



**CAREERS** 360  
PREPARATION **Series**

# Past 5 years CEED

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Question Papers with Answers

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**CEED 2023 - ANSWER KEY****SECTION – I (NAT)**

Q. No.	KEY RANGE	Q. No.	KEY RANGE	Q. No.	KEY RANGE	Q. No.	KEY RANGE	Q. No.	KEY RANGE
01	8	02	13	03	16	04	3	05	20
06	42	07	13	08	2				

**SECTION – II (MSQ)**

Q. No.	KEYS	Q. No.	KEYS	Q. No.	KEYS	Q. No.	KEYS	Q. No.	KEYS
09	A, B, C	10	A, B, D	11	B, C	12	C, D	13	A, B, C
14	A, B, C, D	15	A, B, D	16	B or B, D	17	B, C	18	A, D

**SECTION – III (MCQ)**

Q. No.	KEY	Q. No.	KEY	Q. No.	KEY	Q. No.	KEY	Q. No.	KEY
19	D	20	D	21	A	22	A	23	C
24	A	25	D	26	C	27	C	28	C
29	B	30	A	31	C	32	C	33	B
34	C	35	B	36	C	37	C	38	B
39	A	40	C	41	A				

**Common Entrance Examination for Design**

**CEED 2023**

CAREERS360

## INSTRUCTIONS

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. Questions of Part A and Part B will appear on the computer. Answers to **Part A** have to be entered in the **computer**. Answers to **Part B** need to be given in the **answer booklet** provided by the invigilator.
3. Part A carries a total of 100 marks. It contains 3 sections. All questions are mandatory. The following table summarises the marking scheme of Part A:

Part A Section	Type of questions	Number of questions	Marks for each correct answer	Marks for each wrong answer	Marks for each question not attempted	Total marks for the section
I	Numerical Answer Type (NAT)	8	3	0	0	24
II	Multiple Select Question (MSQ)	10	3	-0.2	0	30
III	Multiple Choice Question (MCQ)	23	2	-0.5	0	46

4. 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. Questions not attempted will be awarded zero marks.
5. 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**.
6. 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**. Questions not attempted will be awarded zero marks.
7. Scribble pads will be provided for rough work for Part A.
8. 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.
9. In Part B, colour pencils, crayons, sketch pens etc. may be used unless otherwise specified in the questions.
10. Charts, graph sheets, tracing papers, tables, calculators, cellular phones and other electronic gadgets are not allowed in the examination hall.

**Part A – Section I: Numerical Answer Type Questions**

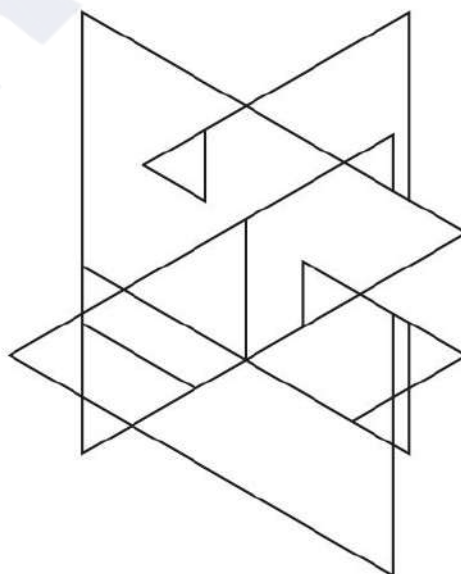
**Q.01** Imagine a pentagon shaped building. The walls of the building are sides of the pentagon, and there is a watchtower at each vertex. Each watchtower can have guards who can watch two walls connected to the watchtower. What is the minimum number of guards required if each wall needs to be watched by at least 3 guards?

**Q.02** Shown below is a number puzzle. Only one piece can be slided horizontally or vertically in one move.

What is the least number of moves required to bring the piece with number 10 to the empty position x?

10	8	3	14
7	5	12	2
4	9	x	11
13	1	15	6

**Q.03** Count the number of triangles in the image below.



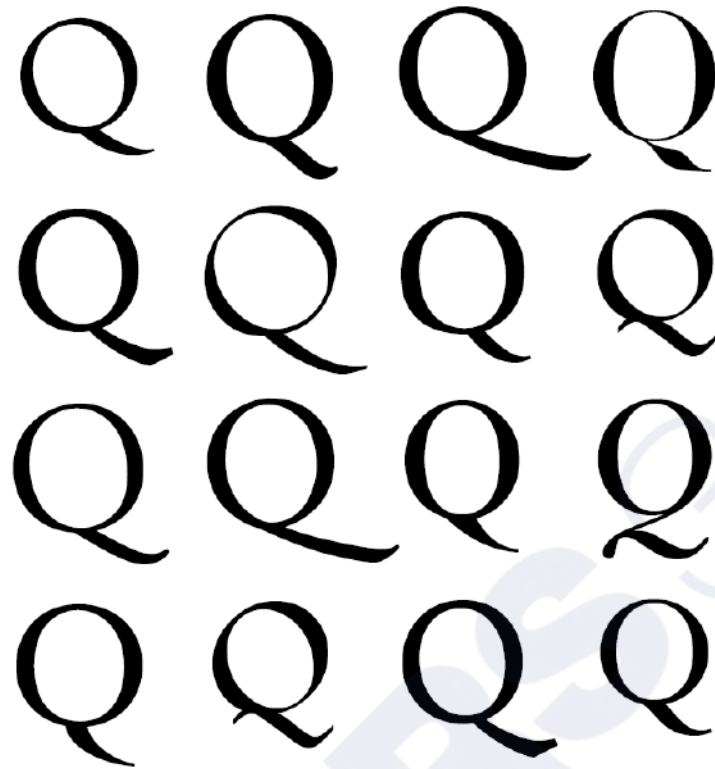
**Q.04** A cube is dissected by one plane at  $\frac{1}{6}$  side length and one plane at  $\frac{1}{2}$  side length in each of the three dimensions of  $xy$ ,  $yz$  and  $xz$ . How many cubes will be formed after dissecting the large cube?

**Q.05** Robert loves fruits. With his monthly allowance, he can buy either 50 apples or 40 bananas. One month, he decides to save 10% of his allowance. After buying 20 bananas, how many apples can he buy?

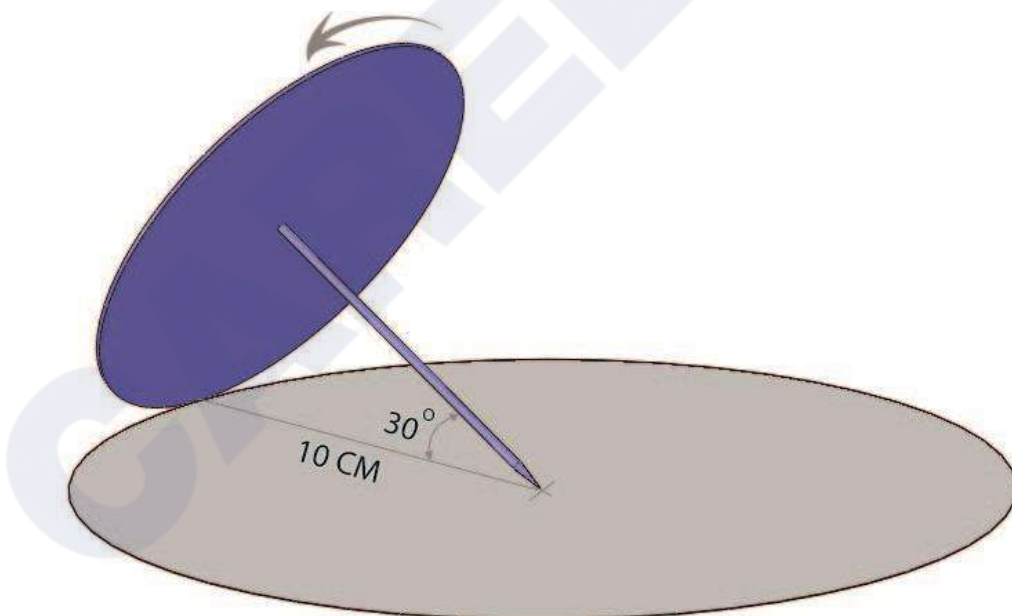
**Q.06** How many surfaces are there in the letters of the word sign 'DESIGN'? Two views of the sign are shown below.



**Q.07** How many fonts have been used to write the letter Q in the image shown below?

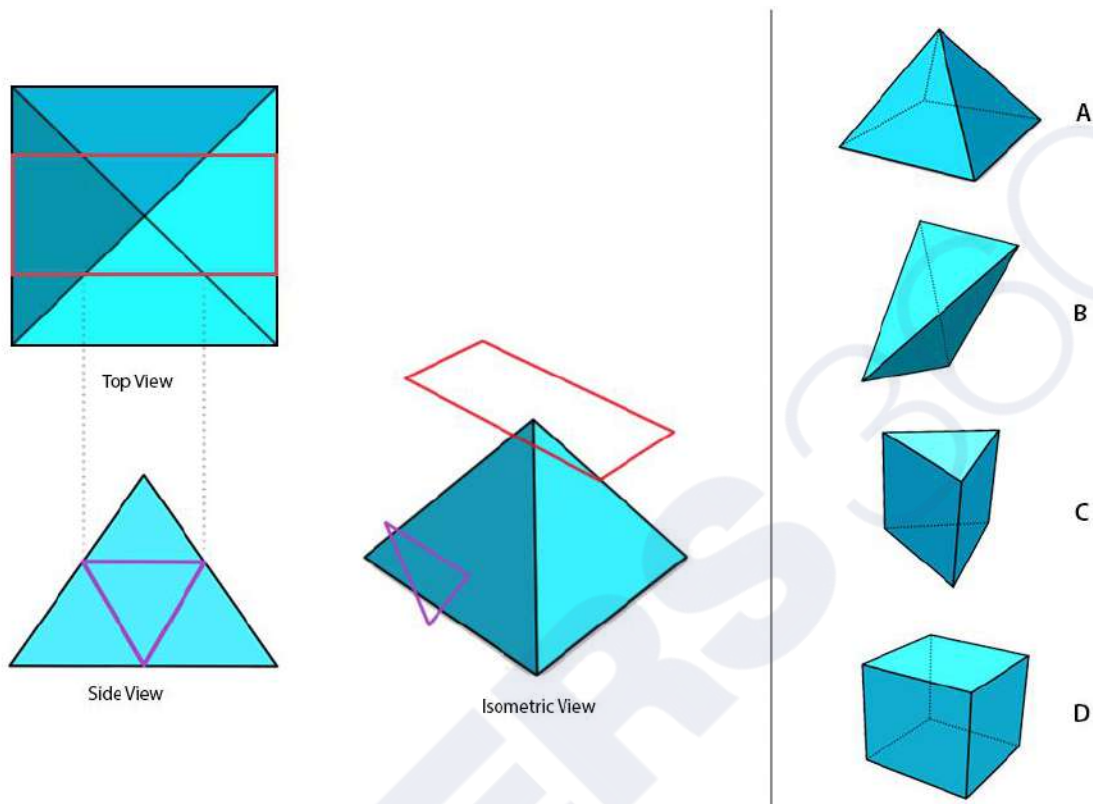


**Q.08** A pin is connected perpendicular to the centre of a circular disk as shown. A little push will make it roll over a grey circle. How many turns does it take to come back to its original position?

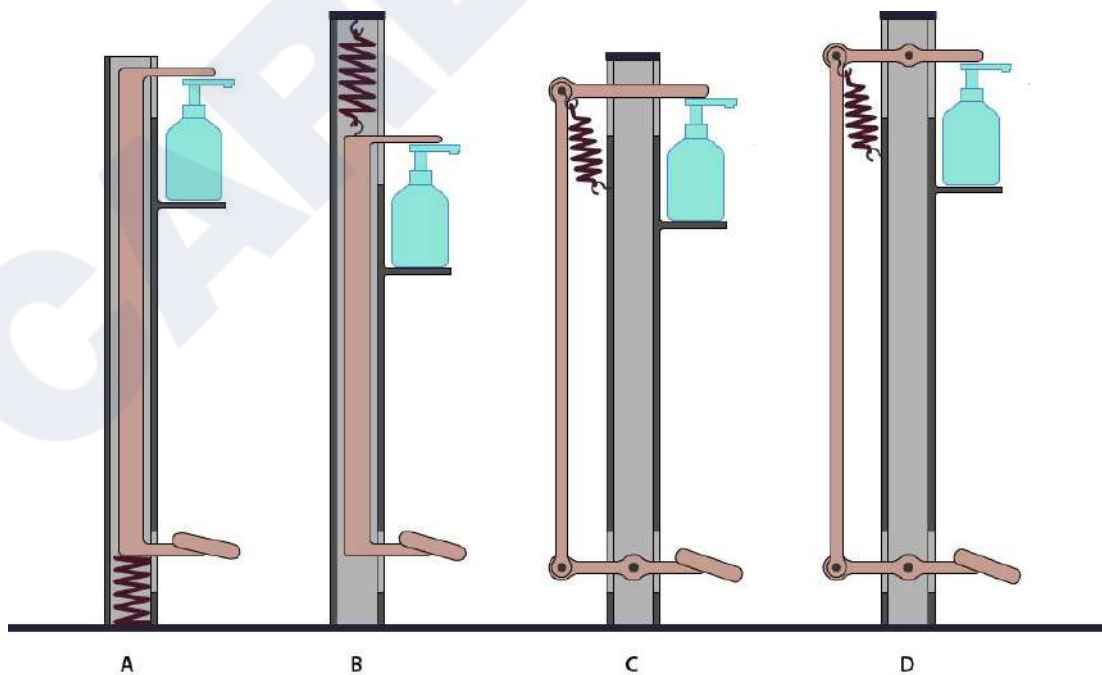


**Part A – Section II: Multiple Select Questions**

**Q.9** The figure shows a square pyramid that will be cut into multiple solids by extending the purple and red shapes. Select the solids that will result from the cuts.



**Q.10** The options show schematics of four different versions of a foot operated hand sanitizer dispenser. Which schematic(s) will work as intended?



**Q.11** Consider the highlighted phrases in the following sentences.

Highways have **milestones stretched in a continuous series**.

A healthy adult's heart **beats at 72 beats per minute**.

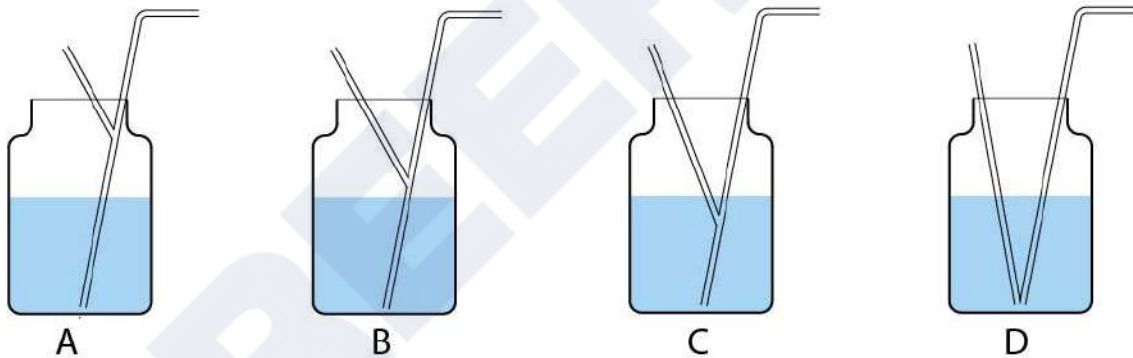
The minute hand of a clock rotates at **6 degrees per minute**.

A building is constructed with an underlying concrete **structure consisting of a series of beams and nodes**.

Choose the option(s) which is/are true:

- A. The phrases represent a structure of a specific element arranged in a non-repetitive manner.
- B. The scales are indicative of either space or time.
- C. The phrases represent a structure of a specific element arranged in a repetitive manner.
- D. The scales are indicative of both volume and time.

