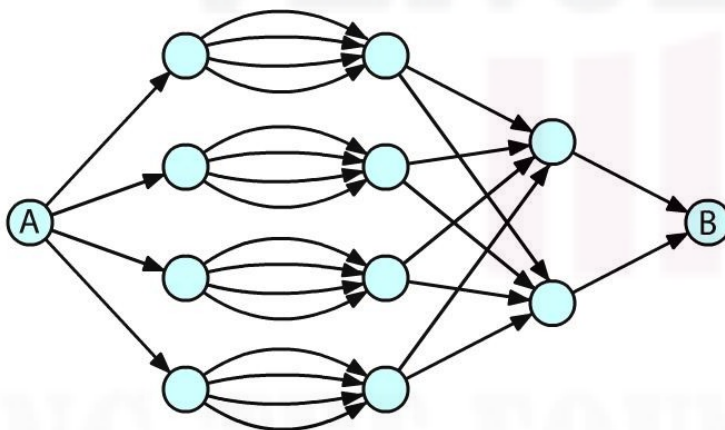
Section 1: Numerical Answer Type (NAT) questions

Section 1 (72 Marks) of Part-A contains a total of 18 **Numerical Answer Type (NAT)** questions. For each question, the answer is a real number that needs to be entered using the virtual keyboard on the monitor. Questions from 1 to 18 belong to this section.

- Q.01** A solid square pyramid has triangular cut-outs that pass through and through, as shown in the figure. How many surfaces are there in the resultant solid?



- Q.02** The figure shows different paths for going from A to B. The directions of the paths are indicated by arrows. No node can be visited twice. What is the total number of different paths to go from A to B?



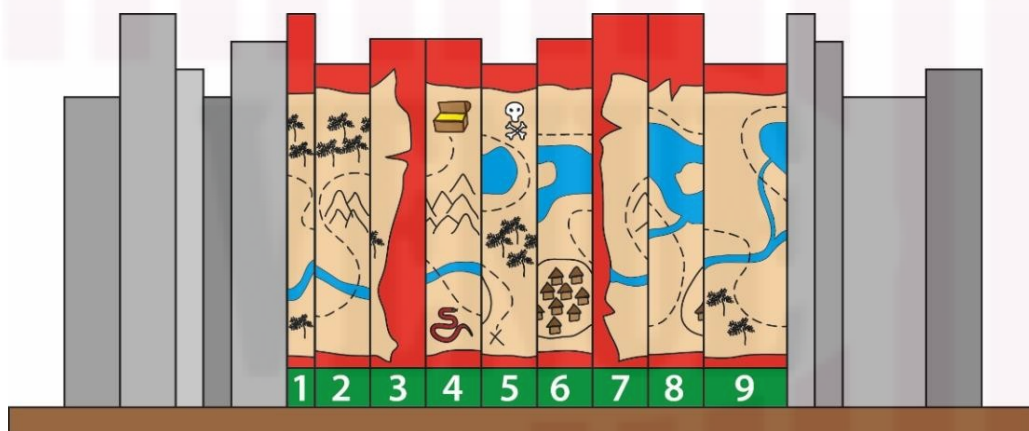
Q.03

FF1+1hF=ART

1F\1+1\J1=TEXT

FJL7⁻ε+ε\hPFL=?

- Q.04** Shown below is a book shelf that has a kid's adventure novel in a book series of 9 volumes. The spines (binding side) of these books contain parts of a treasure map. What is the sequence of the books that forms the completed treasure map? Enter the answer as a single nine-digit integer.



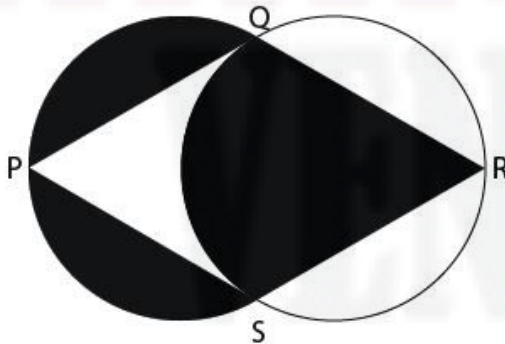
- Q.05** Perform the following steps:
- Step 1: Start with $x=1, y=2$
 - Step 2: Replace x by x multiplied by y
 - Step 3: Replace y by $y+1$
 - Step 4: If $y=5$, then go to Step 6, otherwise go to Step 5
 - Step 5: Go to Step 2
 - Step 6: Stop
- What is the value of x ?

(The following question contains an [animated GIF image](#))

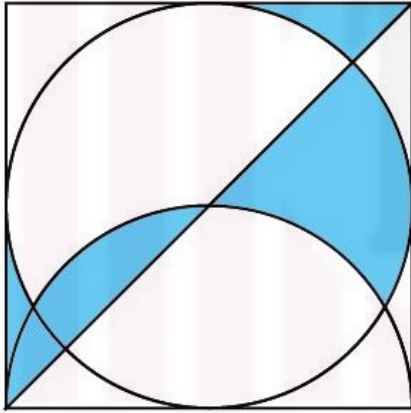
- Q.06** The animation depicts morphing of faces and abstract forms. A face consists of two eyes, two ears, a nose and a mouth. How many unique faces appear in this morphing animation?



- Q.07** If $SQ = QR = RS = SP = PQ$ and $PR = 21$ units, what is the area of the BLACK portion?
(Assume $\pi = 22/7$)



- Q.08** A circle and a semicircle are inscribed in a square as shown below. What fraction of the area of the square is the blue shaded area?

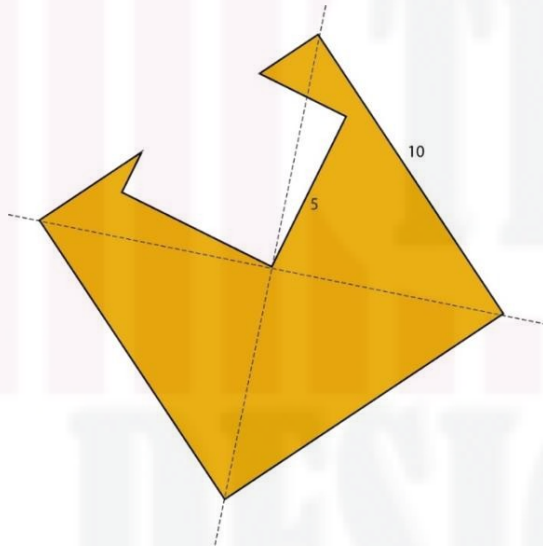


- Q.09** A total of 200 people were surveyed for newspaper readership. It was found that 100 people read publication X, 120 people read publication Y and 50 people do not read either X or Y. What is the total number of people who read either publication X or publication Y but not both?

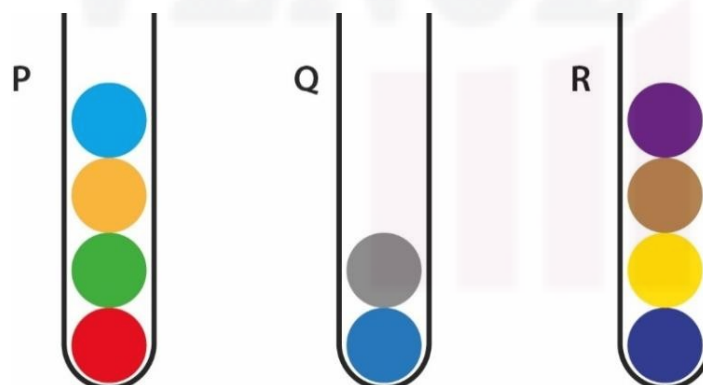
- Q.10** Row 1 shows a word with 7 partial letters. Row 2 contains the parts that complete the word in Row 1. The parts in Row 2 are arranged randomly. What should be the correct sequence in Row 2?



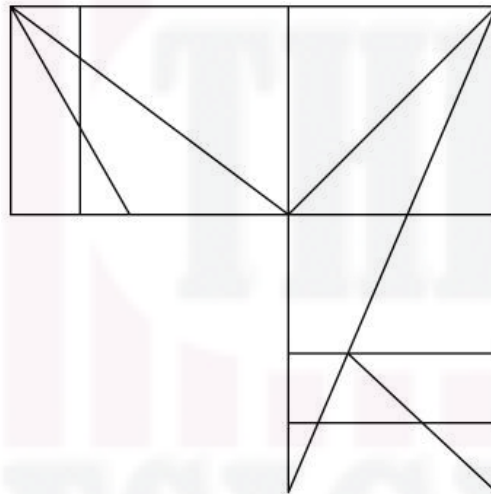
- Q.11** A square of side 10 units, shaded in yellow, is cut using a square of side 5 units as shown in the figure. What is the perimeter of the resulting shape, shaded in yellow?



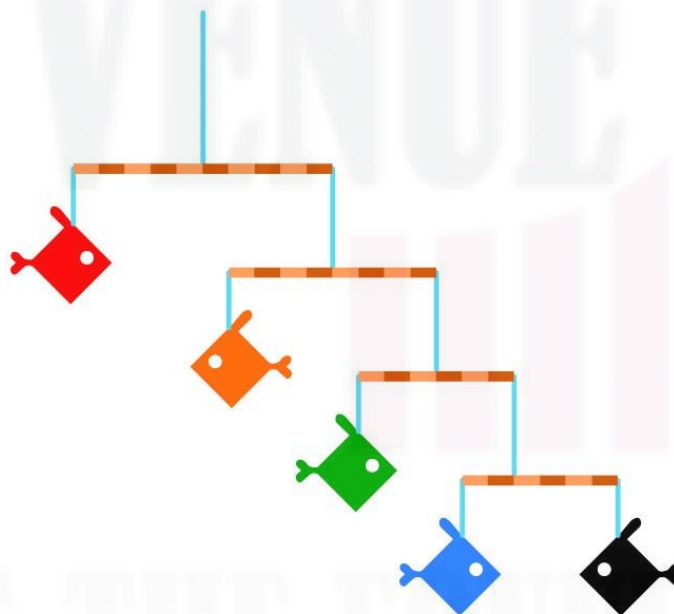
- Q.12** X is three times as old as Y was three years ago. After 17 years, Y will be as old as X is today. What is the sum of the ages of X and Y today?
- Q.13** Shown below are three tubes P, Q and R with coloured marbles. Each tube can hold a maximum of 5 marbles. Only one marble can be transferred in a move. What is the minimum number of moves required to transfer the red marble from tube 'P' to the bottom of tube 'R'?



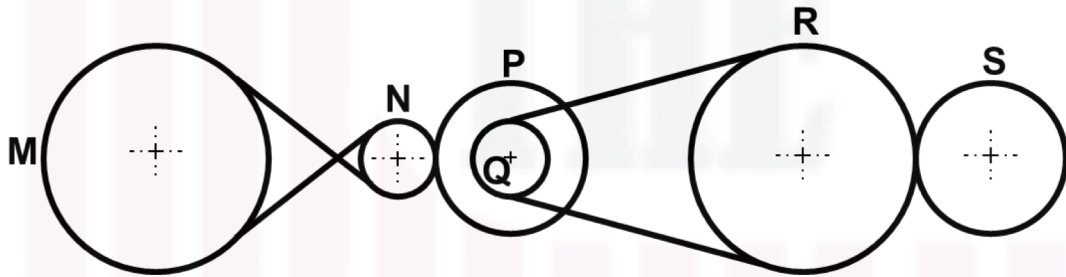
Q.14 How many right-angled triangles are there in the image?