**Q.12** Which of the straw(s) will draw the liquid?



**Q.13** The motif on the left is duplicated in the same position. The duplicated motif was rotated about its central axis on the top of original motif at different angles as shown in options A, B, C, D. Which is/are the correct option(s)?



A



45 degree clockwise  
about central axis

B



135 degree anti-clockwise  
about central axis

C



90 degree clockwise  
about central axis

D



90 degree anti-clockwise  
about central axis

**Q.14** A food delivery company wishes to re-design its app ecosystem. A designer has been asked to conduct research interviews for this activity. Which of the following people should the designer interview?

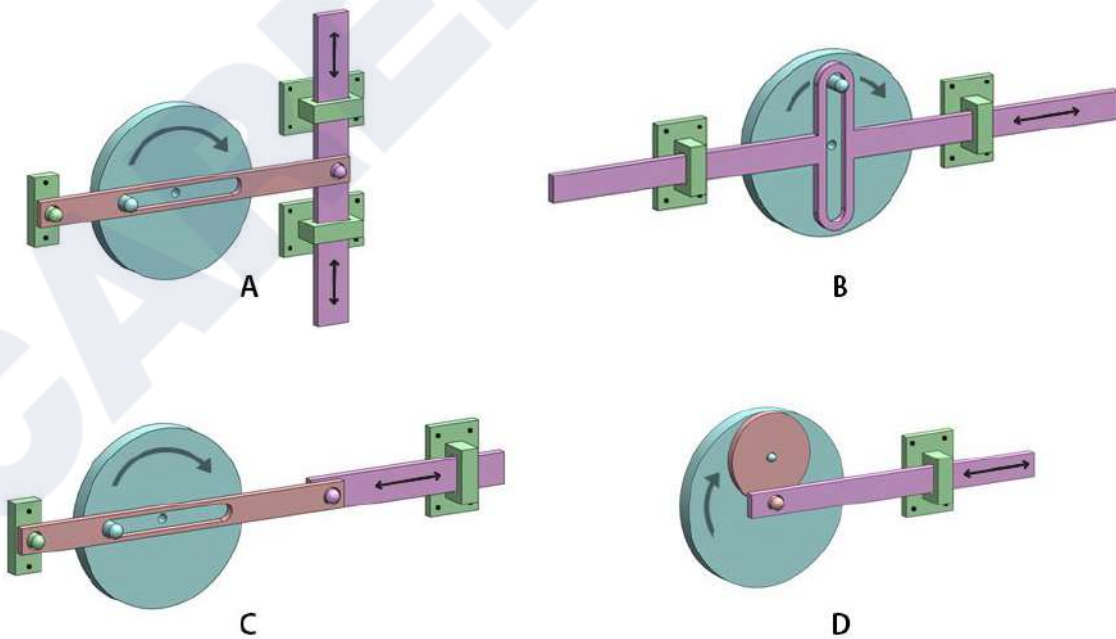
- A. People who deliver the food ordered through the app
- B. Employees of restaurant who offer food through the app
- C. Customer support employees of the food delivery company
- D. Existing users of the app

**Q.15** Find out the correct option(s) which can be used to create the image on the left. You can duplicate, rotate and reflect these options to achieve the same.

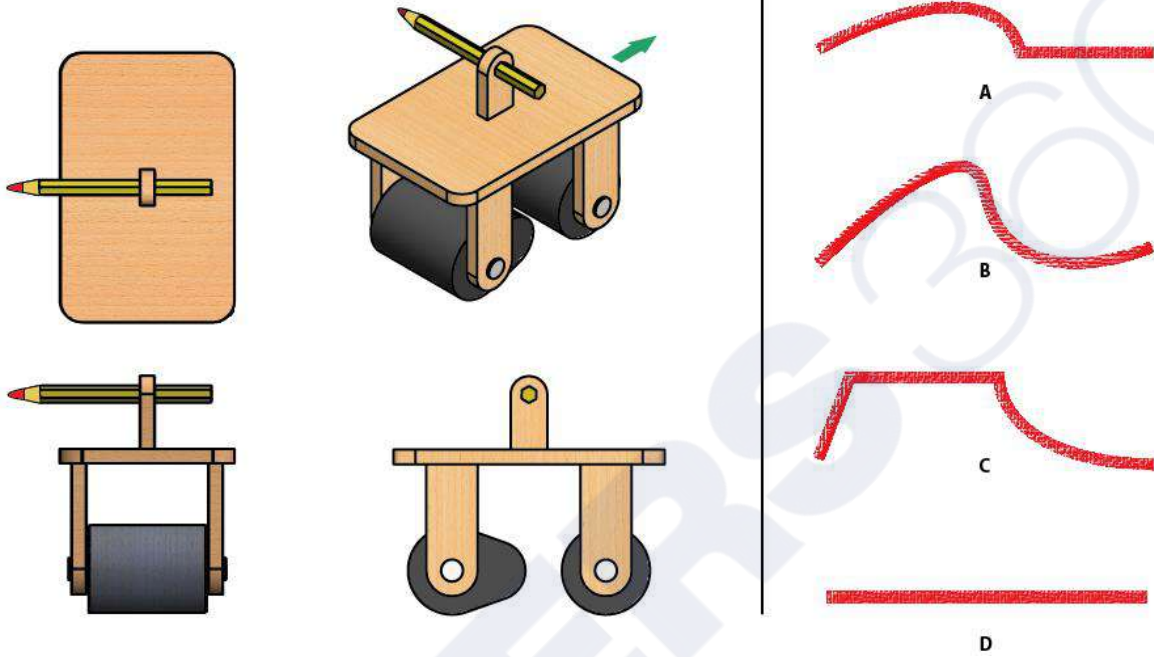
typodiy

- A rnhocnd
- B ryrswy
- C kncdr
- D idiy

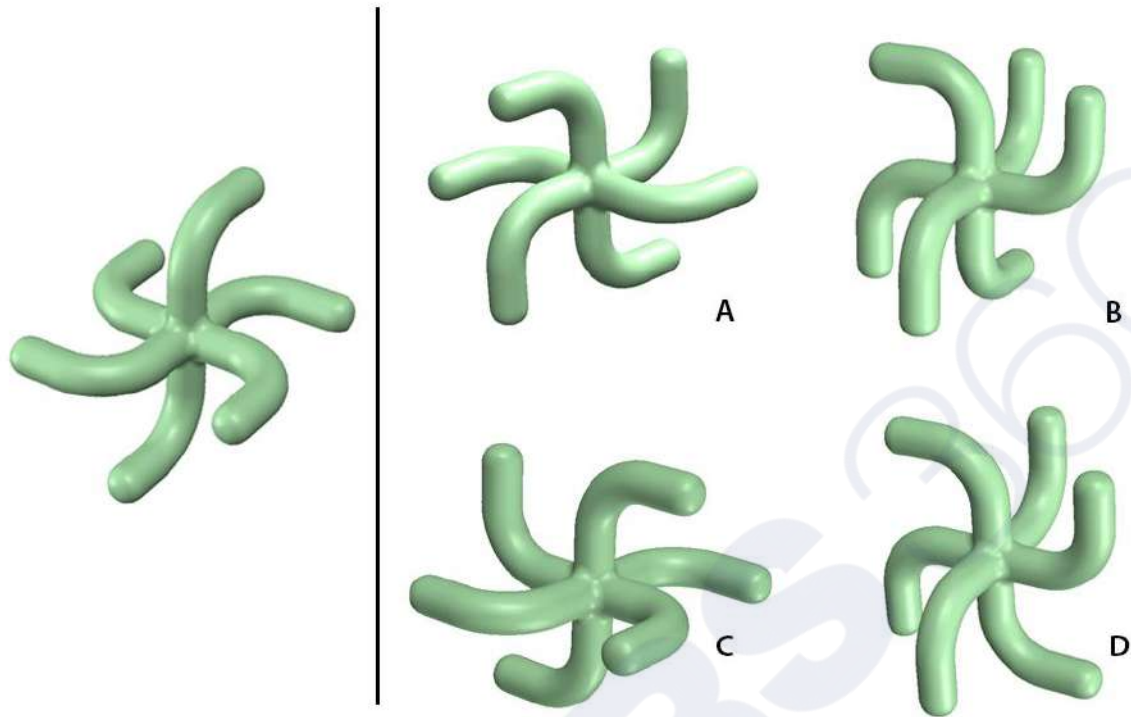
**Q.16** Which option(s) will result in linear motion (shown by straight arrows) of the plunger when the wheel is rotated?



**Q.17** The toy shown in the figure is pushed in the direction of the green arrow as the pencil makes a mark on a wall beside it. Which of the mark(s) in the options can **NEVER** be made by the pencil?

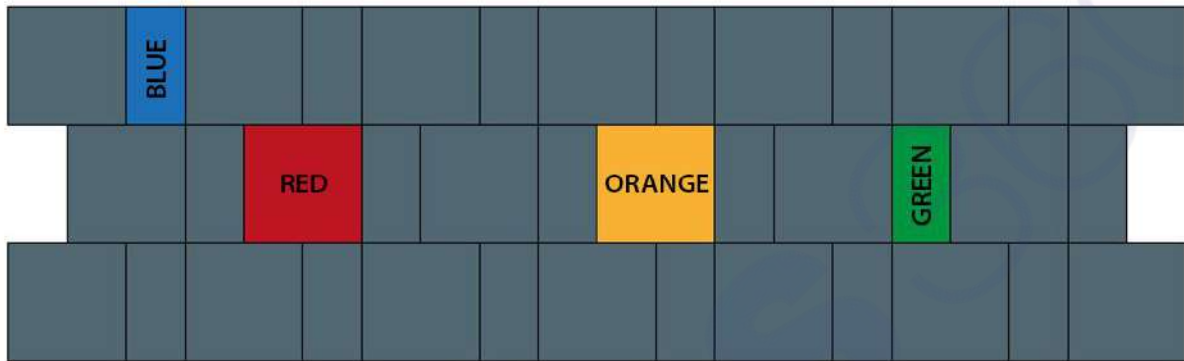


**Q.18** Which of the option(s) is/are the rotated view(s) of the object shown on the left?



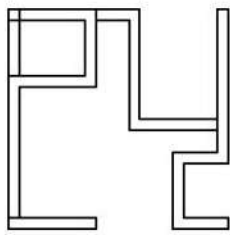
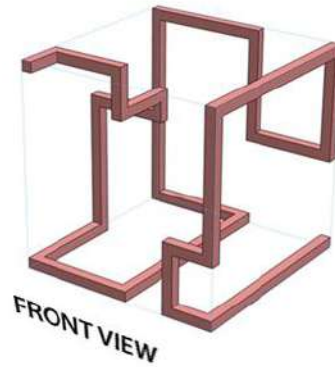
**Part A – Section III: Multiple Choice Questions**

**Q.19** Shown below is a keyboard designed for smartphones. It has two sizes of keys which are arranged one after the other. What will be the difficulty of independently typing a single coloured key from the origin (key O), arranged from least difficult to most difficult i.e. easiest to type first, most difficult to type last. Assume, the mobile is held vertically in the left hand, and a right-handed user presses the keys using only the index finger of the right hand.

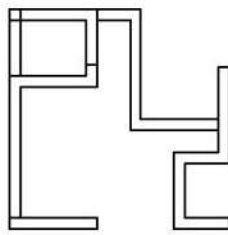


- A. Orange, Green, Red, Blue
- B. Red, Blue, Orange, Green
- C. Red, Orange, Green, Blue
- D. Orange, Red, Green, Blue

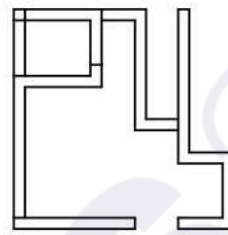
**Q.20** Which option represents the front view of the object shown below?



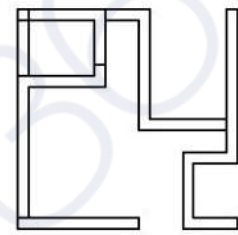
A



B



C



D

**Q.21** Which one of these materials would make a furniture lightest for the same design?



A. Particle board



B. Medium Density Fiber



C. Teak Wood



D. Plywood

**Q 22** A zookeeper had  $x$  baboons and  $y$  monkeys in an enclosure. One day, the zookeeper was told that seven of the animals have escaped. From only this information, he was able to deduce that at least one baboon has escaped. Which of the following **does not** represent a possible  $(x,y)$  pair?

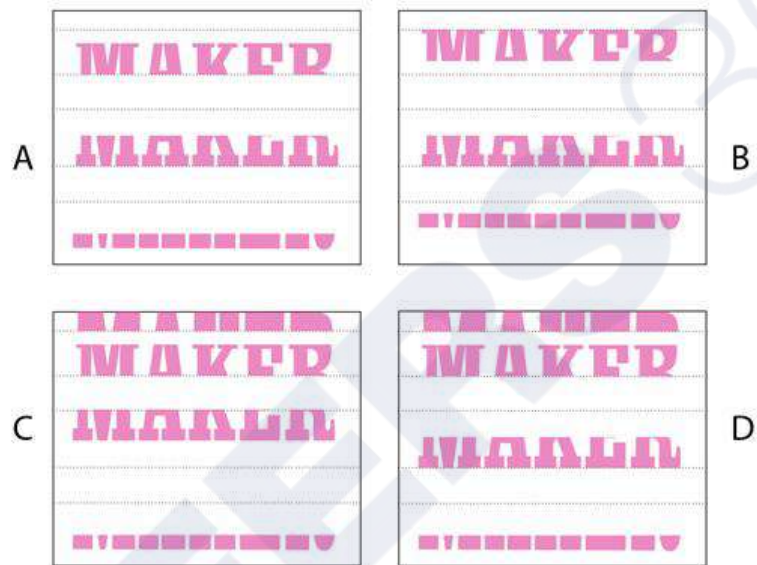
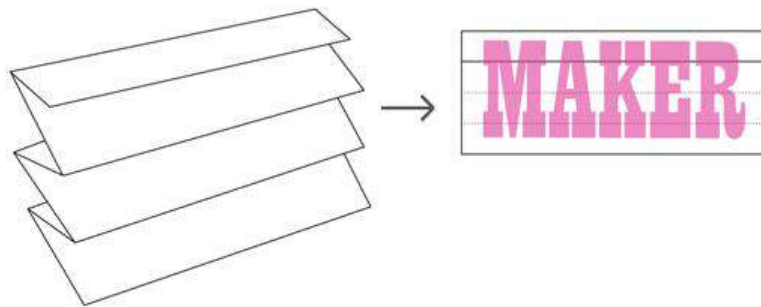
- A. (10,8)
- B. (7,2)
- C. (25,6)
- D. (12,4)

**Q.23** In the paintings from Pablo Picasso's blue period, colours are chosen from one part of the colour-wheel. They yield tonality of blue, in spite of the presence of yellowish green, bluish green, bluish purple and so on. Therefore, it can be said that tonality is an outcome of

- A. Split complementary combination.
- B. Double complementary combination.
- C. Simple analogous combination.
- D. Triadic colour combination.

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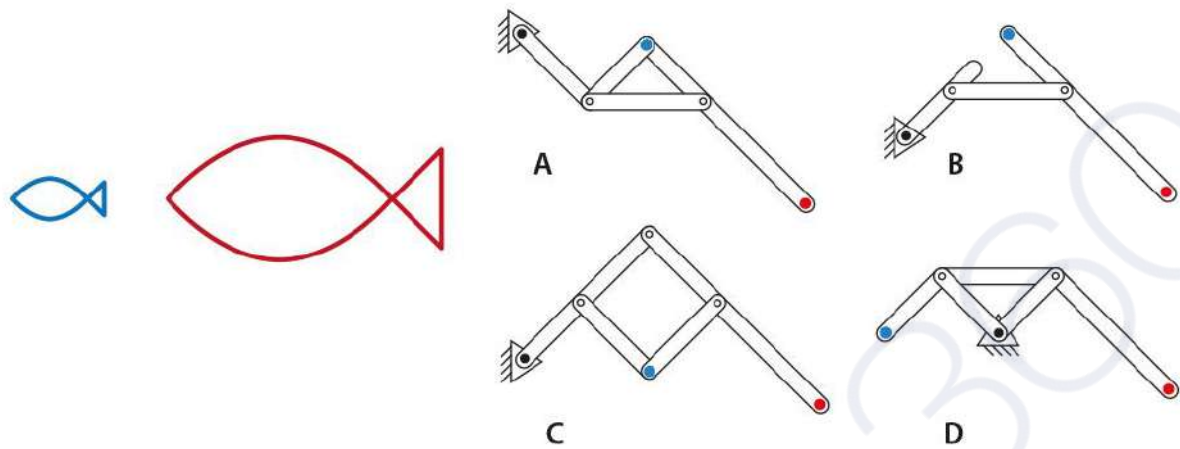
**Q.24** A sheet of paper is folded as shown. Then the word 'MAKER' is written on the folded paper. Which option correctly represents the unfolded paper?



**Q.25** In kitchen we have three important activities to perform, namely, (Task 1) washing utensils, (Task 2) rolling chapati and (Task 3) chopping vegetables. To design an ergonomically correct kitchen which of the following is most beneficial depending on the need in an ideal situation. Assume that only one person will use the kitchen.

- A. All the three tasks at same height.
- B. Tasks 1 and 2 at same height.
- C. Tasks 2 and 3 at same height.
- D. All three tasks at different heights.

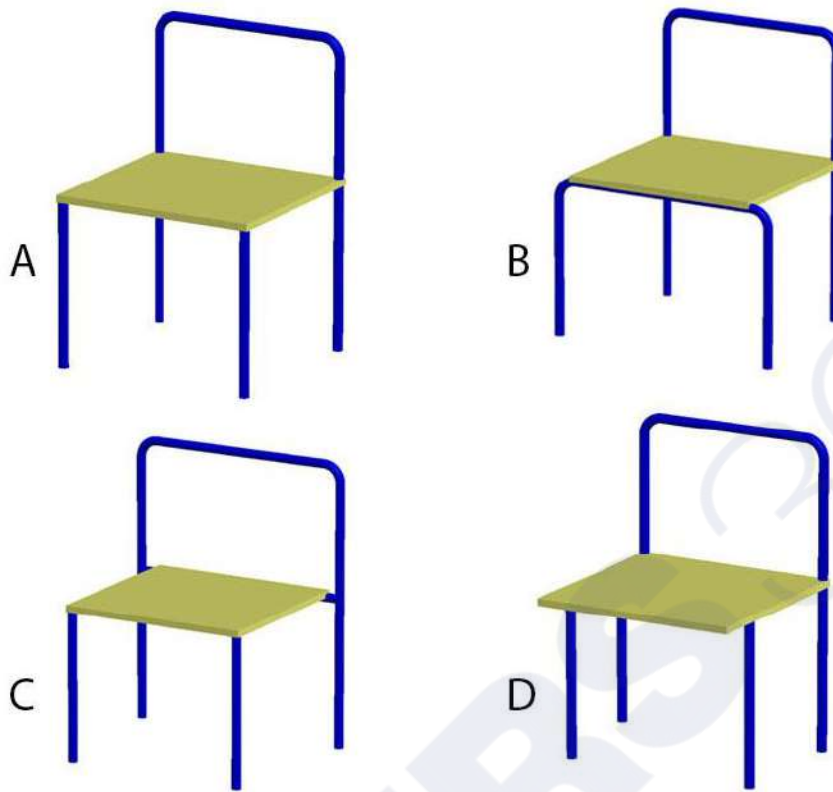
**Q.26** Identify the correct mechanism that enlarges the blue fish to red when traced with the blue dot.



**Q.27** P and Q are two layered dials of a watch. Dial Q is placed on the top of dial P. The white areas in dial Q are cut portions through which parts of dial P are visible from the top. The pattern shown in image R is taken at 12:00 hrs. Dial Q rotates by 90 degrees after every 15 minutes in clockwise direction about its central axis. Dial P rotates by 45 degrees anti-clockwise after every 30 minutes about its central axis. Find out the right pattern at 13:30 hrs.



**Q.28** From the given options, which chair can be compactly stacked?

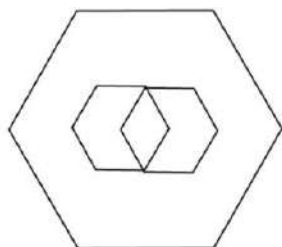


**Q.29** Which one of the diagrams **DOES NOT** represent any of the relationships given below?

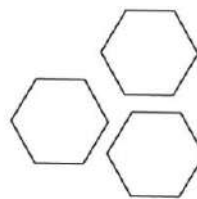
- Egg : Sugar : Cake
- Seed : Fruit : Tree
- Rock : Paper : Scissors



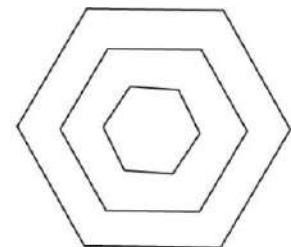
A



B



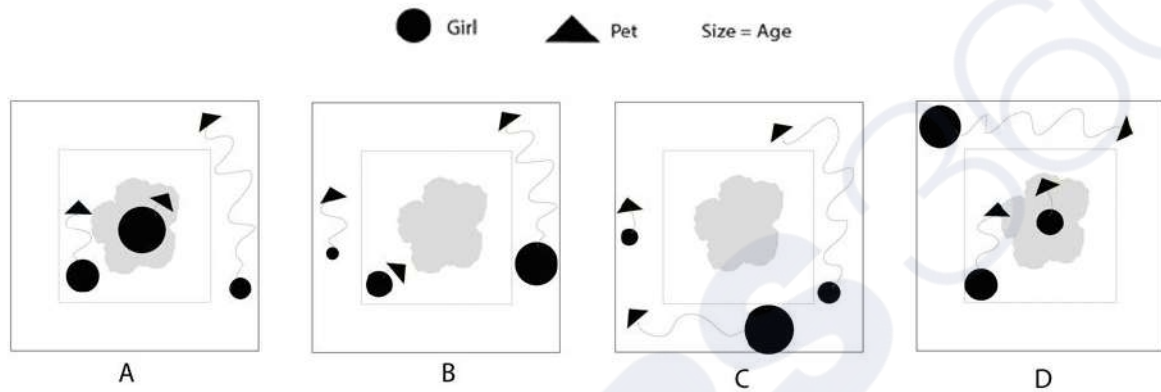
C



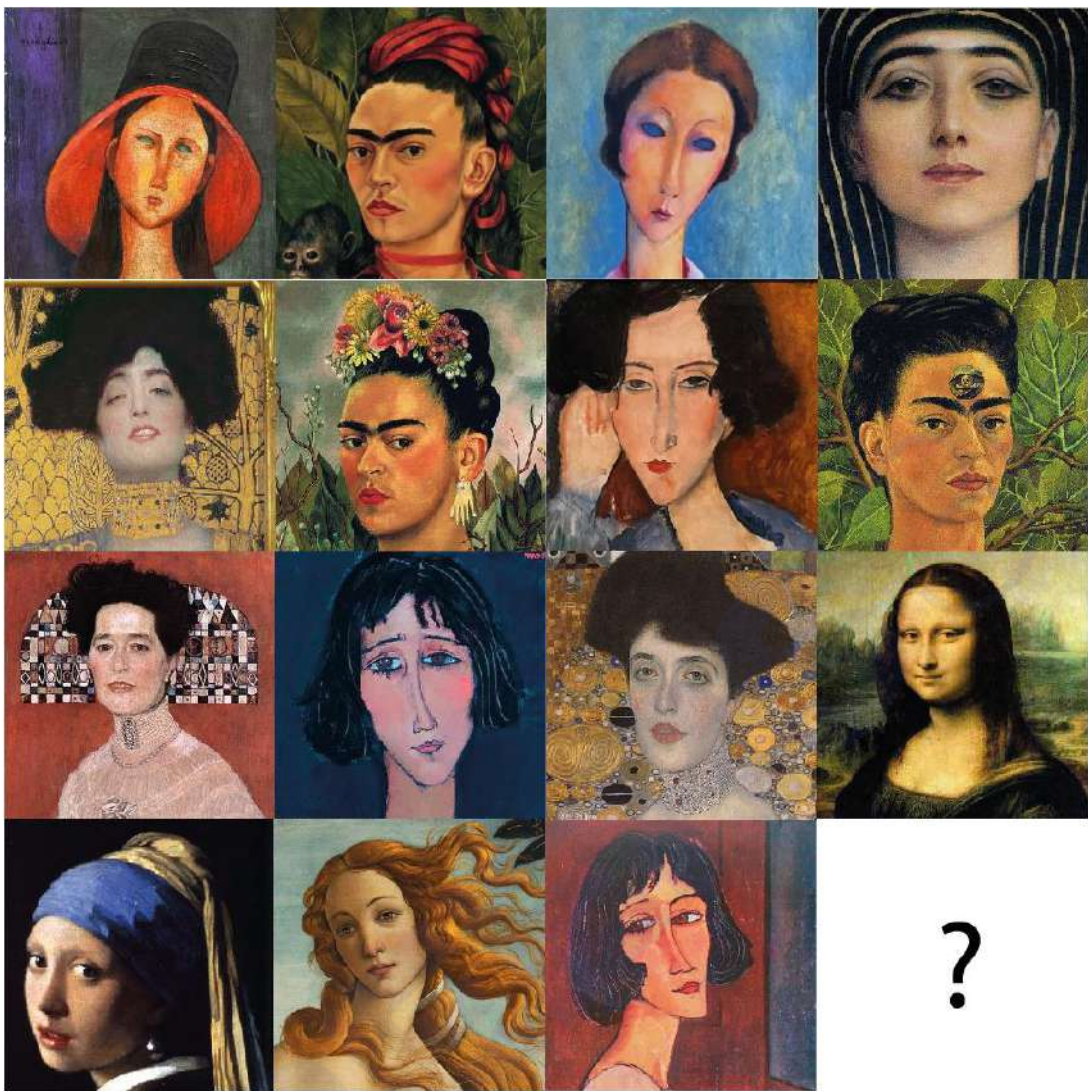
D

**Q.30** Three girls went to a square garden with their dogs. The garden was built around a banyan tree at the centre. The area around the tree was bound by a beautiful picket fence. Usha the eldest, sat on the platform under the banyan tree while Fluffy lay at her feet sleeping peacefully in the shade. Reena and Tommy walked around the fence looking at the beautiful flowers. Madhu, the youngest of the three, was always running around shouting at Gullu who loved the challenge of chasing squirrels.

Which of the diagrams correctly represents the above scenario?



Q.31



A



B

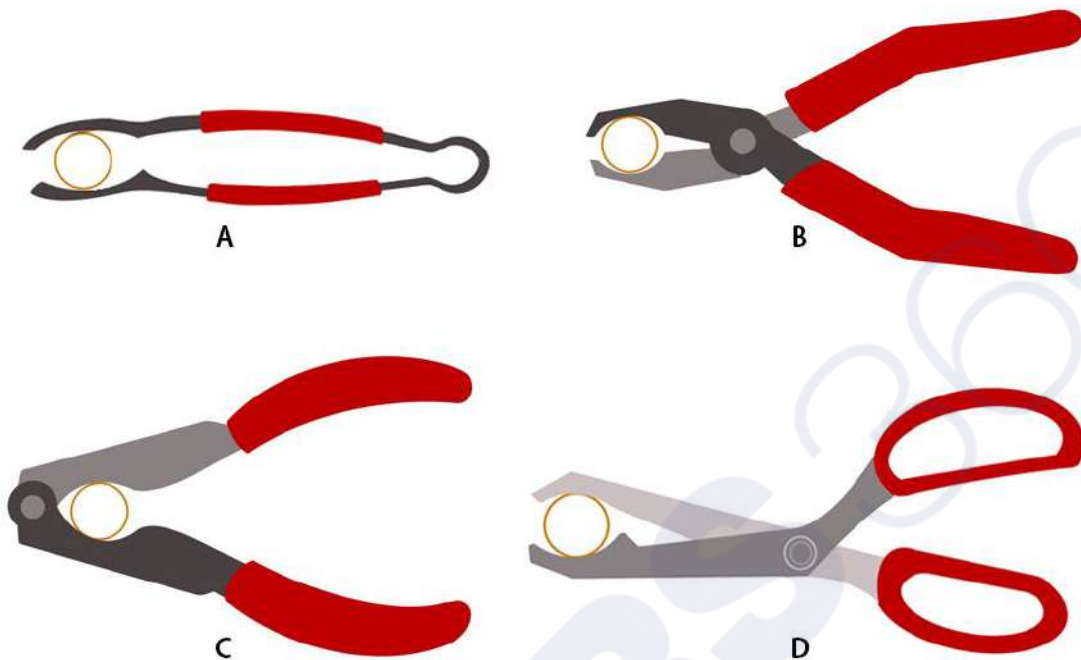


C

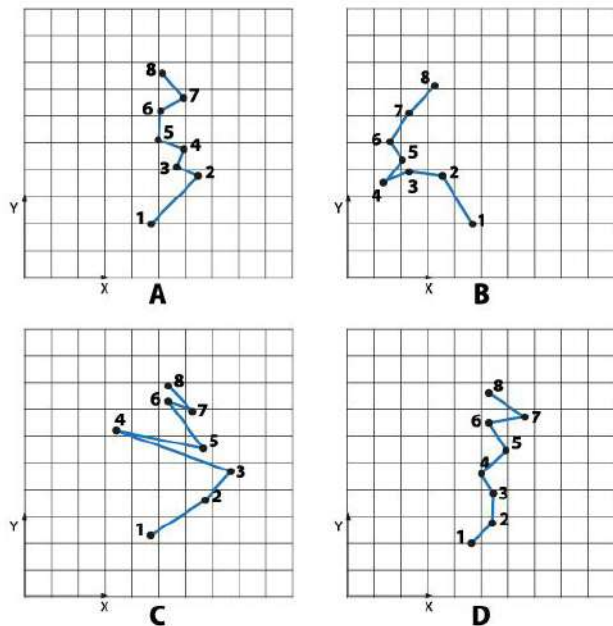


D

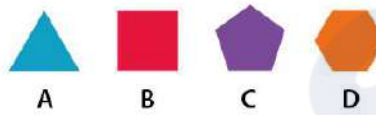
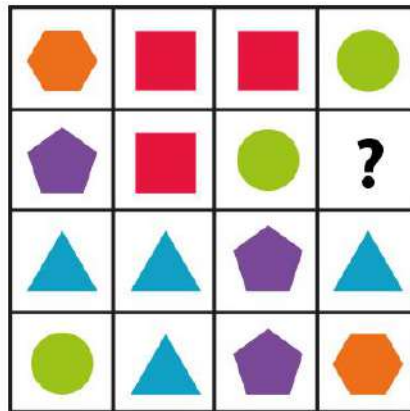
**Q.32** Image below shows four configurations for designing a nut cracker. Which option would require least amount of pressure to break the nut?