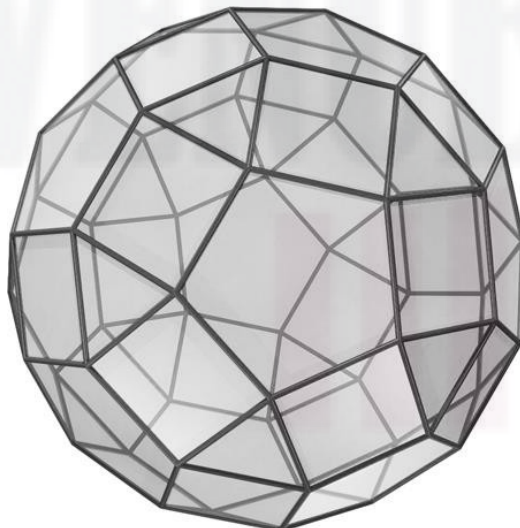
Q.15 The image shows a hanging sculpture created by tying fish-shaped cutouts of different weights by blue strings on brown sticks, as shown. The sticks and strings have negligible weight. The sculpture remains balanced after it is suspended from a ceiling. If the weight of the black fish is 5 grams, what is the weight (in grams) of the red fish?



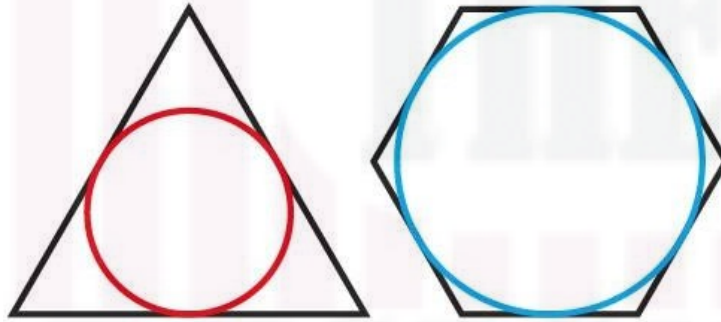
- Q.16** A system of gears and belts is shown below. The diameters of the gears M, N, P, Q, R and S are 3, 1, 2, 1, 3 and 2 meters respectively. If the gear M is rotating at 100 rpm, what is the rpm of gear S?



- Q.17** The given 3D object is made by combining three shapes - pentagons, squares and triangles. What is the total number of squares?



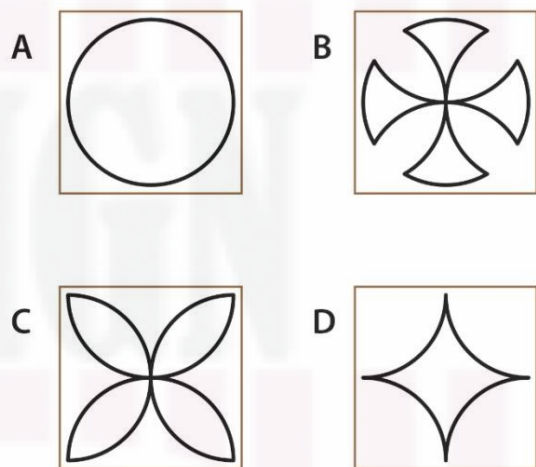
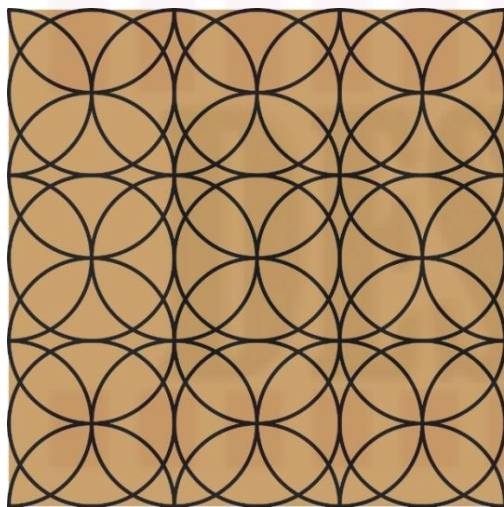
Q.18 The perimeter of the equilateral triangle and the regular hexagon shown in the figure are equal. The circumference of the red circle inscribed in the triangle is 10 cm. What is the circumference of the blue circle inscribed in the hexagon?



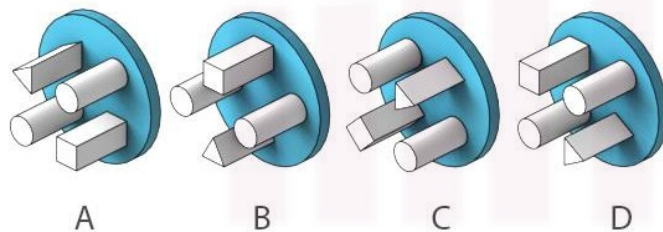
Section 2: Multiple Select Questions (MSQ)

Section 2 (72 Marks) of Part-A contains a total of 18 **Multiple Select Questions (MSQ)**. Each question may have **one or more than one correct choice(s)** out of the four given. Questions from 19 to 36 belong to this section.

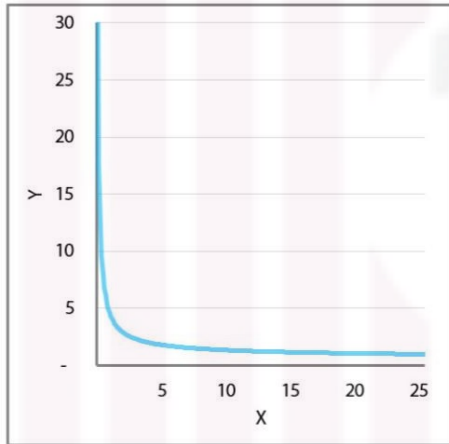
- Q.19** Shown on the left is a pattern printed by repeated use of a single printing block. Which of the printing blocks shown on the right can be used to print the pattern?



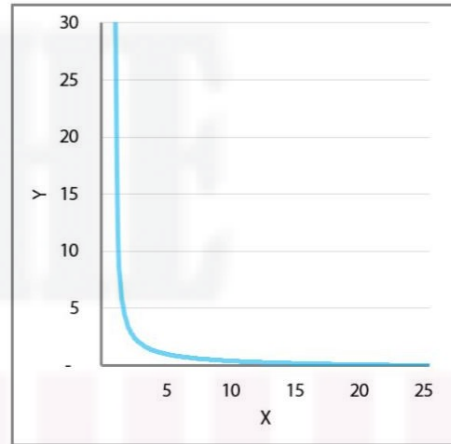
- Q.20** Shown on the left is a socket with four holes in it. Which of the plugs will fit perfectly in this socket?



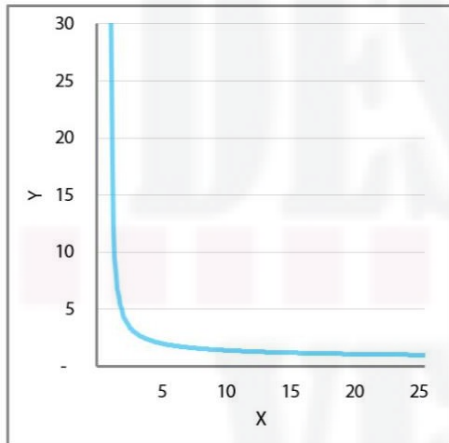
Q.21 Which of the options show parts of the graph representing the equation $x^y = 25$?



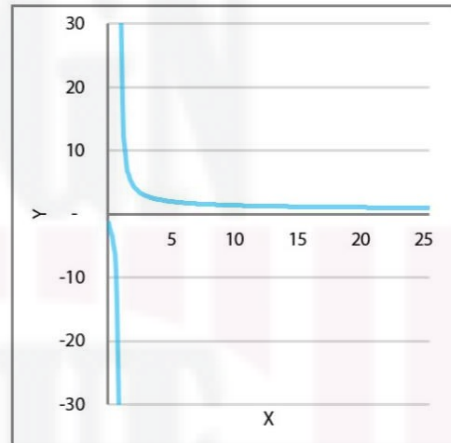
A



B

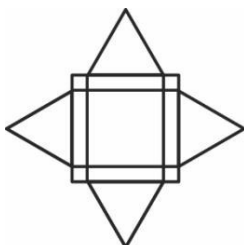


C

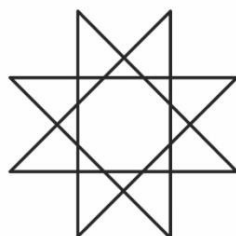


D

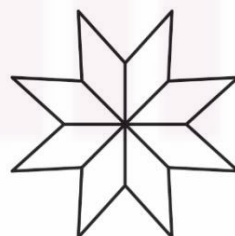
Q.22 Which of the given figures can be drawn without lifting the pen? The lines can cross each other but cannot overlap on top of one another.



A



B

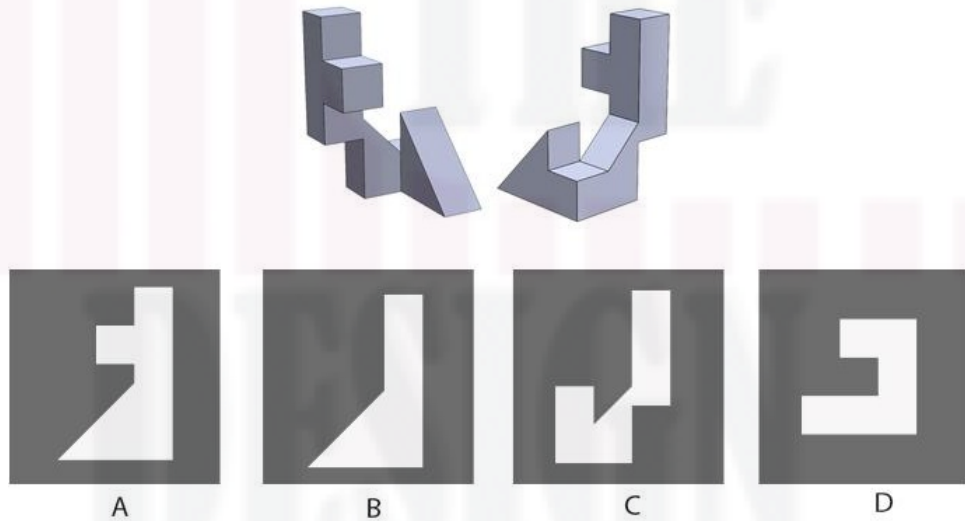


C

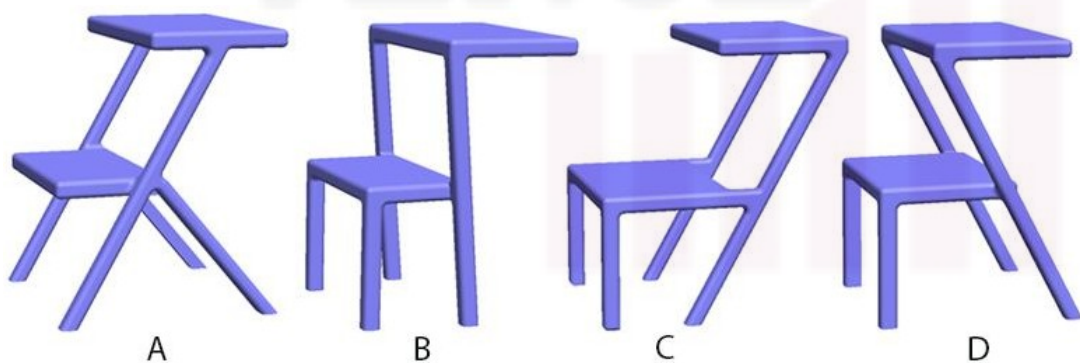


D

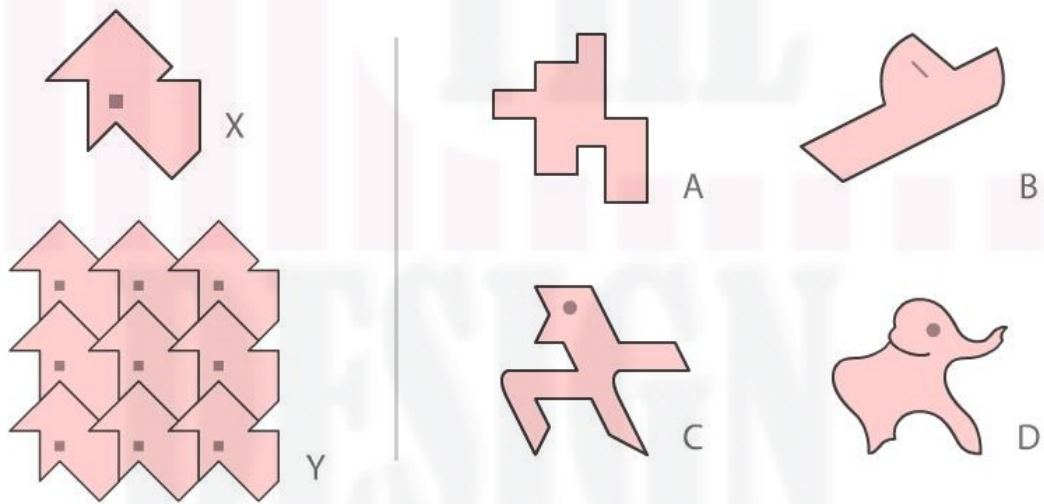
- Q.23** Shown below are 2 views of the same solid. Through which of the cutouts shown in the options, will the solid pass?



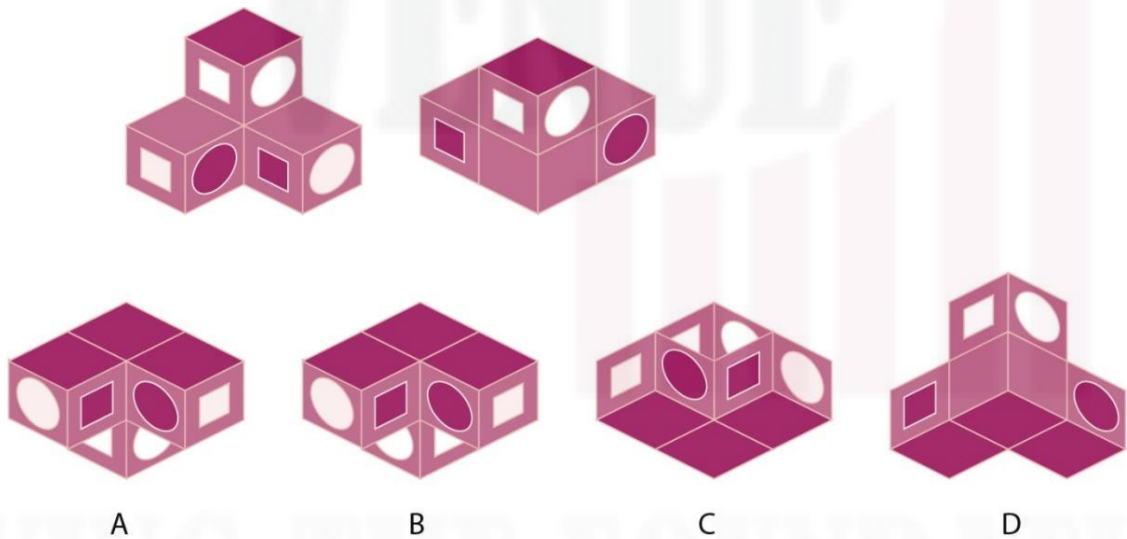
- Q.24** Shown below are different forms for a step-stool. Which of the forms will remain stable when a person is standing on the top step?



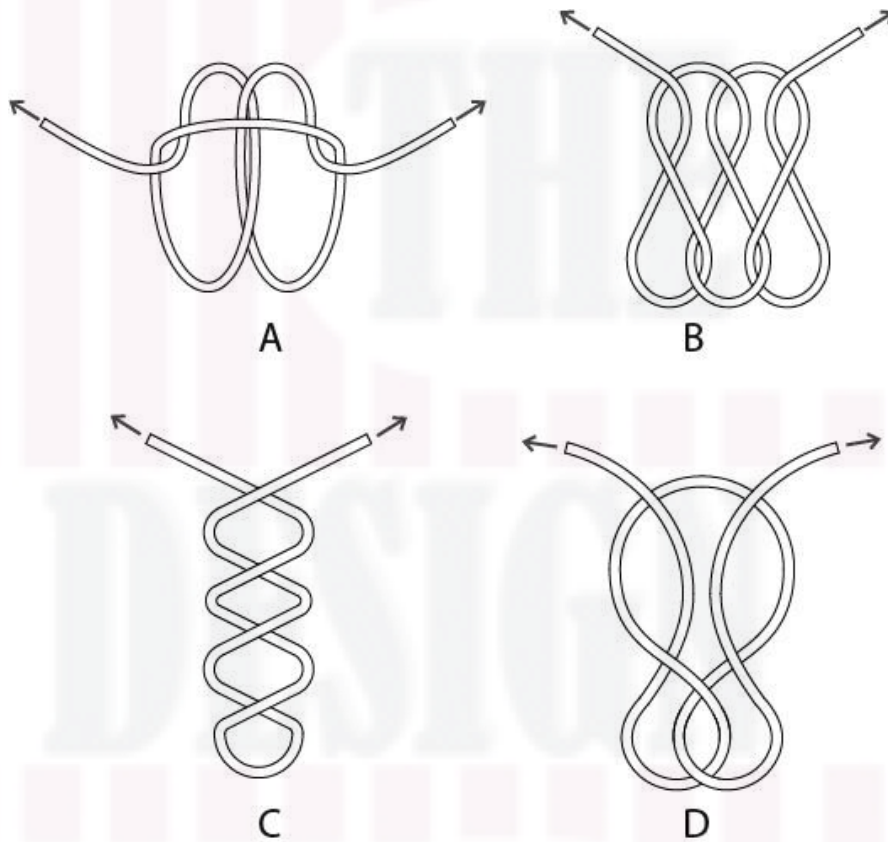
- Q.25** Tile X was used to create a pattern which is seamless (without gaps), when arranged as shown in Y. Which of the tiles from the options will create a seamless pattern?



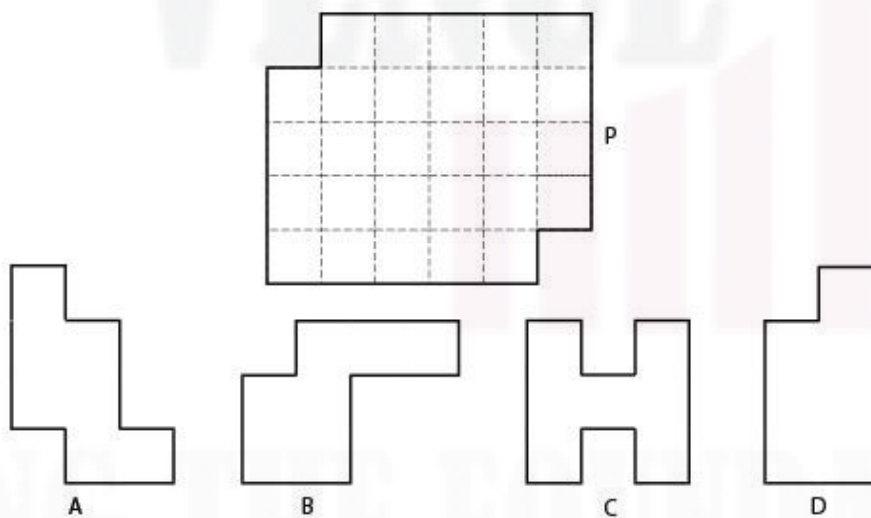
- Q.26** A painted solid is shown from two different directions. Which of the options can be the same solid seen from another direction?



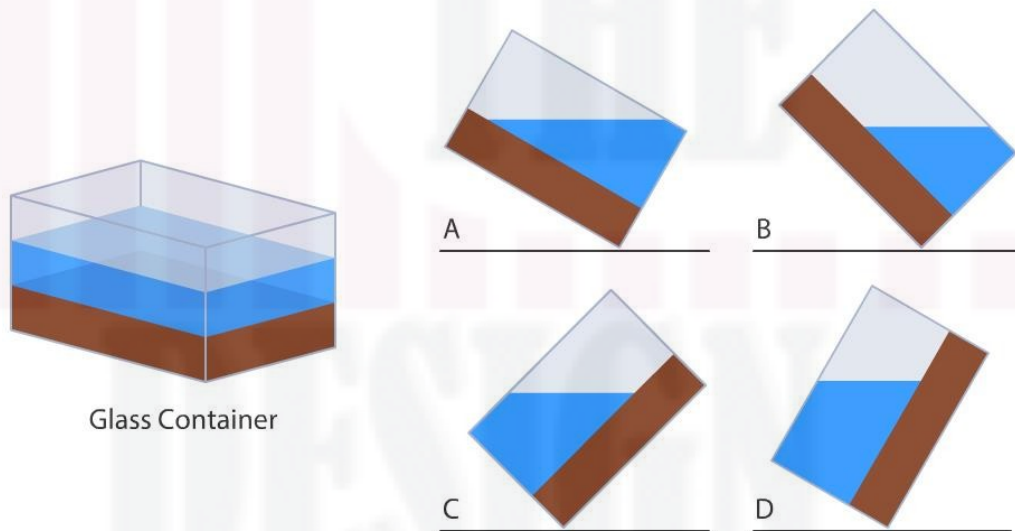
Q.27 Which of the options will form a knot when both the ends are pulled outward?



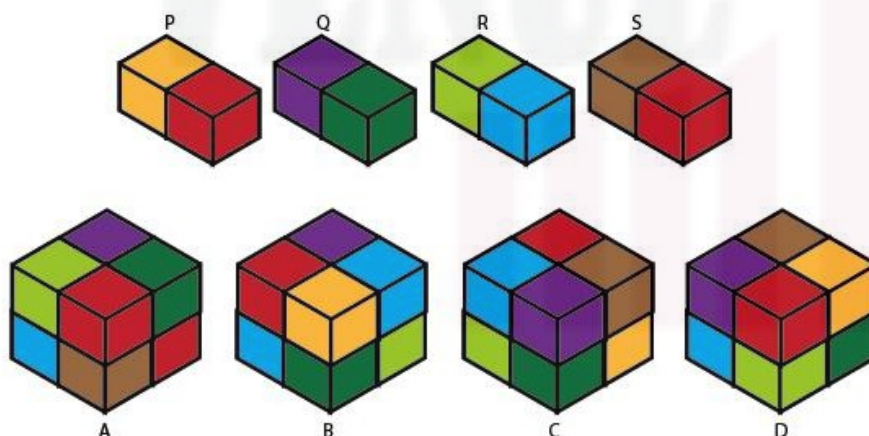
Q.28 Figure P can be created by tiling 4 identical pieces. The pieces should not overlap while tiling. Which of the pieces shown in the options can be used to create figure P, assuming that you can rotate and flip them?