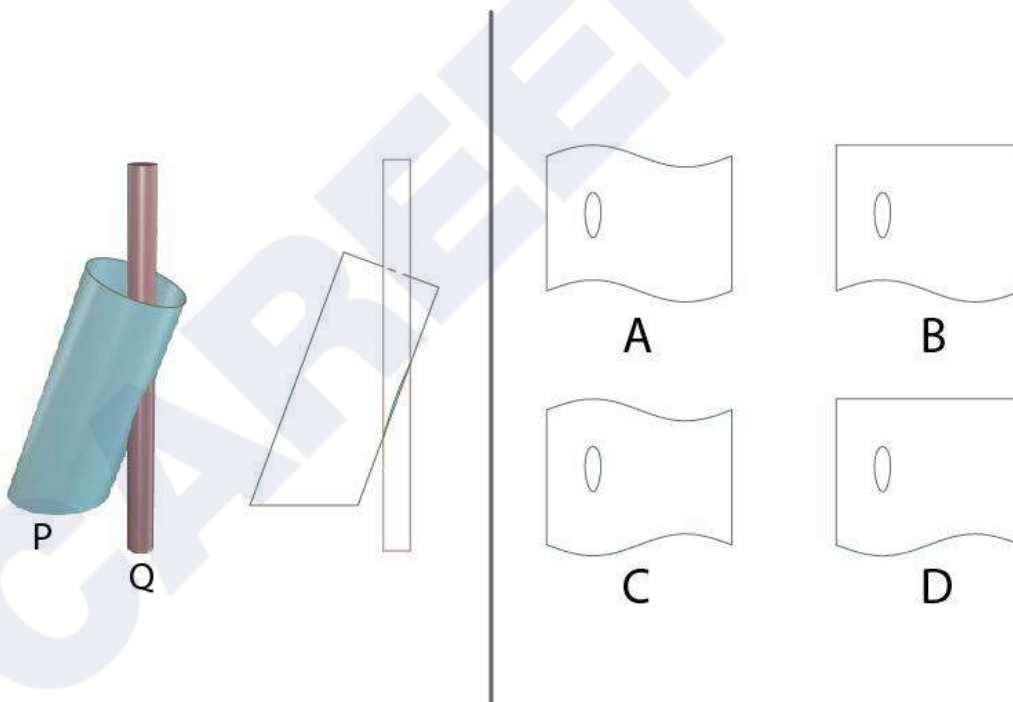
**Q.33** A camel is resting under the shade of a tree. Camel needs to stand-up to walk. Trace the trajectory of point P shown on the body of the camel, as it stands up, assuming 1 as the starting point.



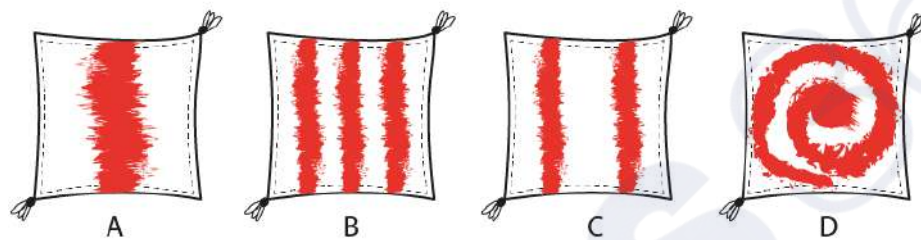
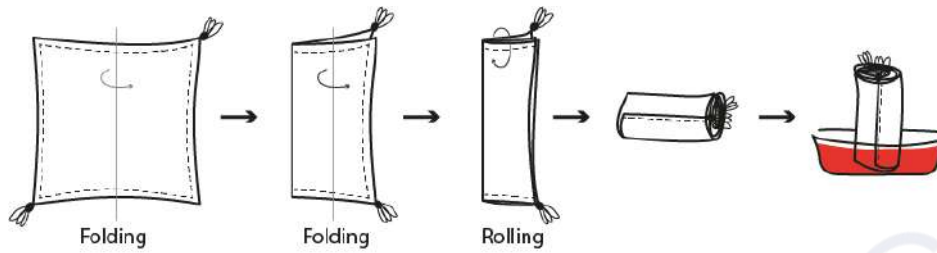
Q.34



Q.35 A cylinder P is cut by a cylinder Q as shown. Choose the option which shows the shape obtained after unrolling cylinder P.



**Q.36** Aru bought a new cushion cover from the market. Though the material is cotton, she was not happy with the plain cushion cover and planned to dye it with a colour. She followed the process as shown in the diagram. Find out the pattern she got after dyeing the cover.



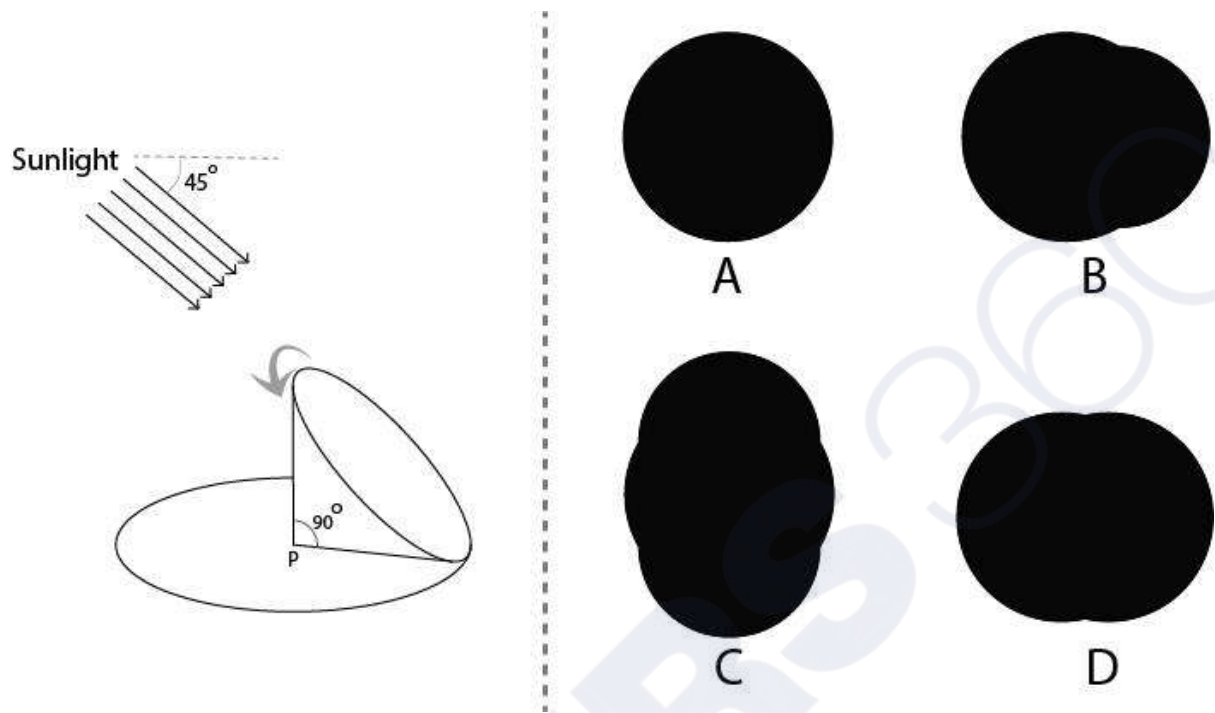
**Q.37** Towards sustainable future people are recycling materials. Shown below are products or architecture (top row) that are made from recycling materials (bottom row).

Which of the options listed below correctly identifies products or architecture with the material that they are recycled from?

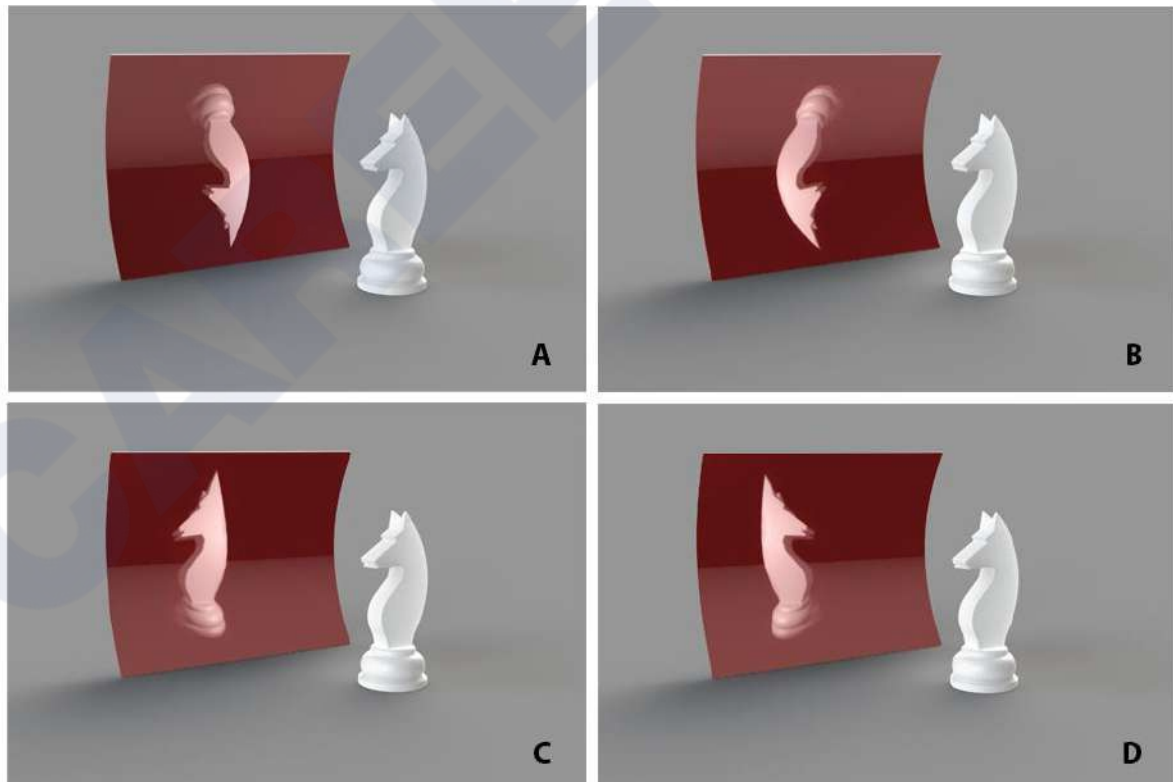


- A. P-4, Q-2, R-1, S-3
- B. P-2, Q-1, R-3, S-1
- C. P-2, Q-4, R-1, S-3
- D. P-4, Q-3, R-1, S-2

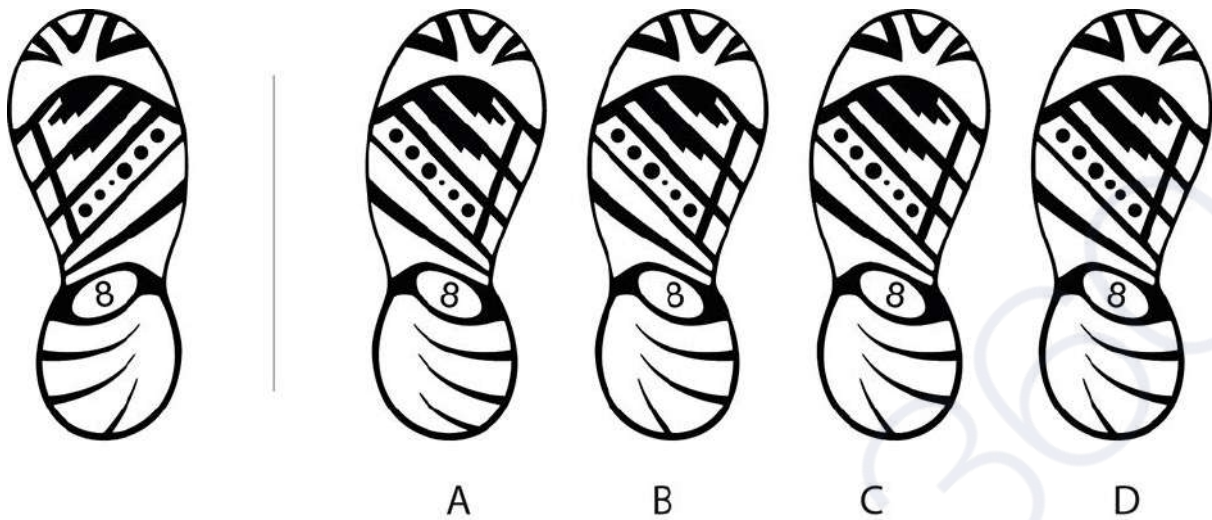
**Q.38** A solid cone is revolving inside the circle as shown. Parallel sunlight at 45 degrees to ground is creating the shadow of the cone. Which option represents the total region covered by the shadow for one complete revolution when seen from the top?



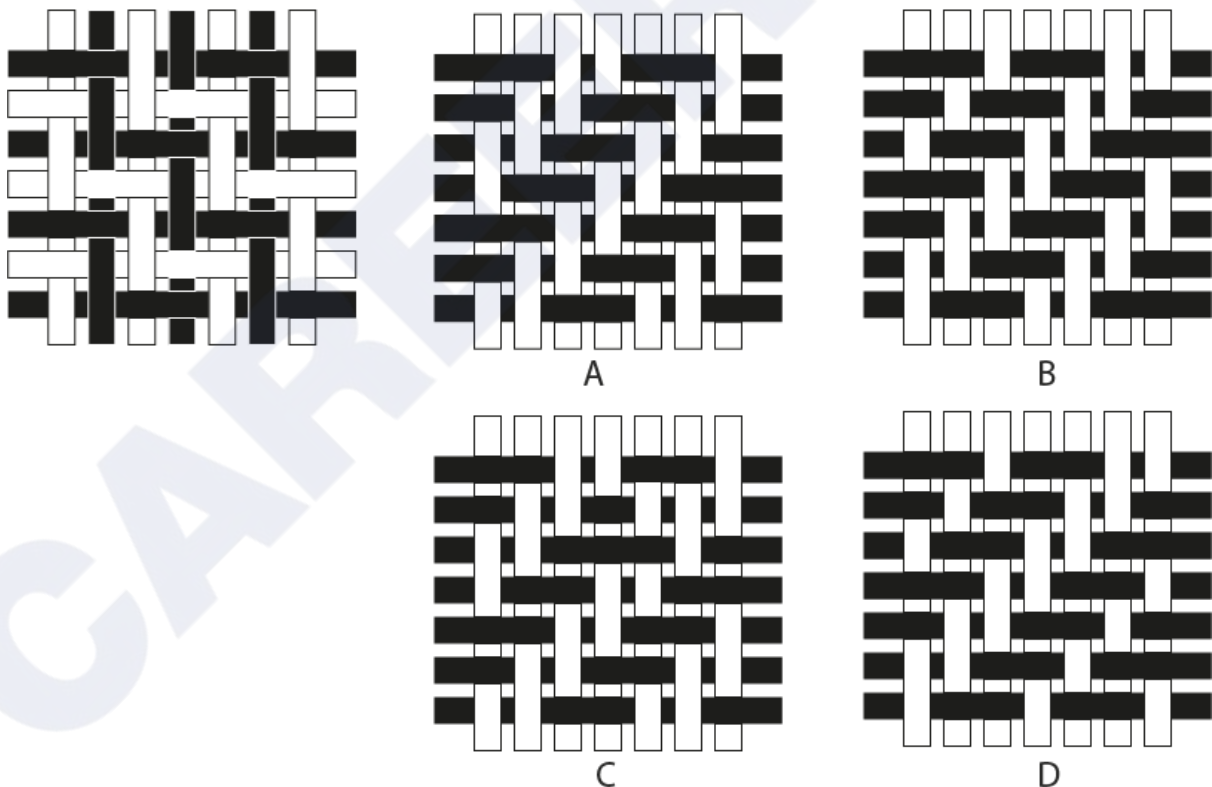
**Q.39** Which of the options shows the correct reflection of the chess piece?



**Q.40** Find out the right pair for the shoe shown on the left from the given options.



**Q.41** The figure on the left was made using white and black ribbons. If all black ribbons in vertical direction are replaced by white and all white ribbons in horizontal direction are replaced by black, then find out the resulting figure.



## Part B

### All questions are mandatory

#### **Q.1 Sketching** (20 marks)

Mr. Singh (5 Feet, 11 inches tall) is smiling and capturing a selfie of his entire family with his mobile phone held vertically. He is with his wife (5 feet tall), standing towards his left with her two mischievous kids. Pinky (girl) and Bablu (boy) are making funny expressions looking into the mobile. They all are standing facing a digital camera installed in the top corner of room. The size of the room is 12 x 12 x 12 feet.