- Q.29** Shown below is an isometric view of a cuboidal glass container of size 2 X 2 X 3 units. It contains a solid wooden block and some water. When tilted, which of the options will be the side view(s) of the glass container?



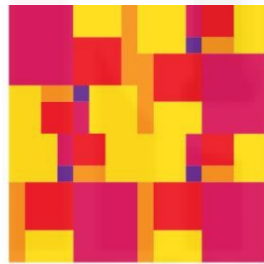
- Q.30** Four solid pieces P, Q, R and S are arranged to form a cube. Which of the cubes shown in the options is/are **NOT** possible?



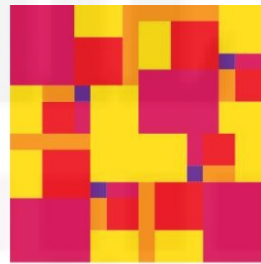
- Q.31** A contractor has a set of ceramic tiles of which one tile is shown on the left. Which of the options show(s) the pattern(s) created using this tile?



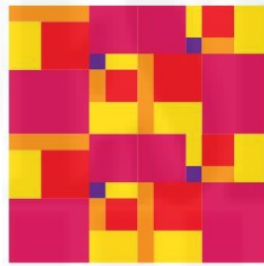
Ceramic Tile



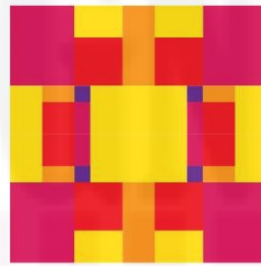
A



B

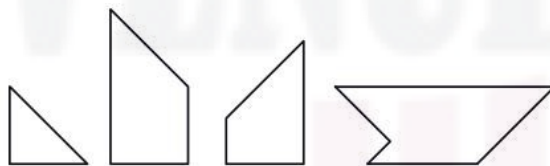


C



D

- Q.32** Which of the options can be made using all the four pieces shown in the top row? Flipping the pieces is allowed.



A



B

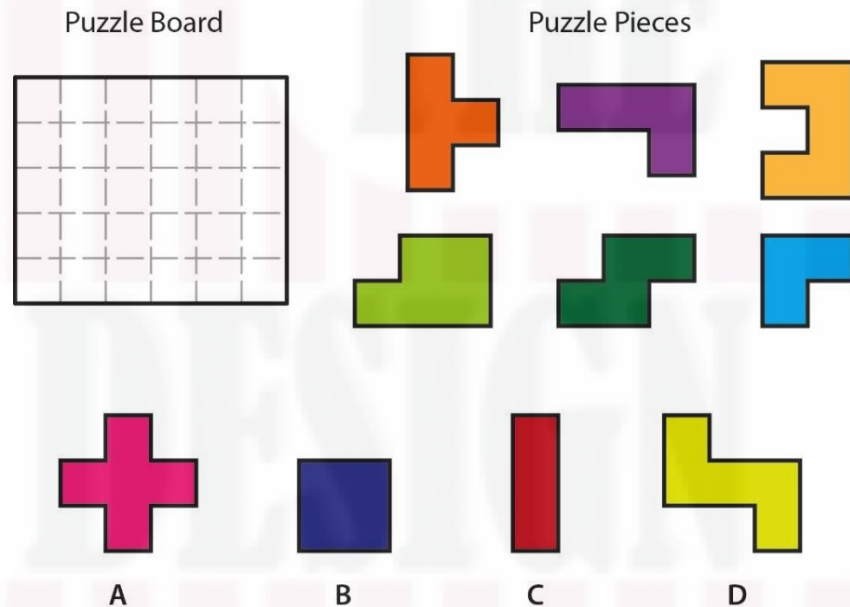


C

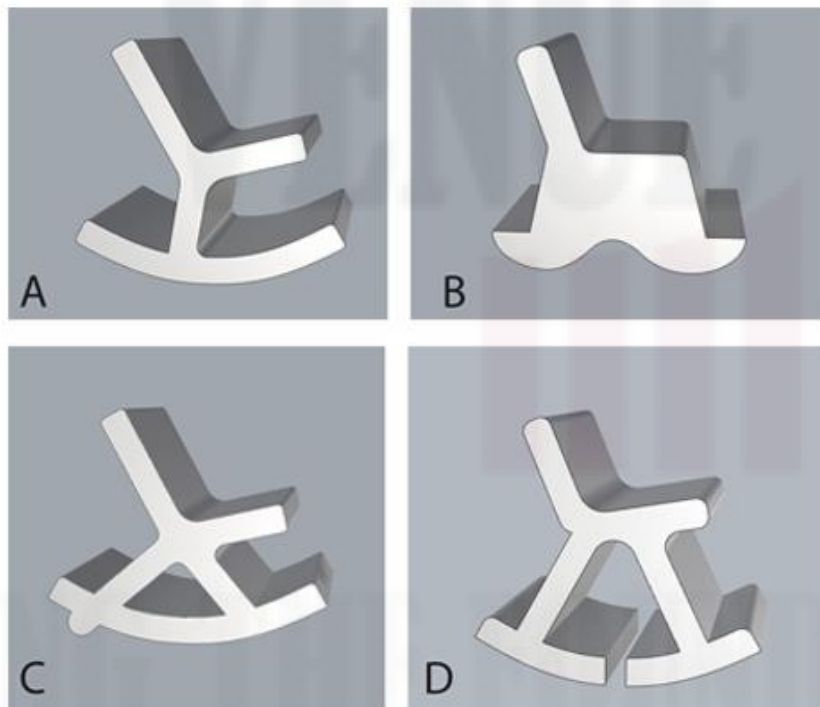


D

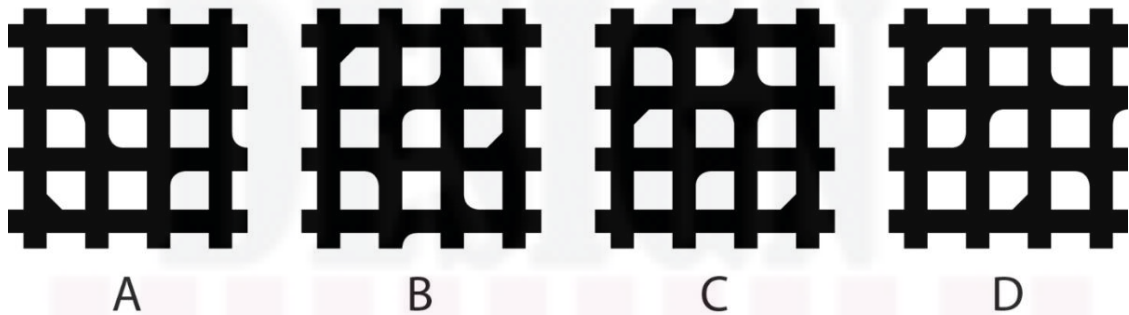
- Q.33** A puzzle board can be covered completely using puzzle pieces, six of which are shown below. Which of the pieces in the options can be used along with these six pieces to cover the board completely? Flipping and rotating of the pieces is allowed. Overlapping of the pieces is NOT allowed.



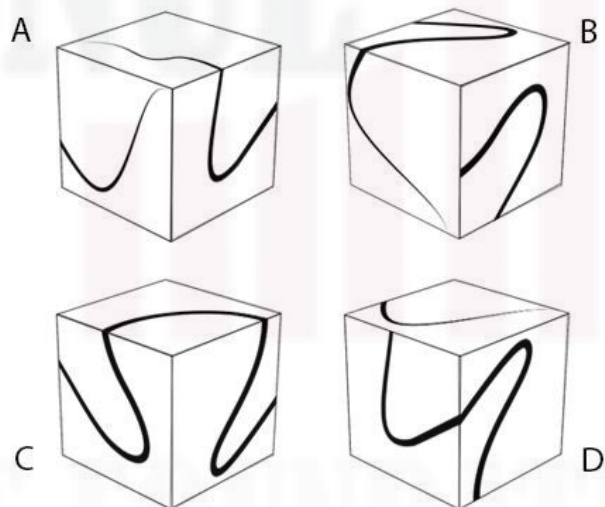
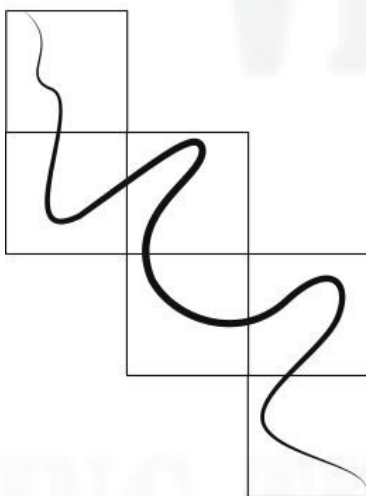
- Q.34** Which of the chairs will rock TO AND FRO?



Q.35 Which of the options is/are simple rotation(s) of the image P?

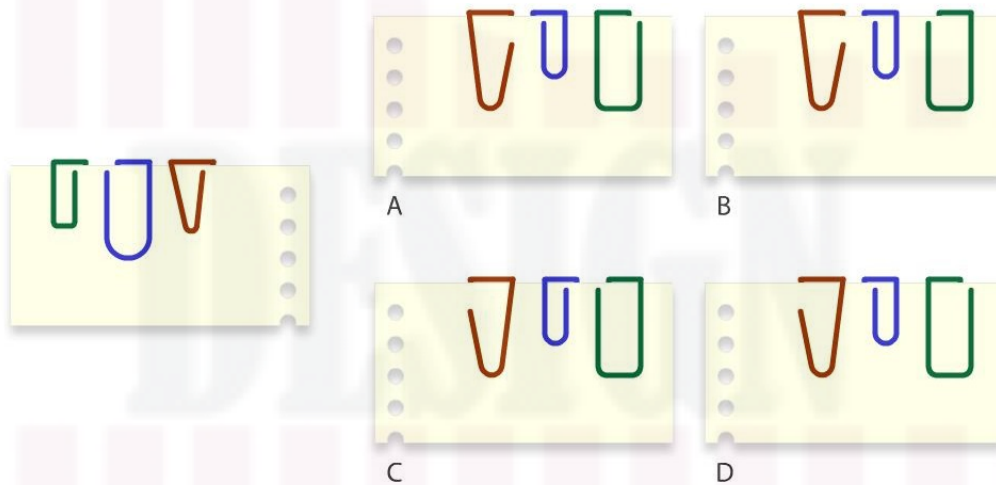


Q.36 Shown on the left is the development of a cube. Which of the options can be created when the shown development is folded?

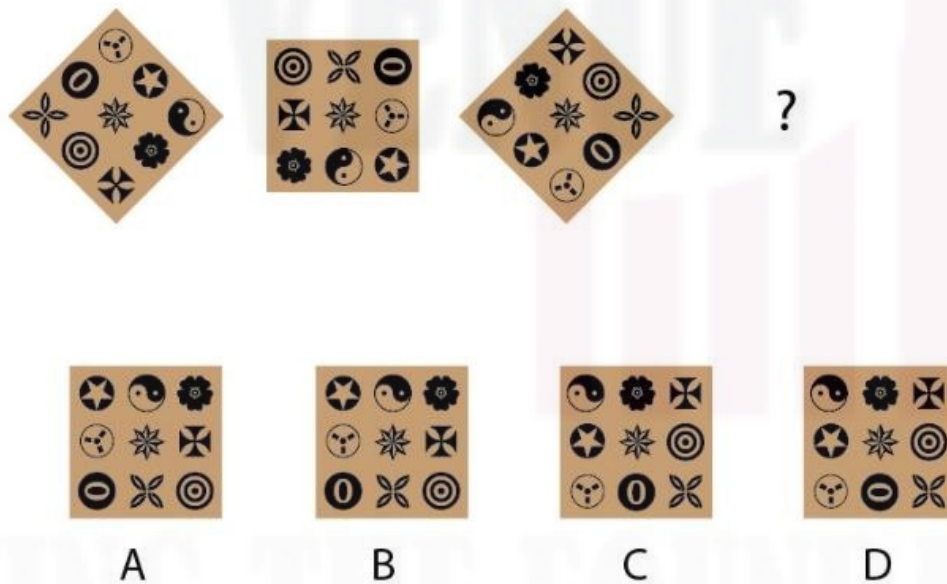


Section 3 (96 Marks) of Part-A contains a total of 32 **Multiple Choice Questions (MCQ)**. Each question has four choices out of which **ONLY ONE** is the correct answer. Questions from 37 to 68 belong to this section.

Q.37 Three paper clips are attached to a paper as shown on the left. Which of the options shows the back side of the paper?

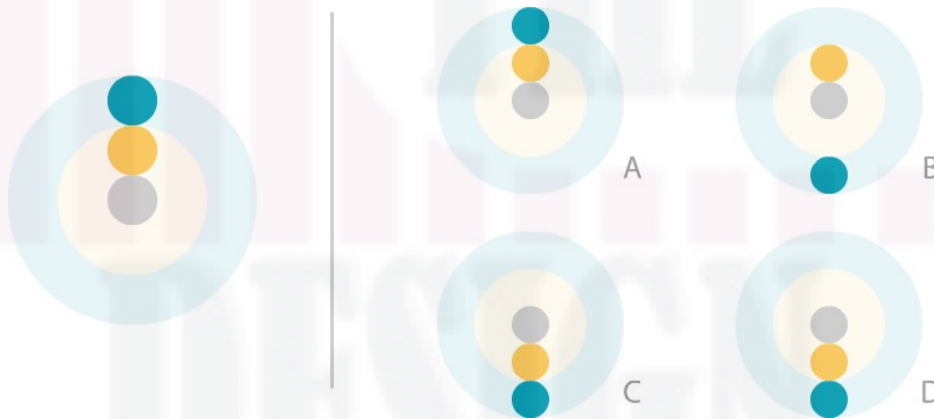


Q.38



(The following question contains an [animated GIF image](#))

- Q.39** An animation of revolving circles is shown on the left. If it is flipped horizontally and then flipped vertically, what will be the resulting animation?

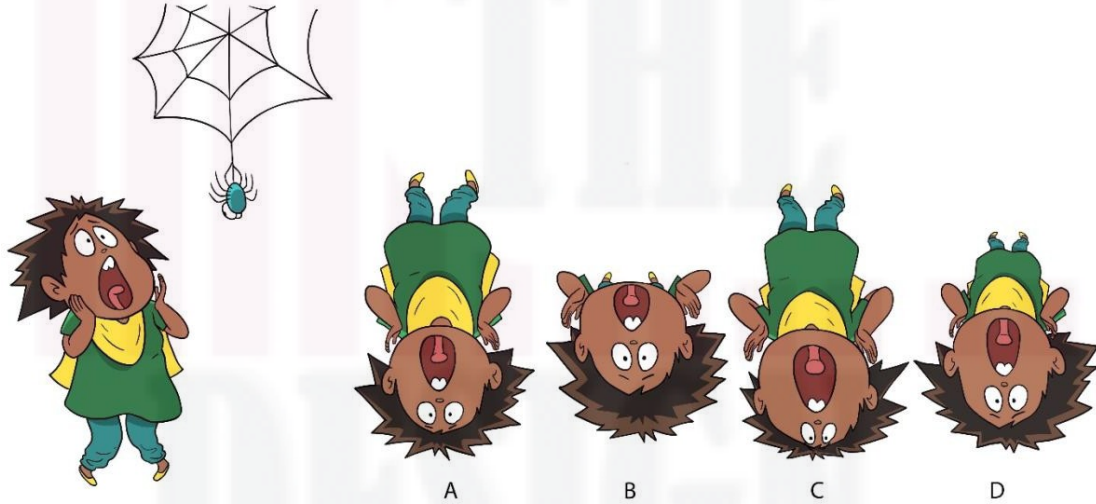


- Q.40** You can set preferences in a mobile app by making a series of selections. You want to be notified of promotions and transactions, but do not want to receive newsletters. You want to allow access to your location and mic, but do not want to allow access to your contacts. What is the correct sequence of actions?

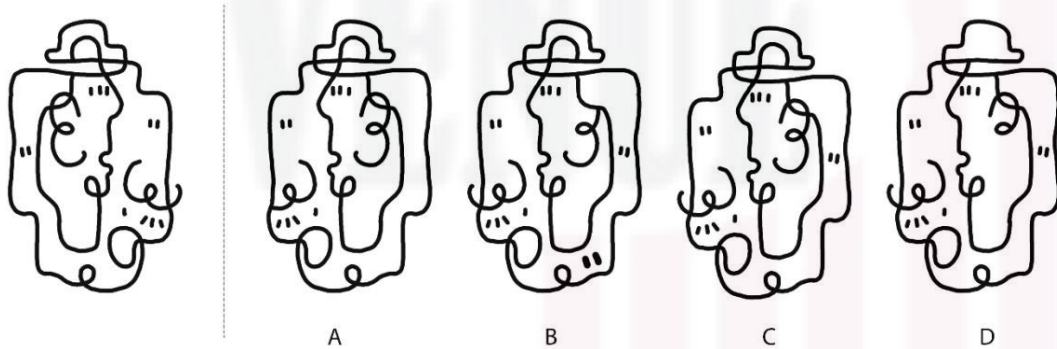
- ☐ Do not notify me on Promotions
- ☐ Send me Newsletter
- ☐ Notify my Transactions
- ☐ Do not allow access to my Contacts
- ☐ Allow access to my Location
- ☐ Allow access to my Mic

- 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

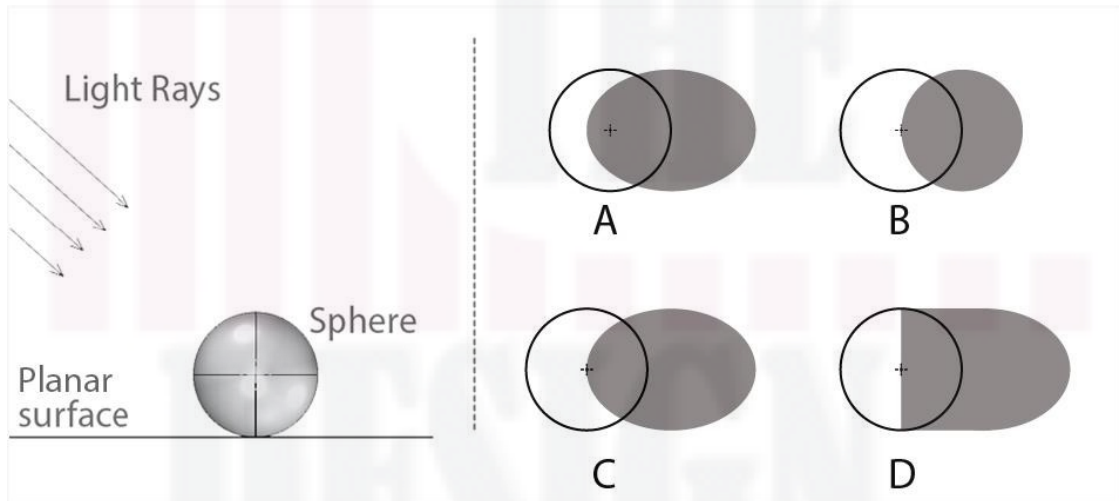
- Q.41** A story depicts Sabina encountering a spider. The continuing scene has to represent the spider's point of view of Sabina. What is the most appropriate option?



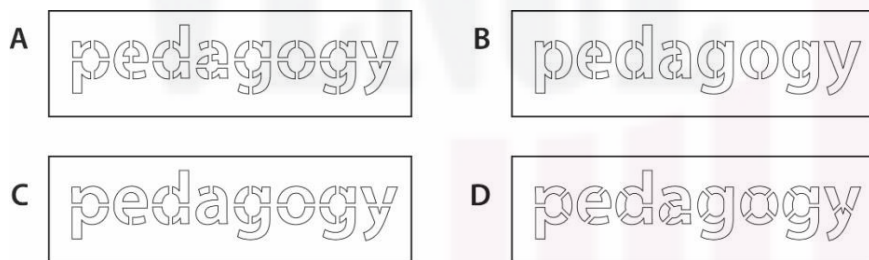
- Q.42** Which option is the correct mirror image of the figure given on the left?



- Q.43** A solid sphere is kept on a planar surface. Parallel rays of light are falling on it as shown in the image. Which option correctly represents the shadow cast by the sphere on the planar surface?



- Q.44** Four students were given a task to design a stencil for the word 'pedagogy' for spray painting. Shown in the options are designs of each student that are to be cut into stencils for painting. Identify the design that will **NOT** work as a stencil to paint the given word?



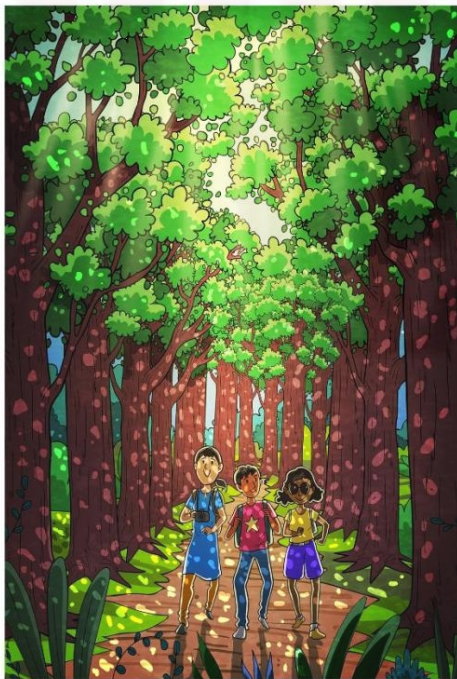
Q.45 A group of friends are on a trek. The sunlight is directly above them. No other light source is present. Identify the most appropriate lighting for this scene.