Draw the picture of the above description from the point of the view of a digital camera capturing this moment.

#### **Additional Instructions:**

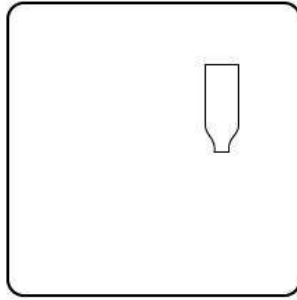
- Use only pencils.
- Do not illustrate the surroundings. Only draw the family.

#### **Evaluation criteria:**

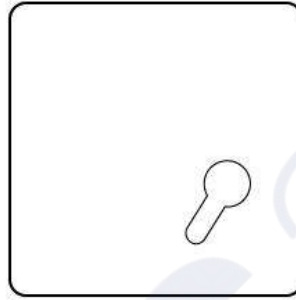
- Imagination
- Overall composition of the picture
- Quality of lines
- Attention to details
- Anatomy and perspective

**Q.2 Creativity** (20 marks = 4 x 5)

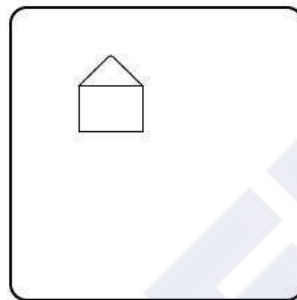
Each of the boxes in the answer script shows some visual elements and the FIRST word for a title of the image. Draw recognizable images by interpreting the visual elements and give a title to the images using the given first word. Use only BLACK pencil/pen. Draw only within the boundaries of the boxes.



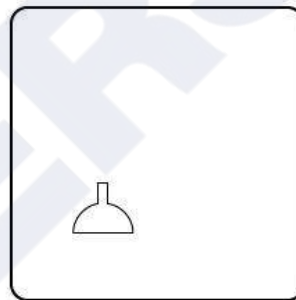
Walk  
.....  
.....



Pull  
.....  
.....



Cover  
.....  
.....



See  
.....  
.....

**Evaluation criteria:**

- Uniqueness: Ability to create unusual images
- Diversity: Variation between the created images
- Clarity: Effective use of the visual elements and title
- Fun: Ability to use humor and surprise in the images and title

**Q.3 Visual Sensitivity** (20 marks)

Create a new visual identity for Indian Women's Hockey Association. The identity has to be original and should have the abbreviations 'IWHA' as part of the visual design. DO NOT draw from any existing designs.

**Evaluation criteria:**

- Creative visual representation
- Effective communication of the concept
- Visual Aesthetics
- Composition

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#### **Q.4 Form sensitivity** (20 marks)

An abstract three-dimensional form is shown below. Visualise the form of a cutlery set (fork, bowl and glass) for 3-6 Yrs. children based on the image of the given form. It should match the design language with relevant details. Sketch and render the form of the cutlery set.



#### **Evaluation Criteria:**

- Consistency with the visual language of the form
- Form should complement function
- Relevant details of the product
- Surface shading
- Quality of lines/strokes

**Q.5 Problem identification** (20 marks= 5 x 4)



Shown in the image above is an example of a bus-stop during the busy hours.

Draw and annotate **FIVE** distinct design problems in this context.

- Use only one visual for each problem.
- Answer in the given space only.

**Evaluation Criteria:**

- Severity of the identified problem
- Ability to make distinct observations
- Ability to communicate through visuals

## CEED 2022 ANSWER KEY

### SECTION – I (NAT)

SECTION – I (NAT)									
Q. No.	KEY RANGE	Q. No.	KEY RANGE	Q. No.	KEY RANGE	Q. No.	KEY RANGE	Q. No.	KEY RANGE
01	27	02	3214765	03	5	04	0.5	05	112
06	7.2	07	420	08	14				

### SECTION – II (MSQ)

SECTION – II (MSQ)									
Q.No.	KEYS	Q.No.	KEYS	Q.No.	KEYS	Q.No.	KEYS	Q.No.	KEYS
09	B, D	10	D	11	B, D	12	A, C, D	13	B, C
14	A, B	15	B, C	16	C, D	17	A, C, D	18	A, C, D

### SECTION – III (MCQ)

SECTION – III (MCQ)									
Q.No.	KEY	Q.No.	KEY	Q.No.	KEY	Q.No.	KEY	Q.No.	KEY
19	D	20	C	21	D	22	C	23	C
24	C	25	C	26	A	27	D	28	C
29	B	30	C	31	C	32	D	33	C
34	A	35	D	36	B	37	C	38	D
39	A	40	C	41	C				

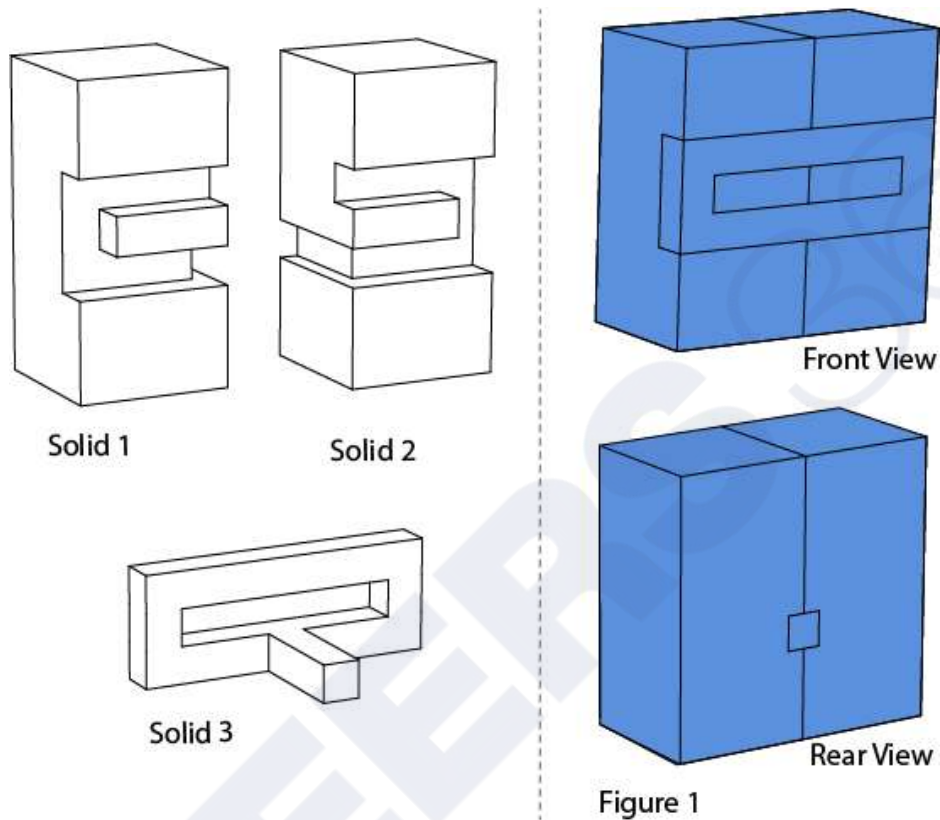
**Common Entrance Examination for Design**

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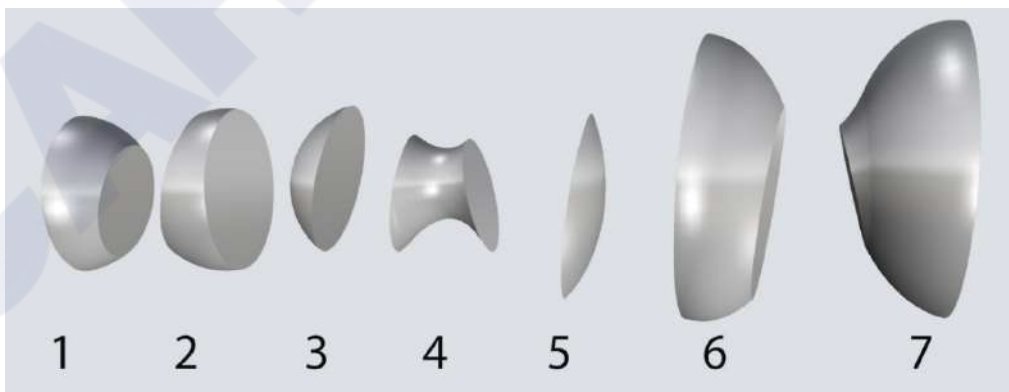
**Question Paper**

## Part A – Section I: Numerical Answer Type Questions

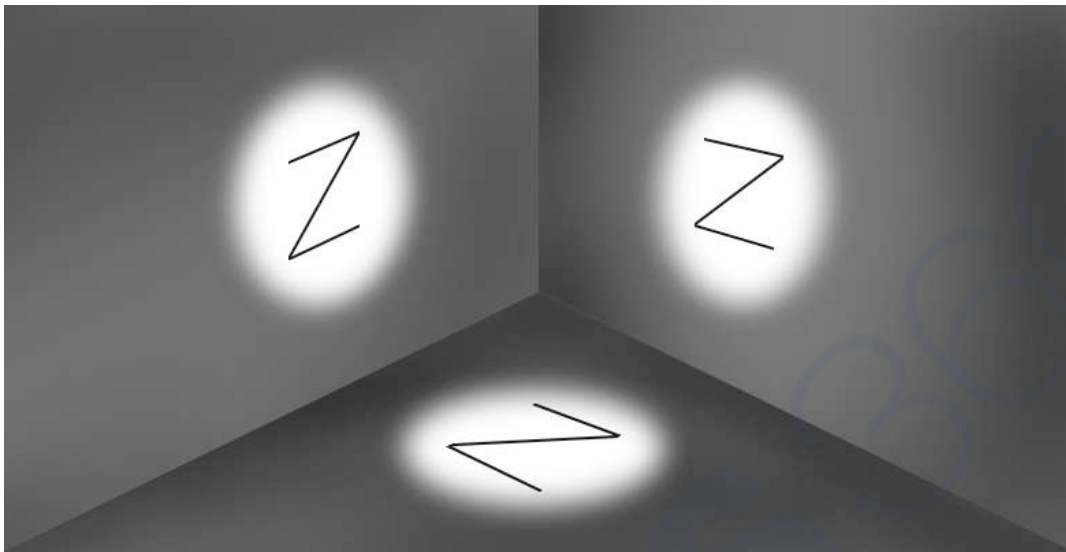
- Q.01** Solid 1, Solid 2 and Solid 3 are joined together to form a cuboid as shown in Figure 1. The cuboid is then painted from all the sides. How many surfaces are there without the paint when you separate all the three solids?



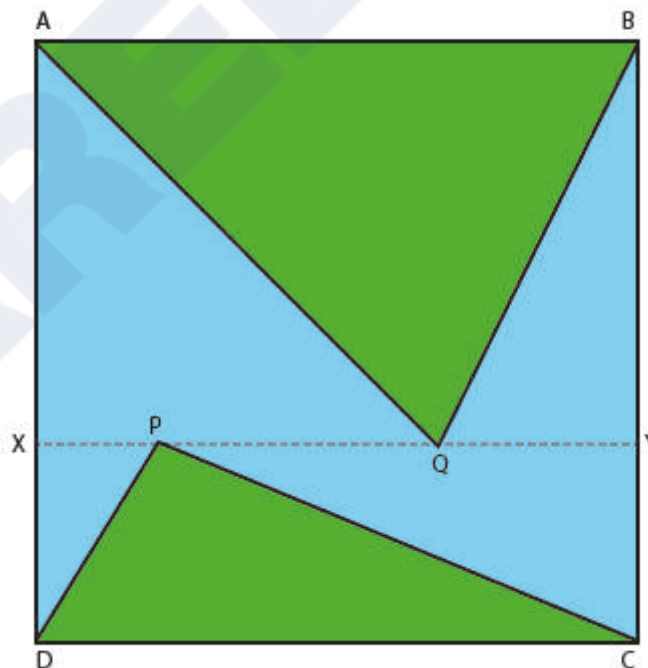
- Q.02** An irregular solid is cut into seven pieces as shown. The pieces are neither rotated nor scaled, but are kept in a random sequence. Find the correct sequence to get the smooth form. The sequence should be written from left to right.



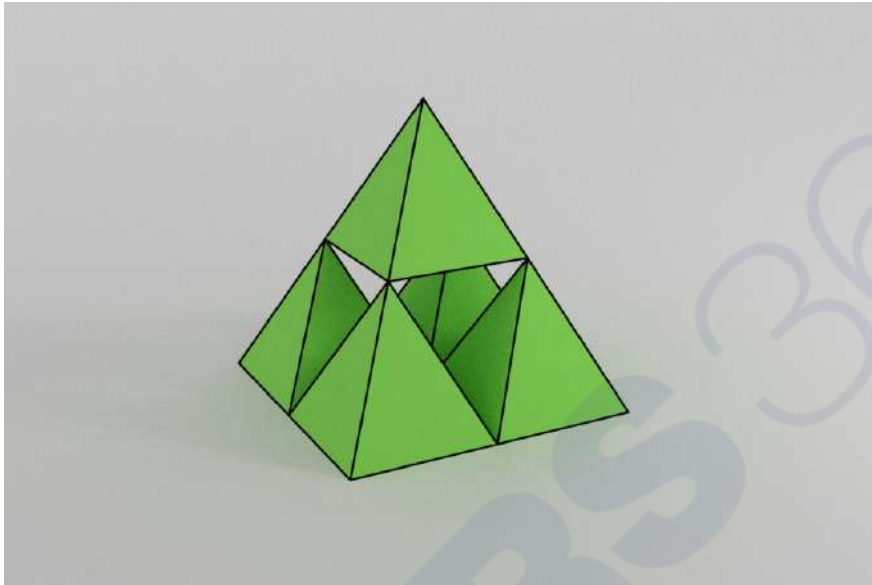
**Q.03** What are the least number of lines required to generate a 3D form such that it creates shadows similar to the figure shown below?



**Q.04** In the square ABCD, line XY is drawn parallel to the base as shown in the figure below. P and Q are any two arbitrary points on XY, forming triangles ABQ and CDP. What fraction of the area of the square is the total green shaded area?

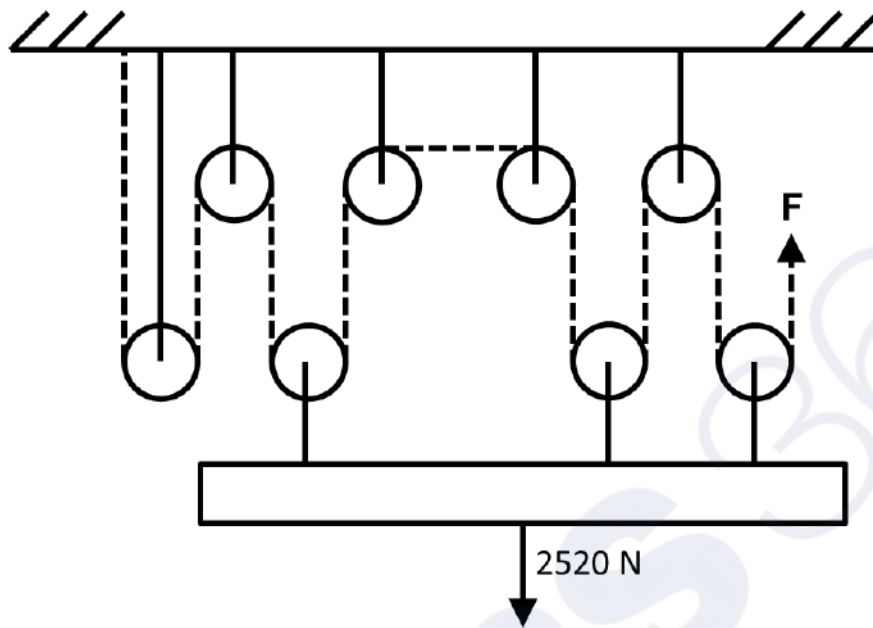


- Q.05** Five square pyramids are stacked as shown in the figure below with the bottom layer consisting of four pyramids in a  $2 \times 2$  grid. If the bottom layer consists of pyramids in  $6 \times 7$  grid, and they are stacked in a similar manner to its maximum height, how many pyramids will the formation contain?