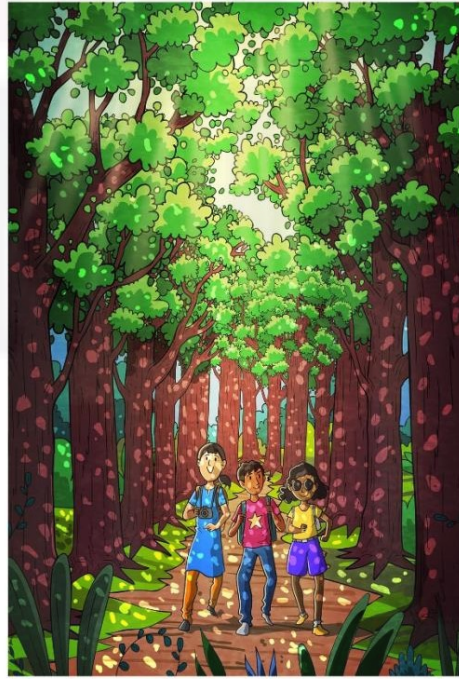
A



B



C

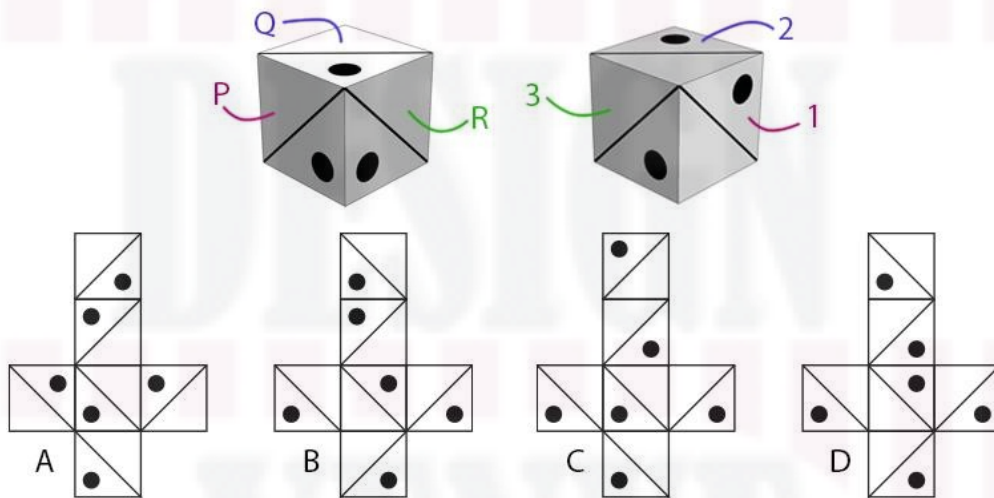


D

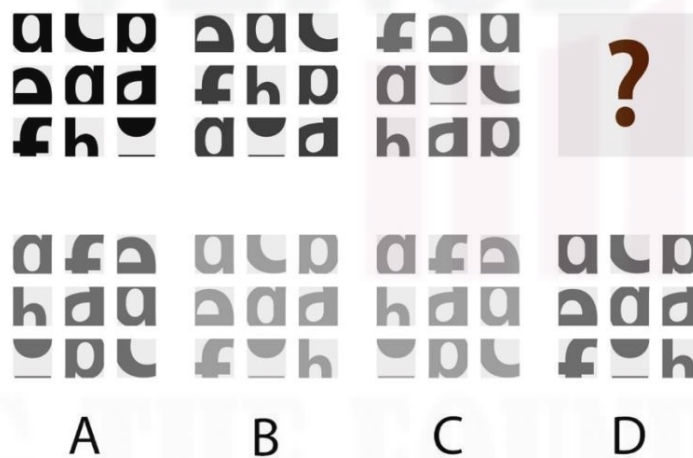
Q.46 Identify the odd one.



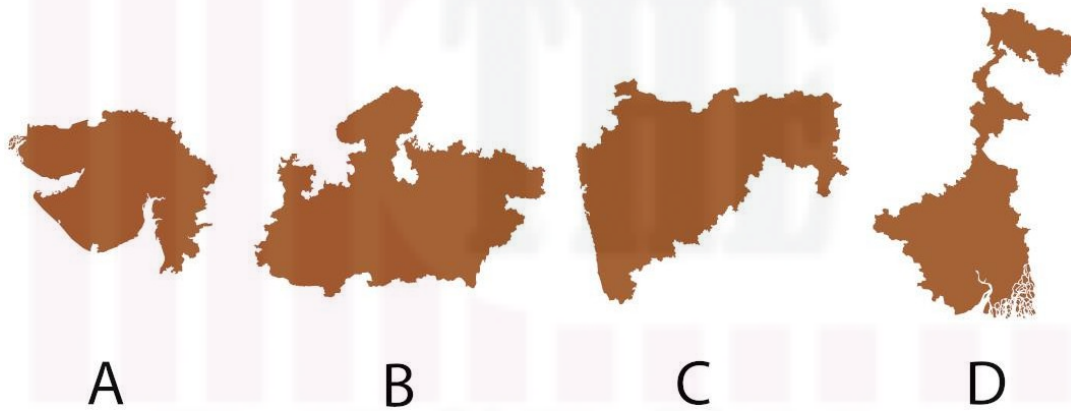
Q.47 Shown below are the 2 views of a cube. If face P is opposite to 1, Q is opposite to 2 and R is opposite to 3, which option can be folded to make the cube?



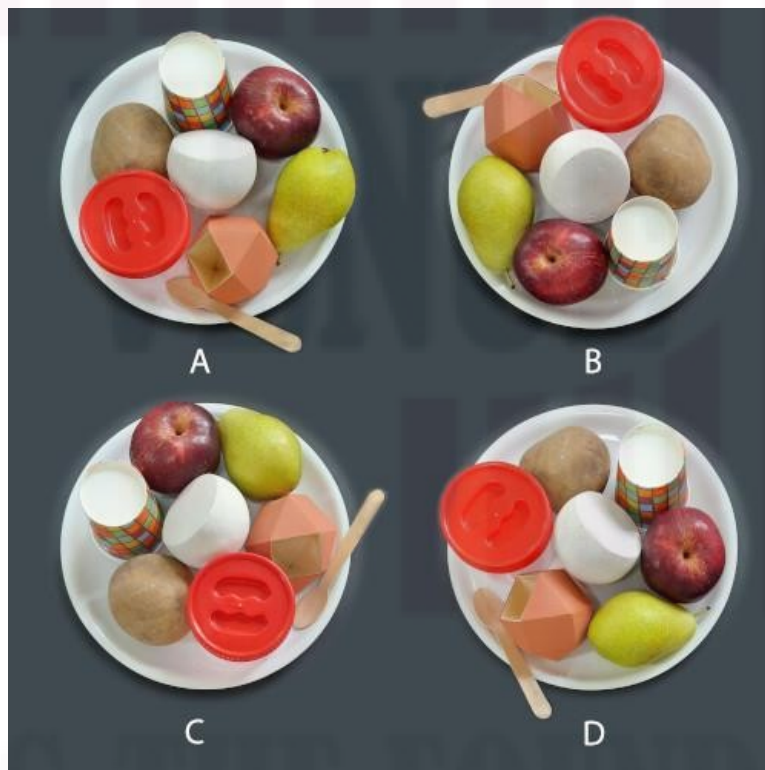
Q.48



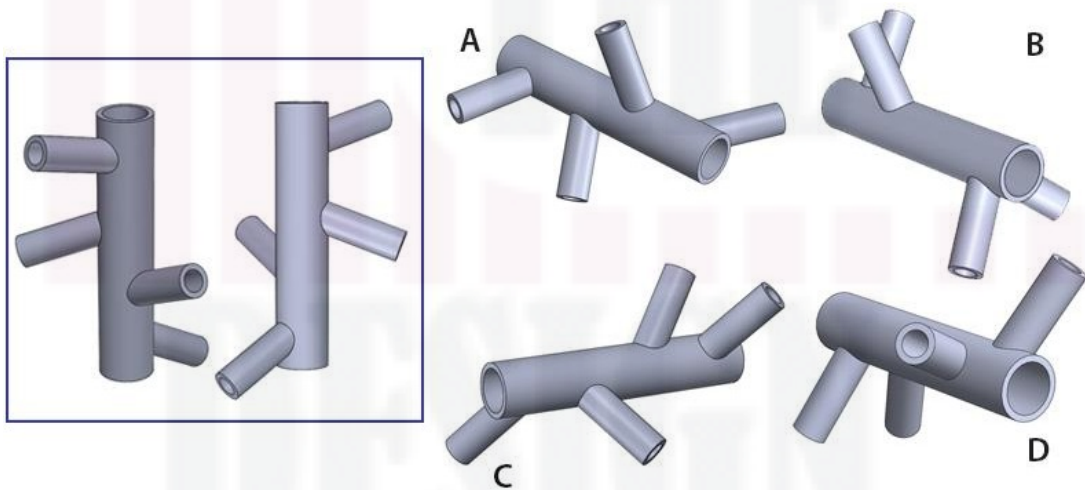
- Q.49** The options show maps of some states of India. In only one of the options, the map has been scaled (either up or down). Which is that option?



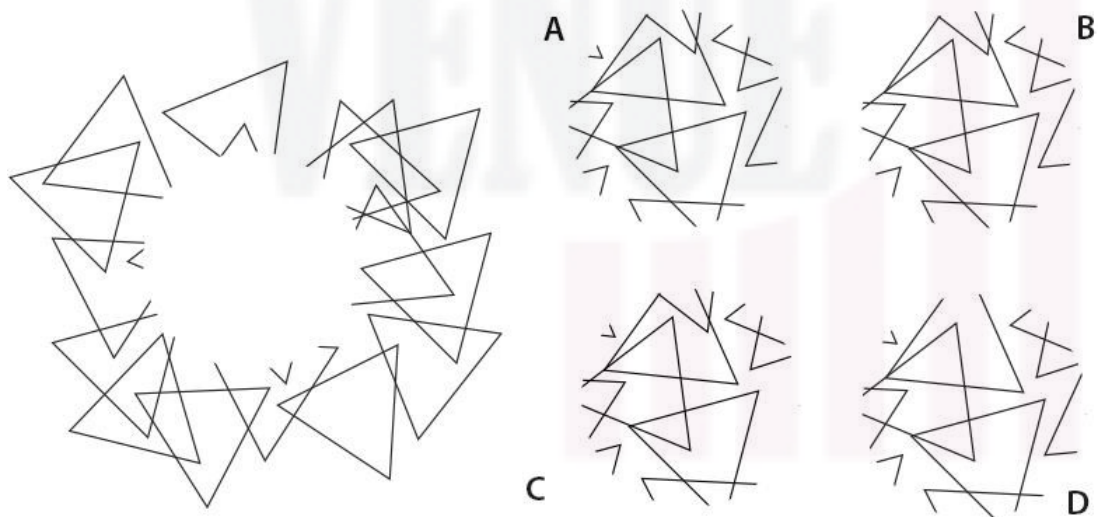
- Q.50** Gita placed some objects on a white plate. She took a photo with a camera. Without disturbing the arrangement of objects, she took two more photos while turning the plate. Soon after, Shefali placed same objects on a similar plate and under similar lighting conditions, took a photo. Which option shows Shefali's photo?



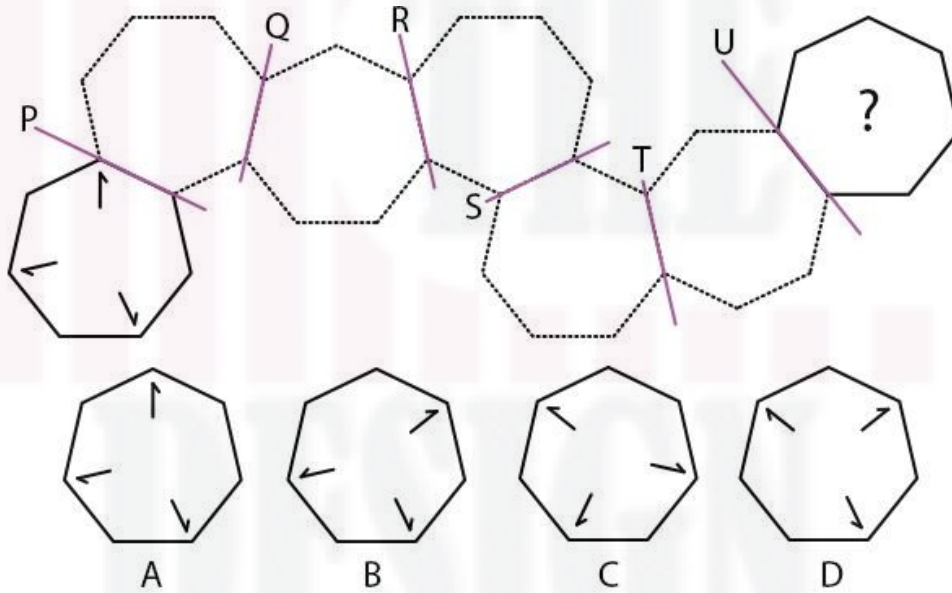
- Q.51** Two views of the same object are shown in the box. Which option depicts the same object?



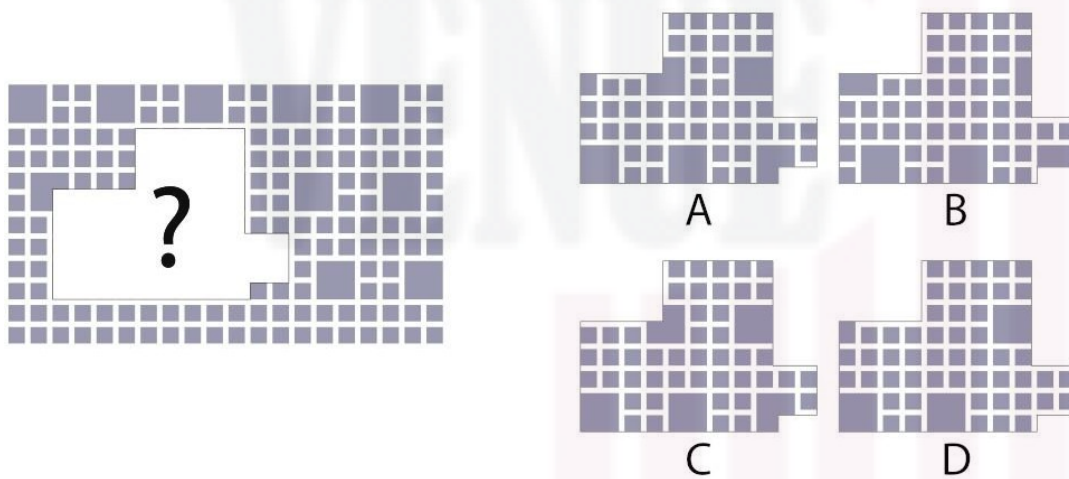
- Q.52** The image shown below is made up of triangles only, from which the central portion is missing. Identify the missing portion.



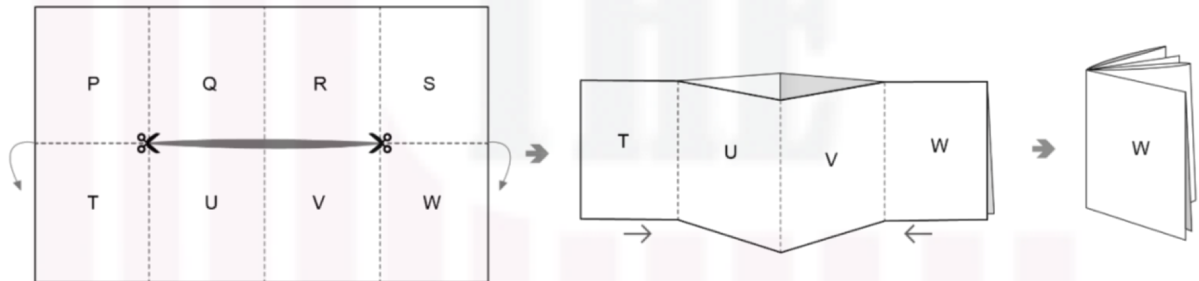
Q.53 The figure shown below is mirrored along the axes P, Q, R, S, T and U. What would be the resultant figure?



Q.54

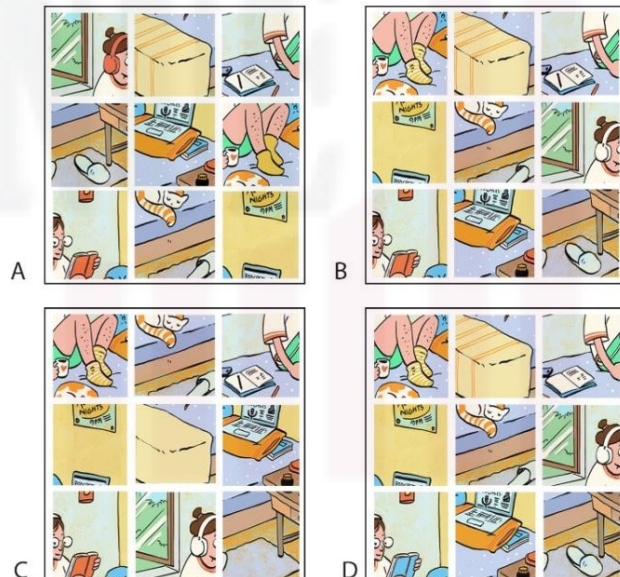


- Q.55** An A4 size paper is cut as shown below and folded across the dotted lines such that it has eight faces named from 'P' to 'W'. It is further folded to make a small booklet for the purpose of a zine design. From the given options, select the correct sequence of pages.

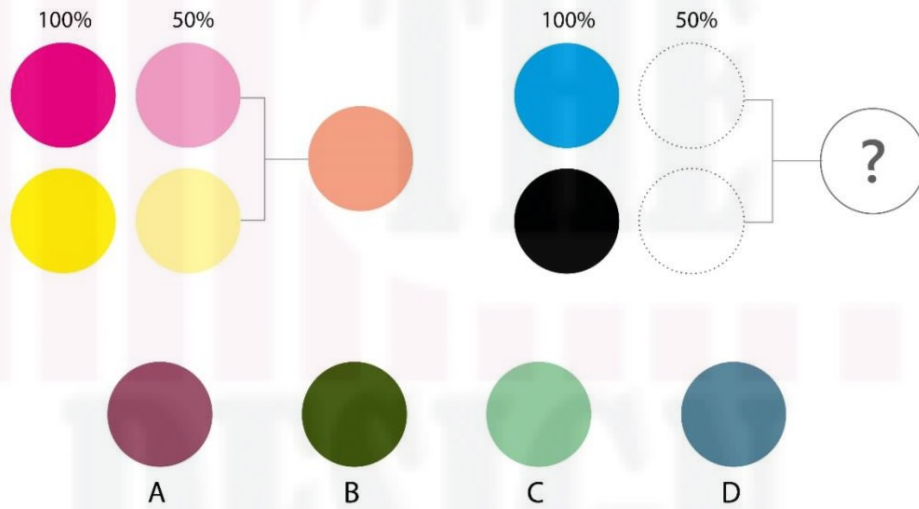


- A. P, Q, R, S, T, U, V, W
- B. W, S, R, V, U, Q, P, T
- C. W, S, R, Q, P, T, U, V
- D. W, V, U, T, S, R, Q, P

- Q.56** The left image below shows Nandu's study room. The image is sliced in 9 equal parts. From the given options, find the correct set of images.



Q.57



Q.58 Fill in the blank with the same font.

INDIAN_____

S

A

S

B

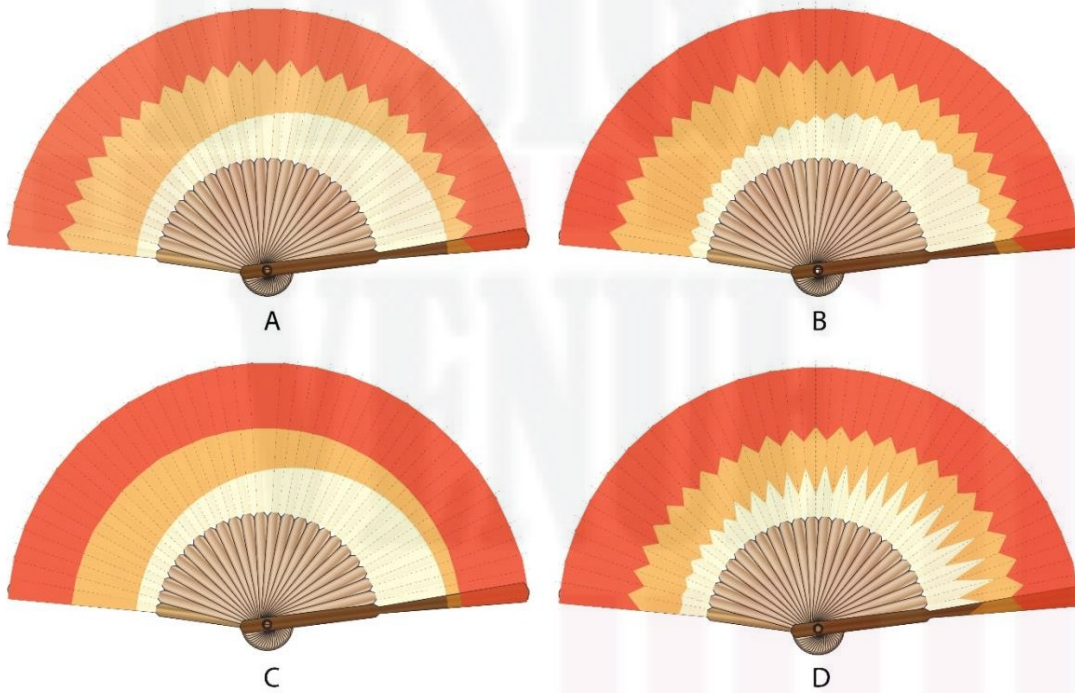
S

C

S

D

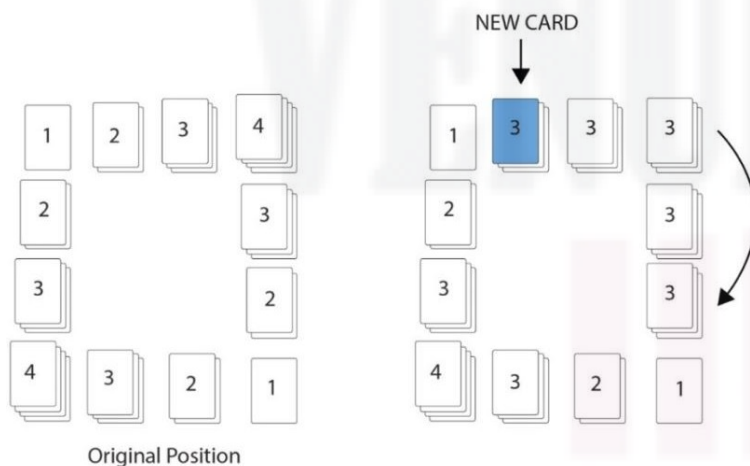
- Q.59** A folding paper fan P is dipped in orange colour and then in red colour as shown. Which option is the closest representation of the resultant fan?