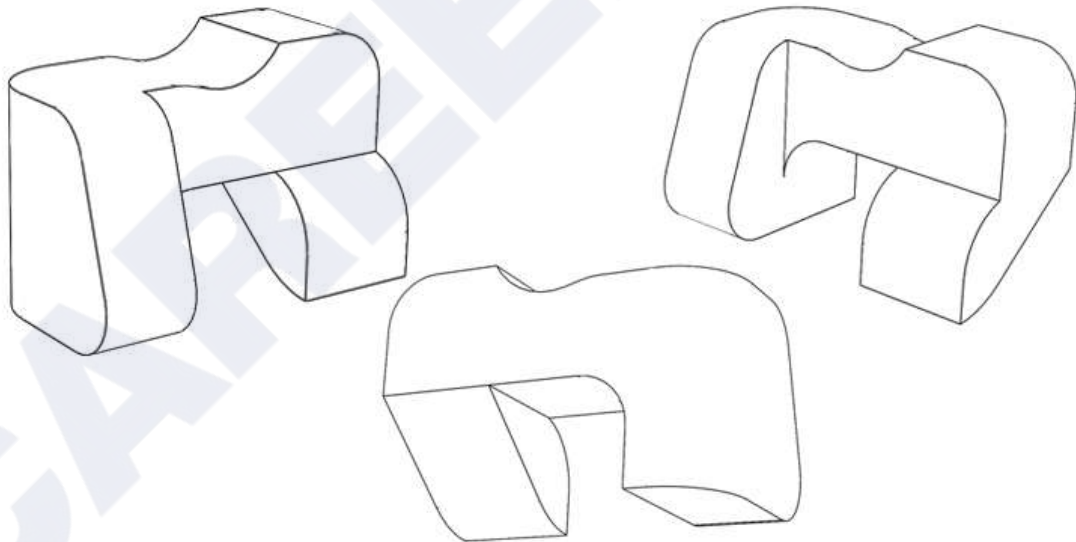


- Q.06** A bank needs to upgrade its ATM kiosks to be wheel-chair accessible. An ATM kiosk entrance has four steps rising up to reach the floor level of the kiosk. Each step is 1000 mm in length, 300 mm in breadth, and 150 mm in height. The bank proposes to create a wheel-chair accessible ramp with a slope of 1:12, adjacent to the steps. What is the minimum horizontal length of the ramp in metre?

- Q.07** A system of frictionless and massless pulleys is being used to pull up a load of 2520 N. What is the minimum force (in Newtons) required at the end of the rope (shown in dashed lines)?



- Q.08** Shown below are three views of the same solid. Count the number of edges.



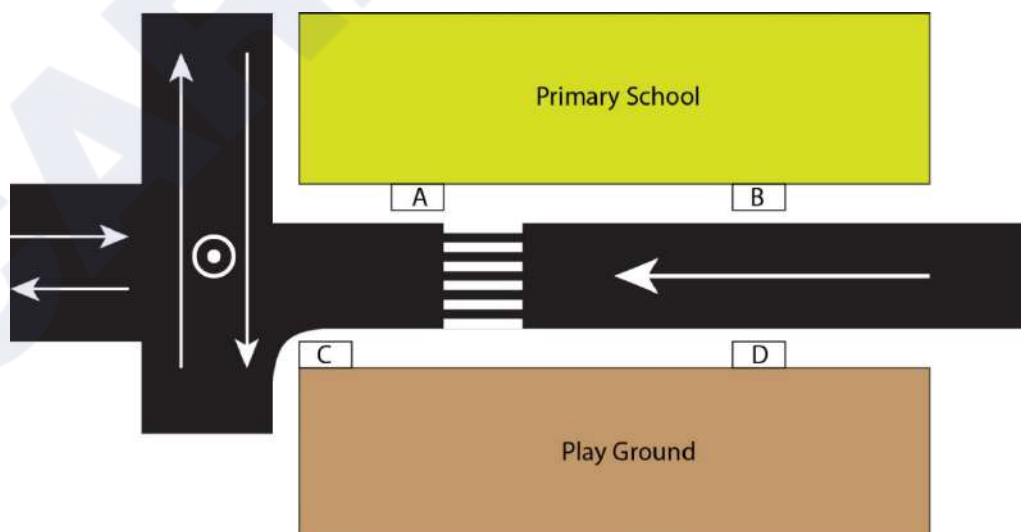
## Part A – Section II: Multiple Select Questions

**Q.09** A virus has two variants P and Q. Two treatments L and M were developed against variant P and Q and tested through four independent trials. The table shows the results. Assuming that both variants are equally prevalent, and both treatments cost about the same, but a given patient can be treated with only one treatment, which of the options is/are true?

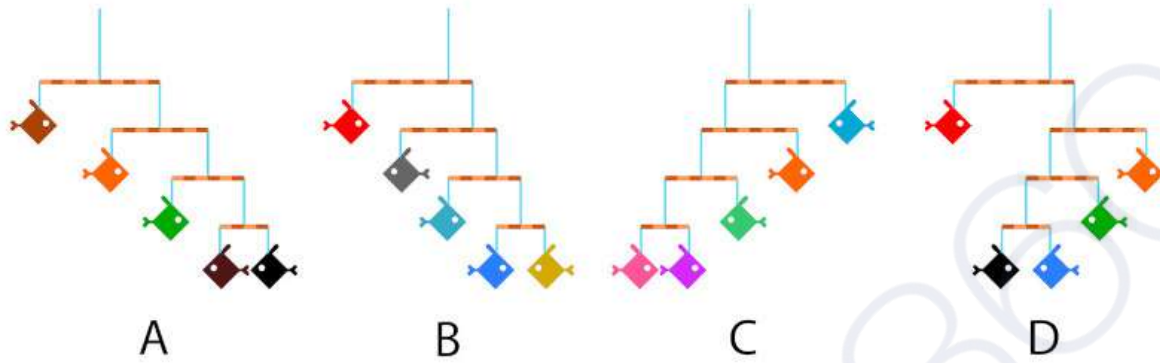
	Against variant P	Against variant Q	Total
Treatment L	44 successes / 50	81 successes / 100	125 successes / 150
Treatment M	94 successes / 100	31 successes / 50	125 successes / 150

- A. If the patient is known to be infected by variant P, both the treatments will be equally effective
- B. If we can determine that the patient is infected by variant Q, treatment L has a higher chance of success
- C. If the variant that the patient is infected by is not known, then both the treatments can be equally effective
- D. If a hospital can stock only one of the two treatments, they should stock treatment L

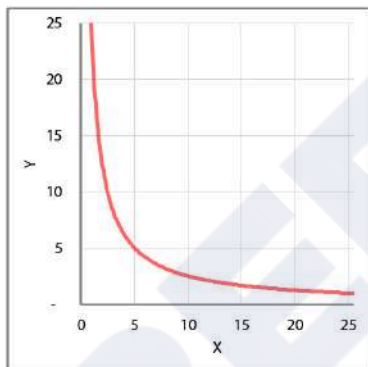
**Q.10** Figure shows the plan of a one-way road passing next to a primary school. Which of the options can be the location(s) to set up a bus stop for the school bus in Indian context?



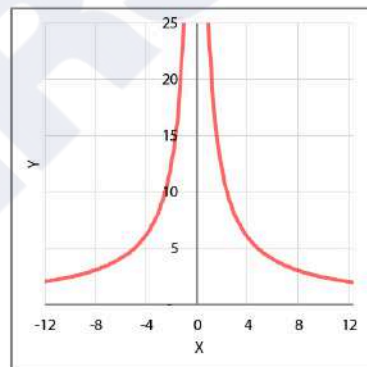
**Q.11** Mobile sculptures are created by tying fish-shaped cut-outs of different colours using blue strings on brown sticks of negligible weight, as shown below. All the fish cut-outs are of the same size and weight. Which of the options will remain balanced after suspending from a ceiling?



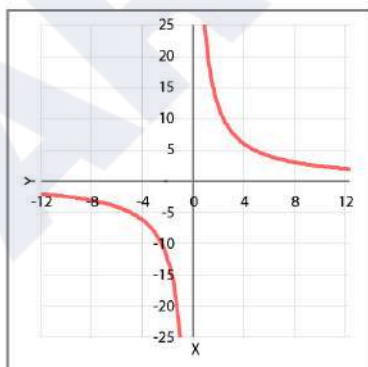
**Q.12** Which of the graphs shown below represent(s) the equation  $XY = 25$ ?



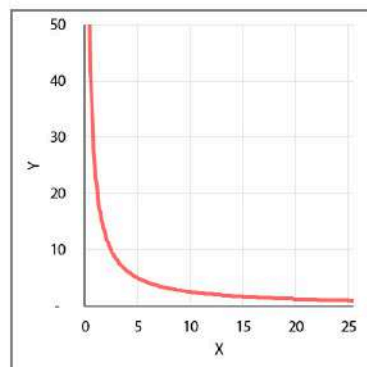
A



B

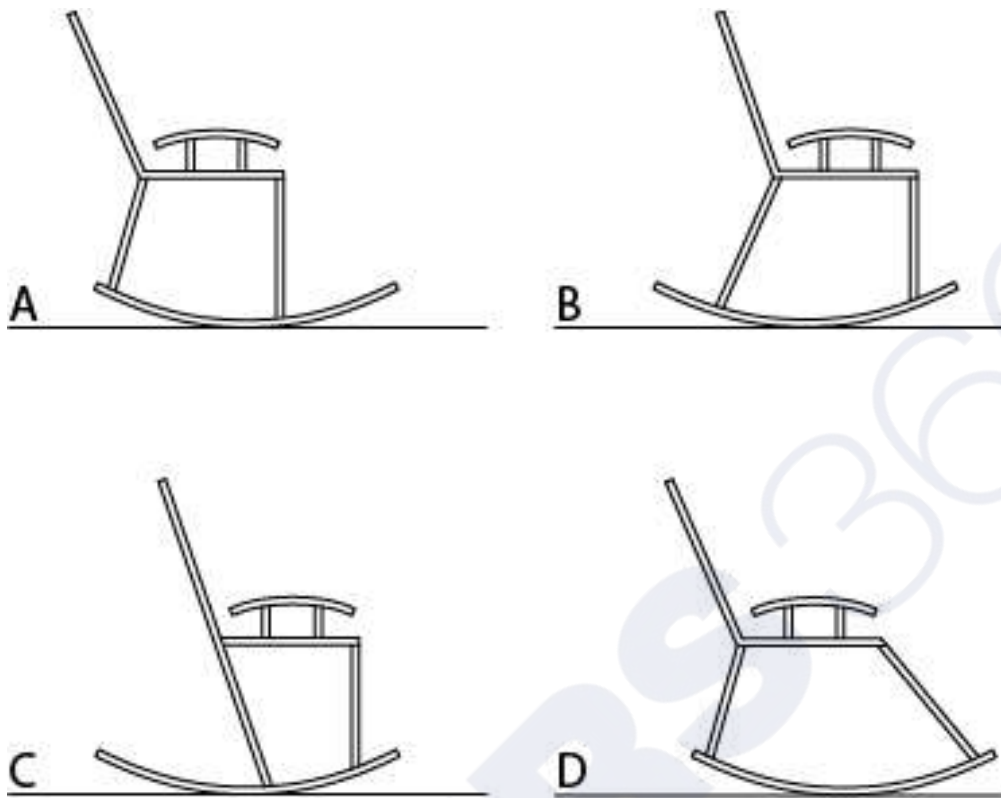


C

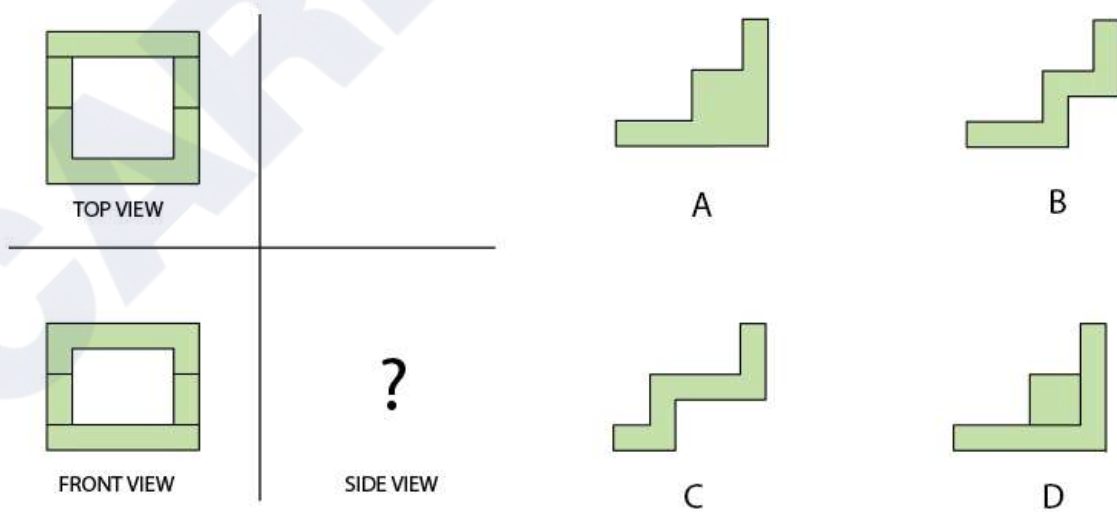


D

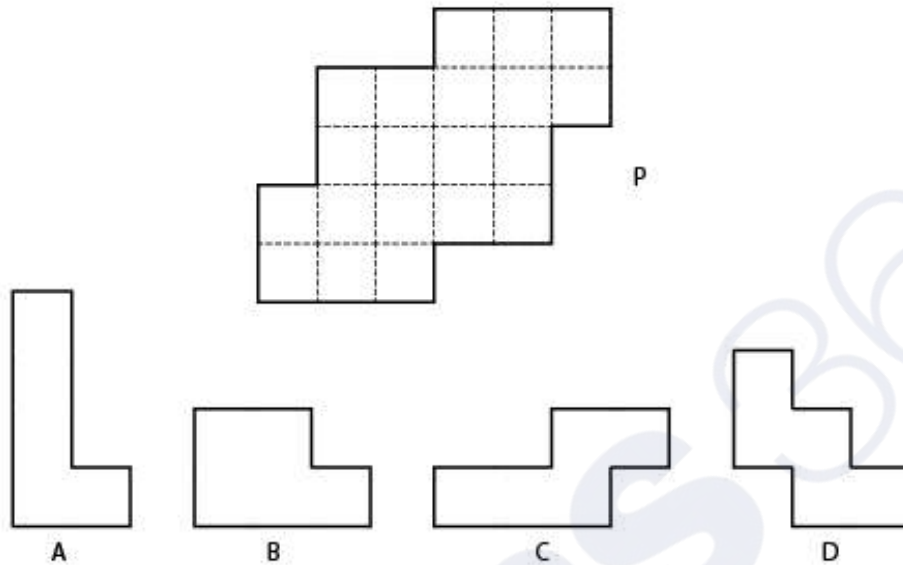
**Q.13** Which of the following rocking chairs will **NOT** topple while rocking 15 degree?