- Q.60** A painting was created on the road as shown in the image. From the given options, identify which image was used to plan the painting (as seen from the top view).

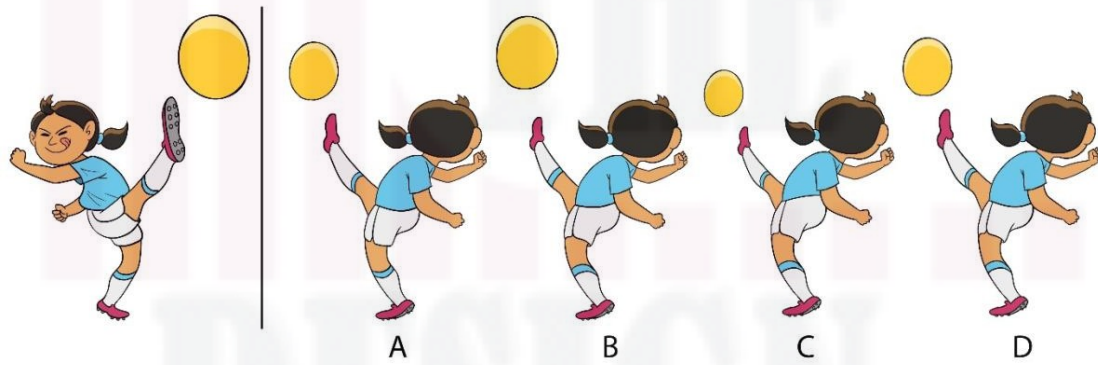


- Q.61** A game board was set with multiple decks of cards arranged in such a way that sum total of the cards on each side was equal ($1+2+3+4=10$). However, a new card was added on one side (blue card) and the cards were rearranged to maintain the rule, namely, that the sum total equals 10. How many cards can be added (starting from original position as shown on the left) before the game ends and no more cards can be added? Assume that every position must have at least one card and the sum total rule of 10 must be followed.



- A. 4
B. 6
C. 8
D. 10

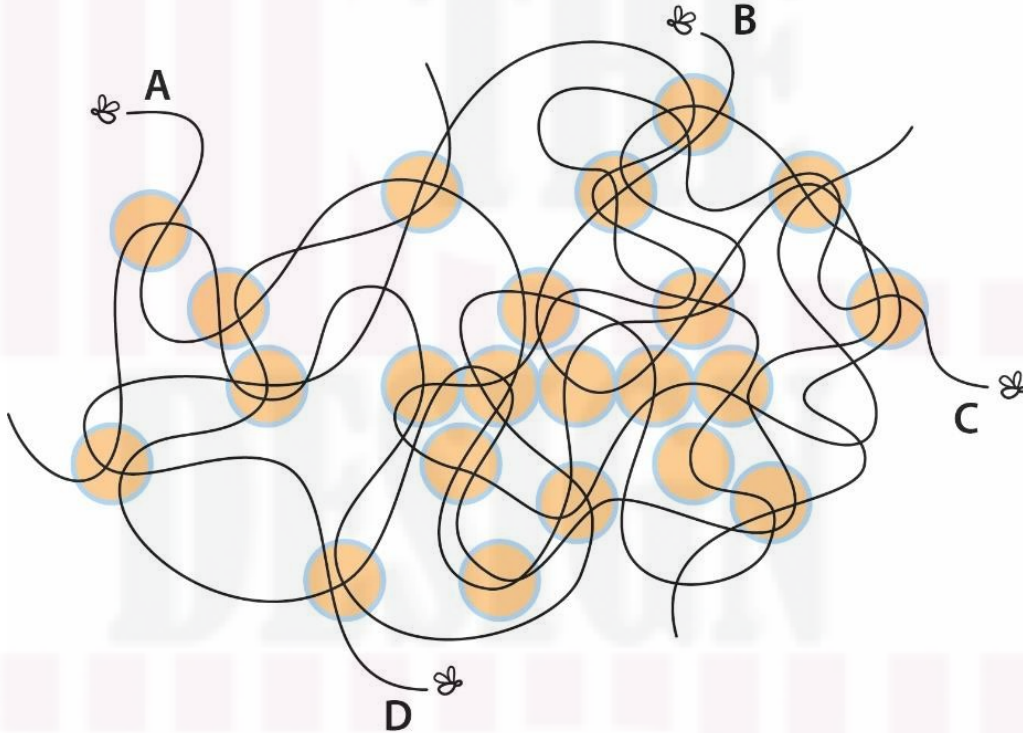
- Q.62** Fatima is shown kicking the football. Identify the most appropriate illustration of the scene observed from behind.



- Q.63** Identify the correct silhouette of the coloured dragon.



- Q.64** Shown below are trajectories of 4 flies over the juice glasses. Identify the fly that crossed over the maximum number of glasses.



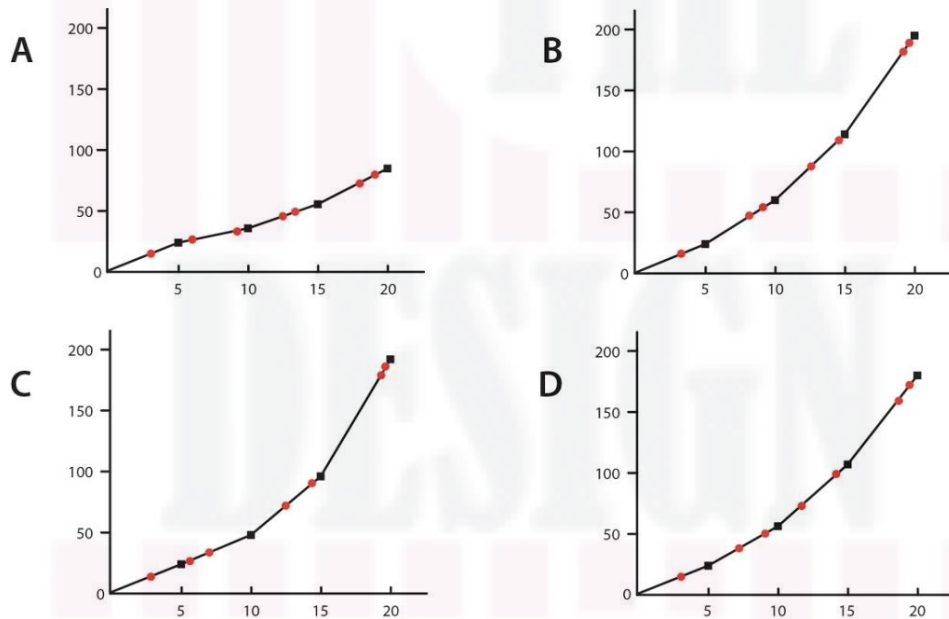
- Q.65** A list of 8 country names in Vietnamese (shown in red), and their English translations (shown in blue) are given below. The translation list is mixed up. Which of the following statements is **TRUE**?

Áo, Ba Lan, Bỉ, Đan Mạch, Hà Lan
Na Uy, Phần Lan, Thụy Điển

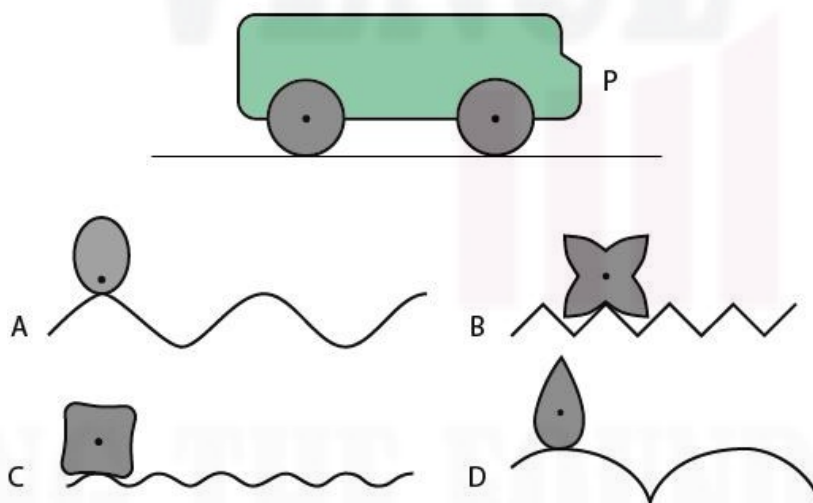
Finland, Austria, Denmark, Norway,
Netherlands, Belgium, Sweden, Poland

- A. Đan Mạch is Denmark, Thụy Điển is Sweden, Phần Lan is Poland
- B. Hà Lan is Netherlands, Áo is Austria, and Ba Lan is Poland
- C. Bỉ is Belgium, Hà Lan is Finland, and Na Uy is Norway
- D. Na Uy is Netherlands, Thụy Điển is Denmark, and Phần Lan is Finland

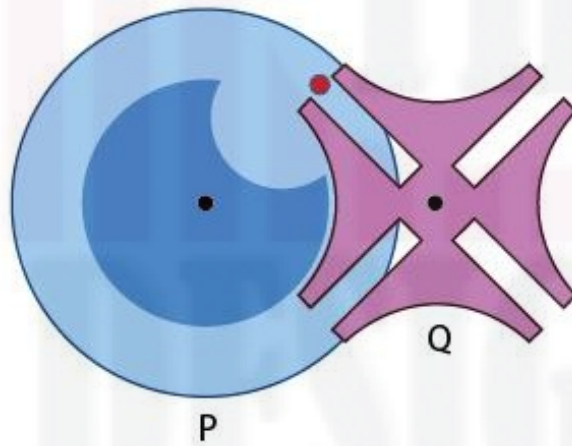
- Q.66** India and Australia are playing the finals of World Cup T20 cricket match. India won the toss and decided to bat. At the end of 5 overs, India scored 24 runs with one wicket down. From there on, in every 5 overs, India scored 50% more runs than the previous 5 overs and lost two wickets. From the options, identify the correct graph that shows India's final score.



- Q.67** Figure P shows a profile of a bus with circular wheels on a flat road. The options below show profiles of 4 wheels and corresponding roads. If the 'wheel' always moves without slipping or sliding, which of the options will result in the bumpiest ride?



- Q.68** In the figure shown below, the drive wheel P engages with the driven wheel Q through a pin marked in red. Which of the options describes the movement of Q, when P moves in the clockwise direction?



- A. Continuously anti-clockwise
- B. Intermittently anti-clockwise
- C. To and fro
- D. Intermittently clockwise

PART-B

Q. 69 Sketching (Mandatory question)

(30 minutes – 60 marks)

Read and visualize the following:

- A rat is spotted inside a school canteen.
- A school boy is afraid and standing on a stool/chair.
- A brave school girl is chasing the rat out of the canteen.
- A tiffin box is falling on the floor.
- Two school bags and two water bottles are kept on a table.
- A few plates are broken and lying on the floor.
- The canteen owner is watching this in shock, standing on top of the counter table.

Sketch this scene from the canteen owner's point of view.

Note:

- Make a pencil sketch only
- Do not use colours

Evaluation Criteria:

- Perspective
- Proportion
- Composition
- Observation
- Imagination
- Quality of sketch
- Attention to detail