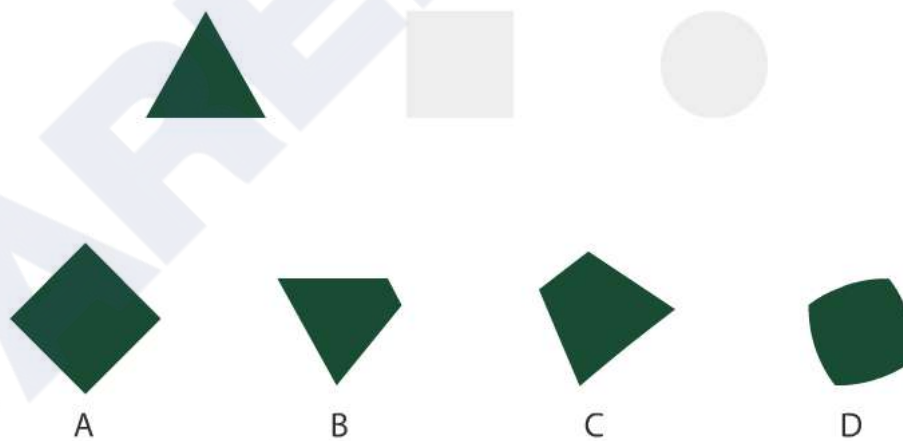
**Q.14** Shown on the left are the front and top views of a 3D object. Which option(s) can be the side view?



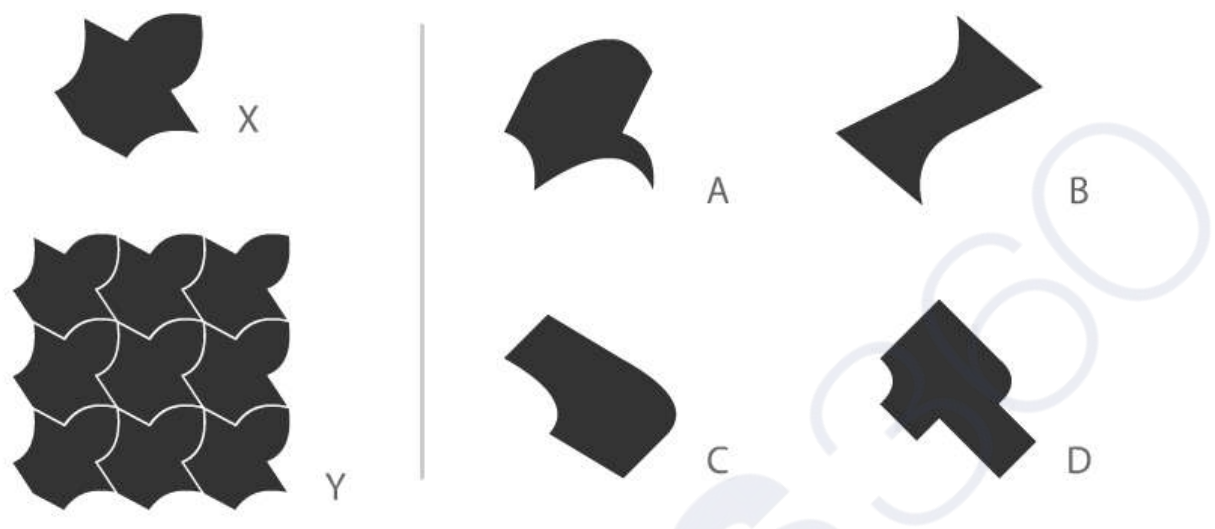
**Q.15** Figure P can be divided into four identical pieces. Assuming that the pieces can be rotated and flipped, which of the options will fit?



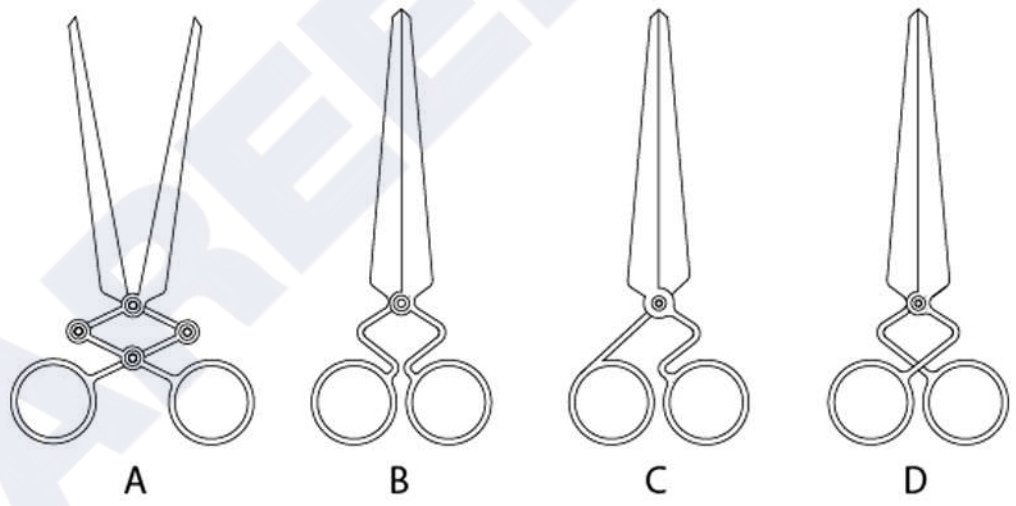
**Q.16** An animation of shapes morphing from one to another is shown in the GIF below. Which of the shapes shown in the options can be found in this animation sequence in its exact orientation and size?



**Q.17** Tile X was used to create a pattern which is seamless (without gaps) when arranged as shown in Y. Which tile(s) from the options will create a seamless pattern?

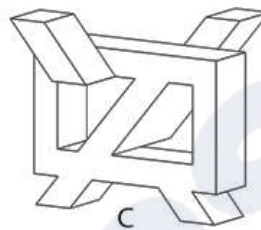
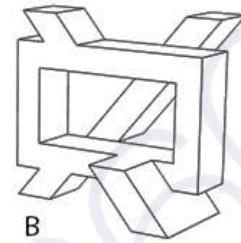
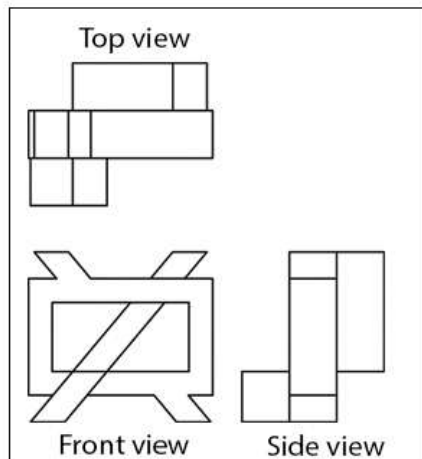


**Q.18** Some configurations for the pair of scissors are shown below. If concentric circles represent hinges, which of the options will work?



## Part A – Section III: Multiple Choice Questions

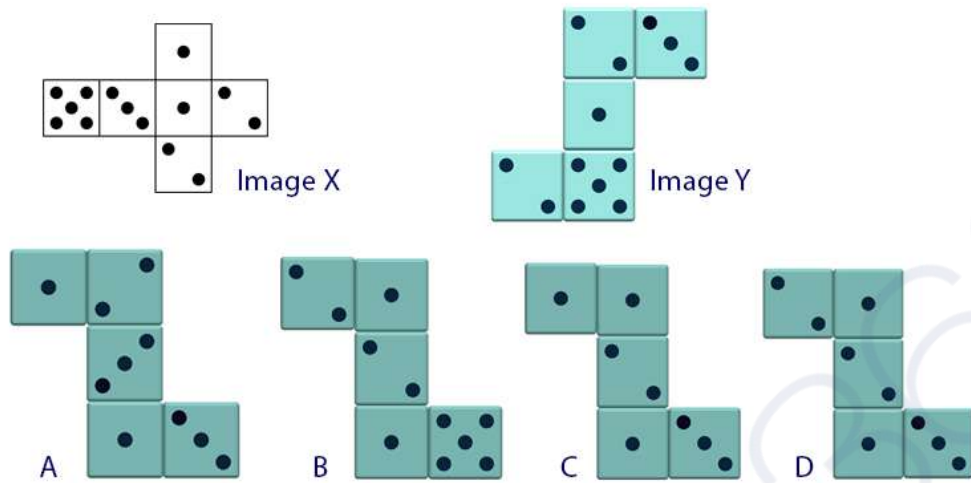
**Q.19** Shown in the box are the orthographic views of a 3D object. Which option represents that object?



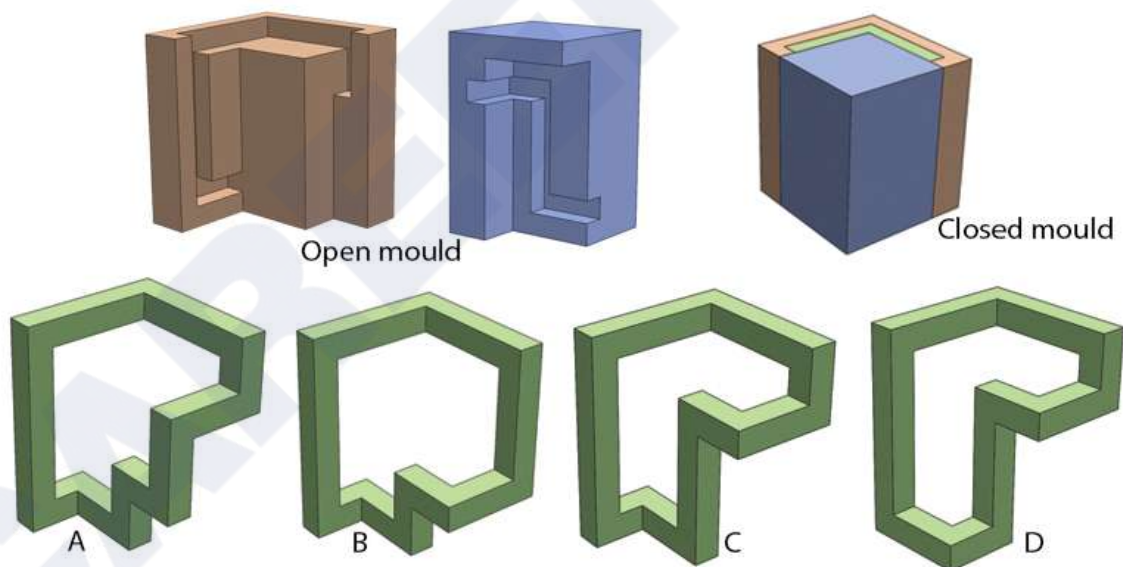
**Q.20** A washbasin is to be installed in a college canteen in India. Which of the options can help derive the appropriate height of the washbasin from the floor?

- A. Average height of the adult Indian male and female population
- B. Average height of the tallest 50% adult Indian female population
- C. Average height of the shortest 5% adult Indian female population
- D. Average height of the shortest 5% adult Indian male population

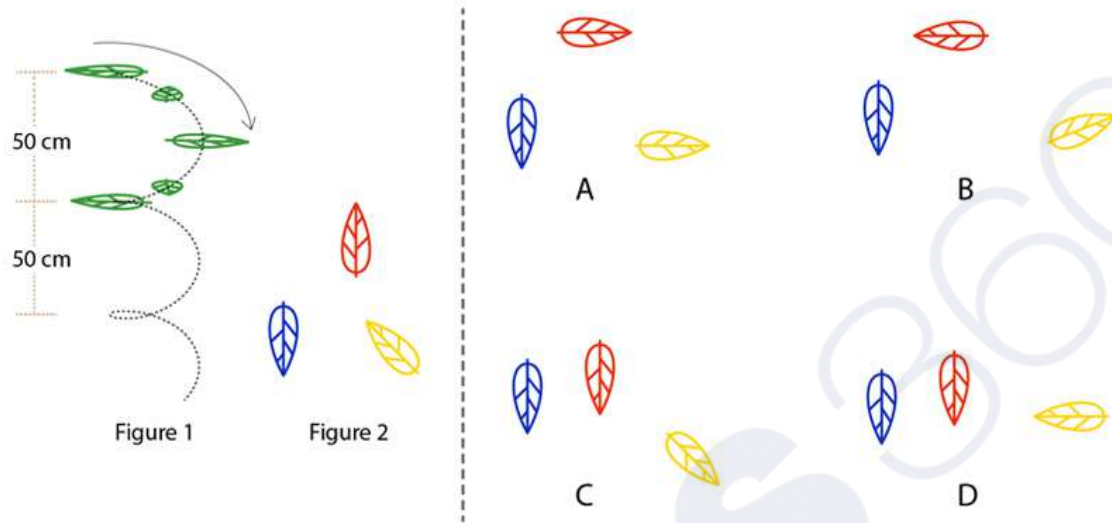
**Q.21** Image X represents the six faces of a cube. Image Y shows a composition using five such cubes. What could be the rear view of the shown composition?



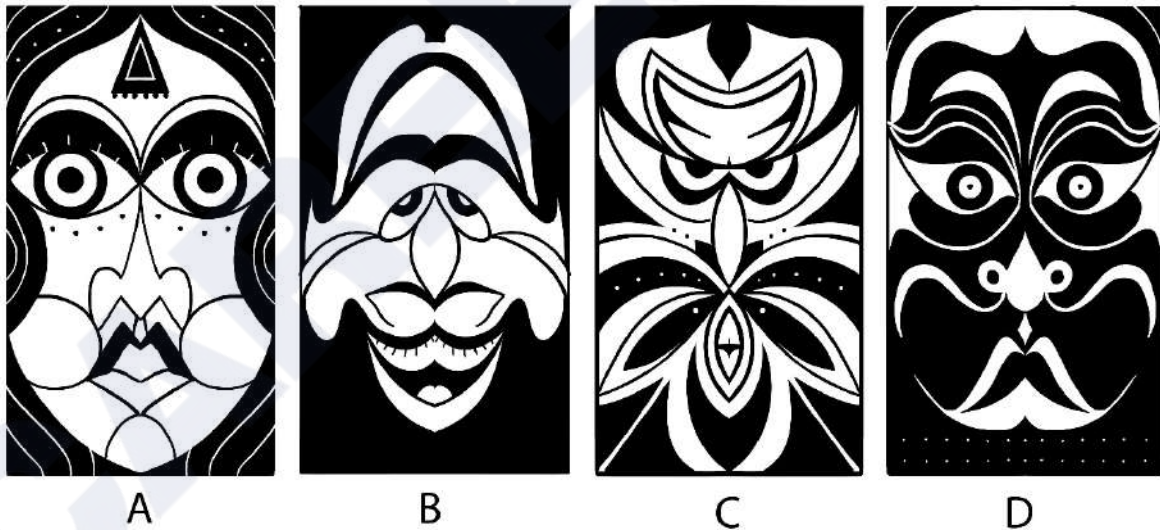
**Q 22** Shown below are two parts of a mould. Mould is closed and material is poured into the cavity. What would be the resultant moulded part?



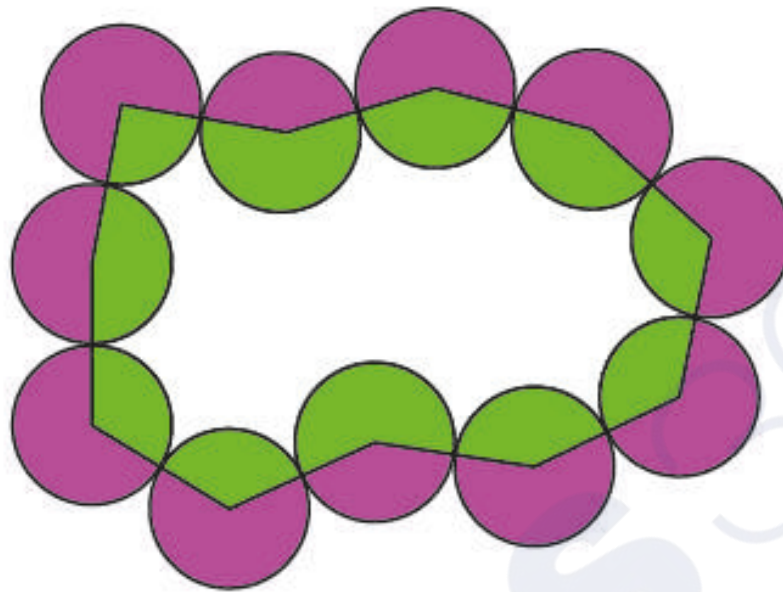
**Q.23** Three leaves are falling from a tree. Figure 1 shows the way a leaf falls. Figure 2 illustrates the starting orientation of the three leaves. If the blue colour leaf is at 200 cm, the red colour leaf is at 425 cm and the yellow colour leaf is at 375 cm from the ground, then what would be the orientation of all the leaves when they reach the ground?



**Q.24** Which option resembles an angry person when flipped vertically?



**Q.25** Eleven identical circles are linked together by line segments that connect the centres of adjoining circles as shown in the figure below. Which of the statements is **TRUE**?



- A. Purple area is equal to the green area
- B. Purple area is greater than green area by one circle
- C. Purple area is greater than green area by two circles
- D. Purple area is greater than green area by three circles

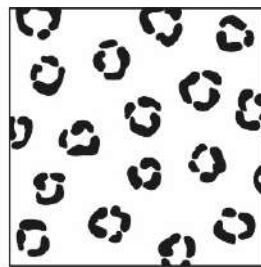
**Q.26** Identify the odd one.



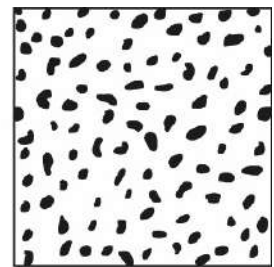
A



B

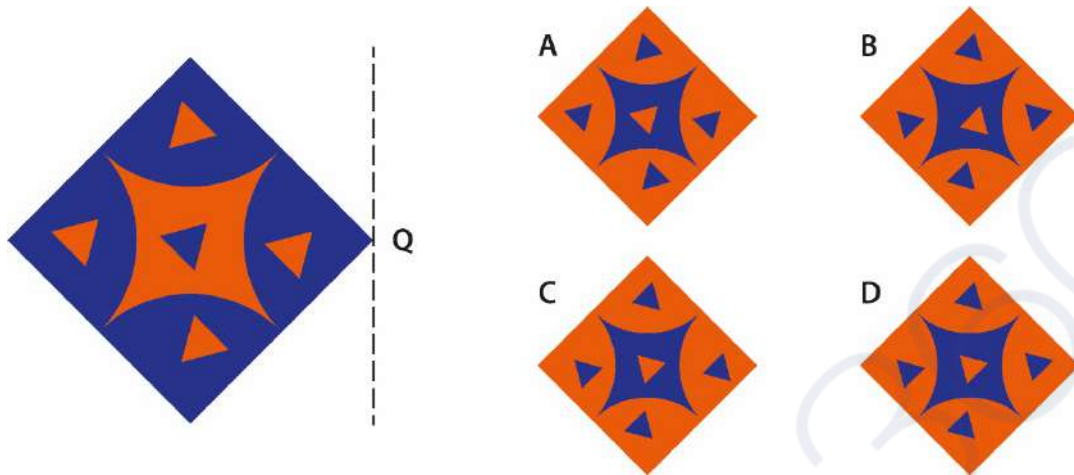


C

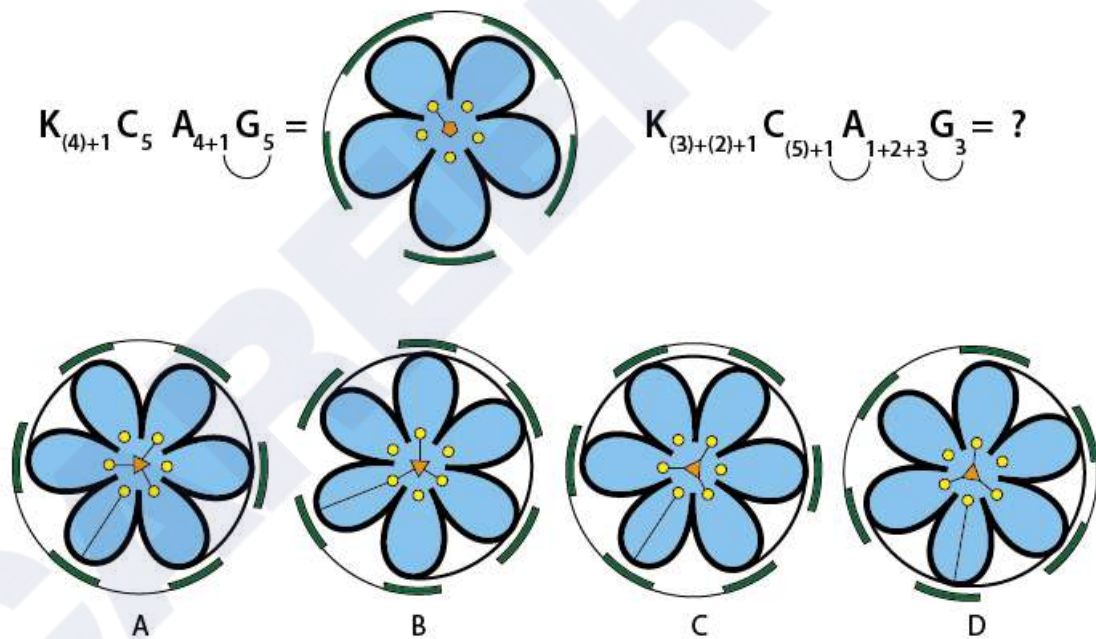


D

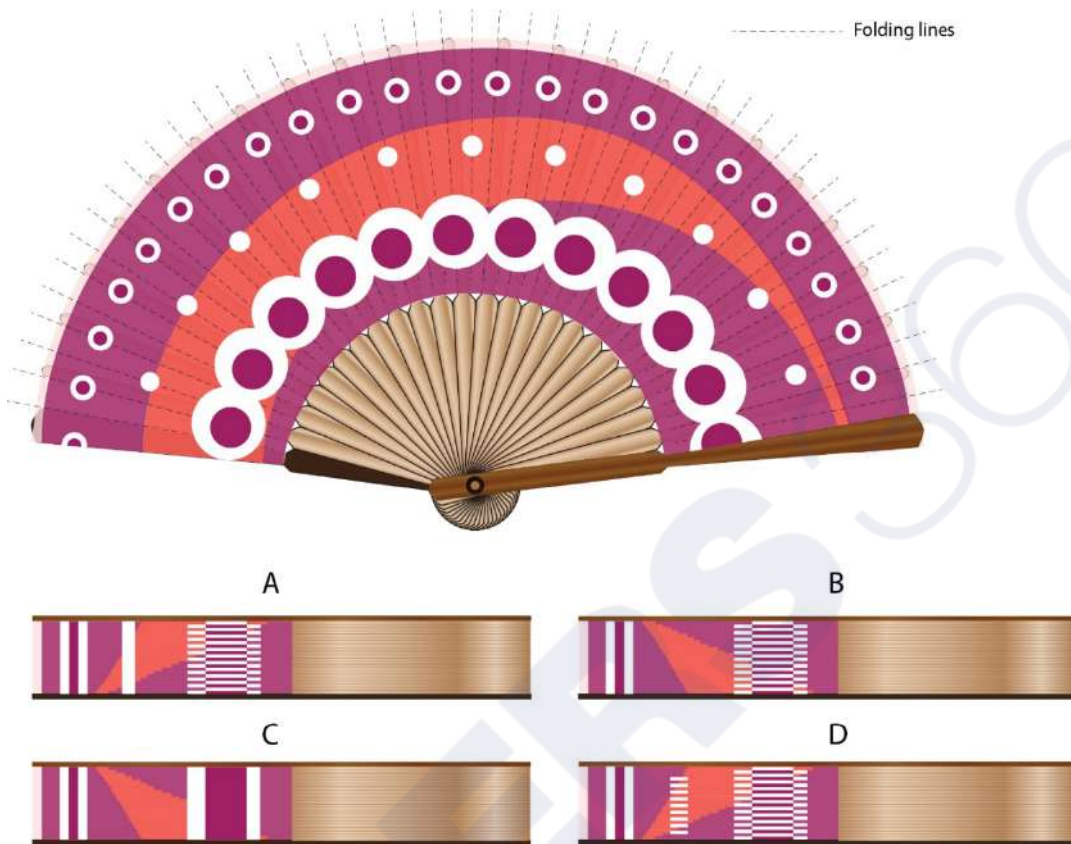
**Q.27** Shown on the left is a woven mat using threads of two colours. The mat is flipped at the edge Q to reveal the back side. Identify the back side of the mat from the given options.



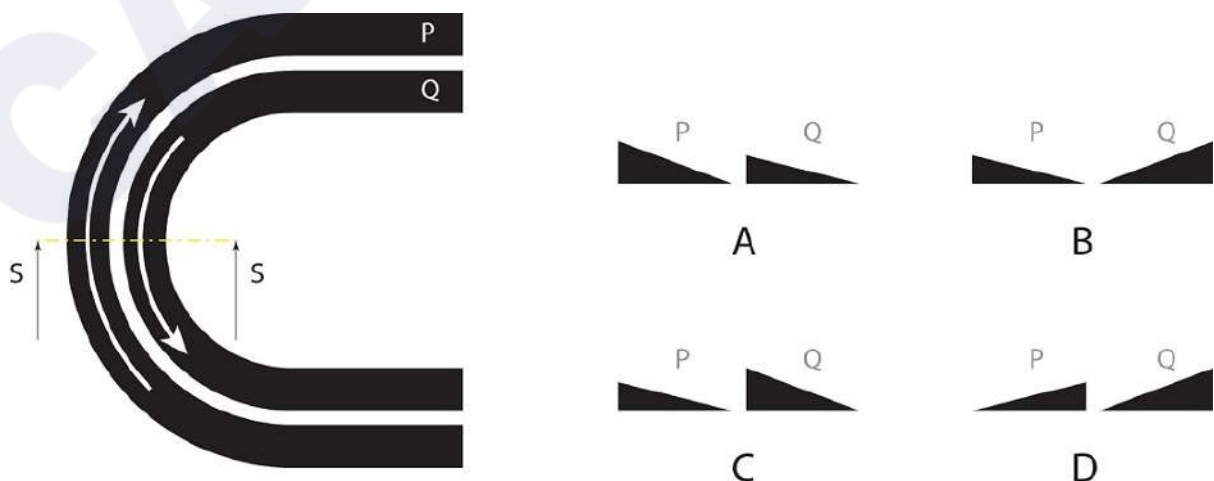
**Q.28**



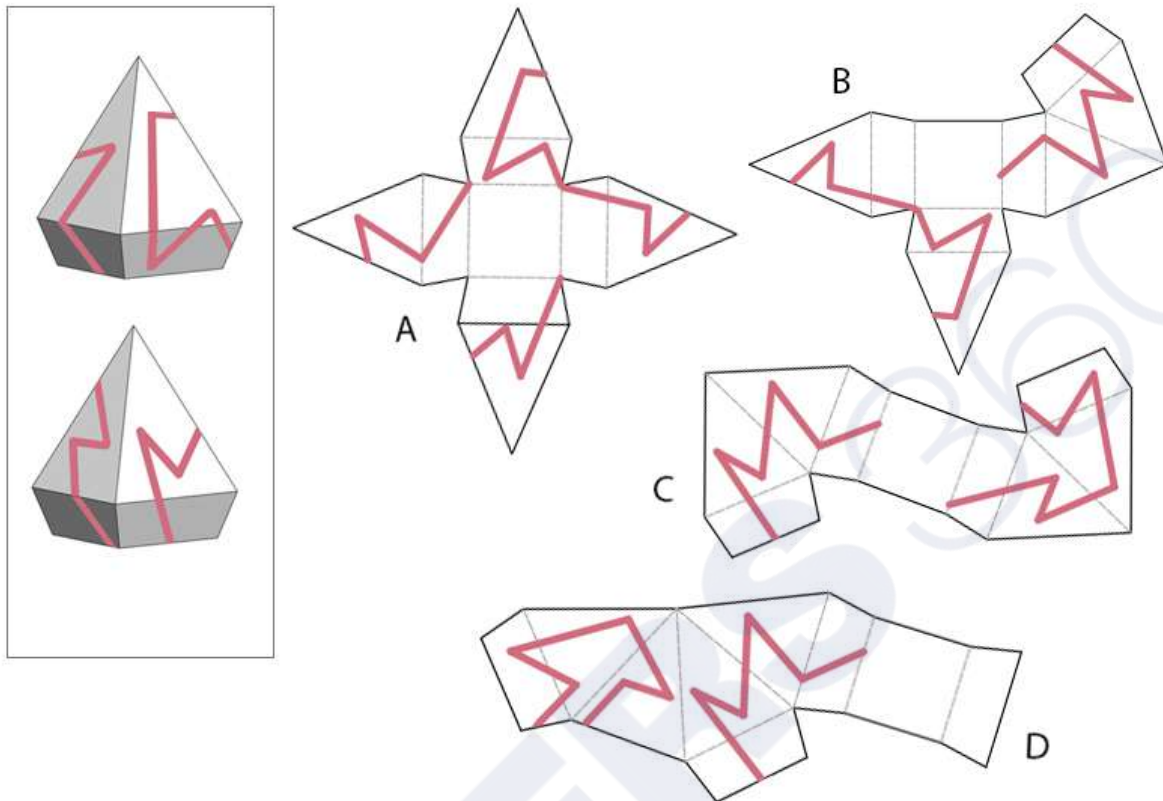
**Q.29** A folding fan shown in the image is made of bamboo and paper painted on one side. Which option is the closest representation of the same fan in the folded position? (dotted lines indicate the folds)



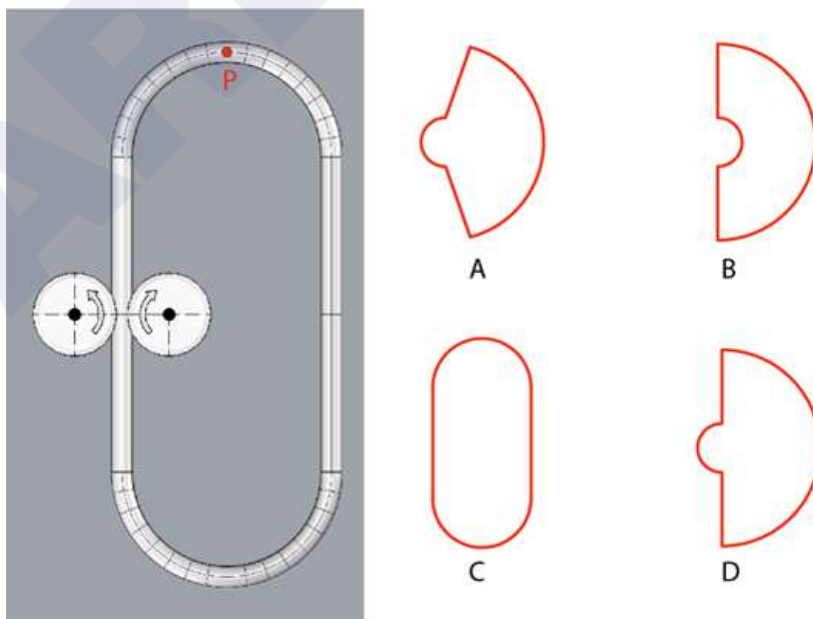
**Q.30** Roads are generally made with an angle on the curvatures to counter the centrifugal force on vehicles moving with speed. This is called 'Banking of Road'. Figure shows two one-way roads P and Q from top view. If the maximum safe speed limit is same for both the roads, which option shows the schematic cross section of P and Q at the position SS?



**Q.31** Which option will fold into the pack shown in the image below?



**Q.32** A closed loop is made of a metal pipe and is rolling between two fixed pulleys as shown in the image on the left. What would be the path traced by point P when the loop completes one turn?



**Q.33** Biomimicry is the practice of looking to nature for inspiration to solve design problems. Shown below are plants and animals (top row) that have inspired the design of products (bottom row).

Which of the options listed below correctly identifies the plant and/or animal with the product that it inspired?



P

Q

R

S



1

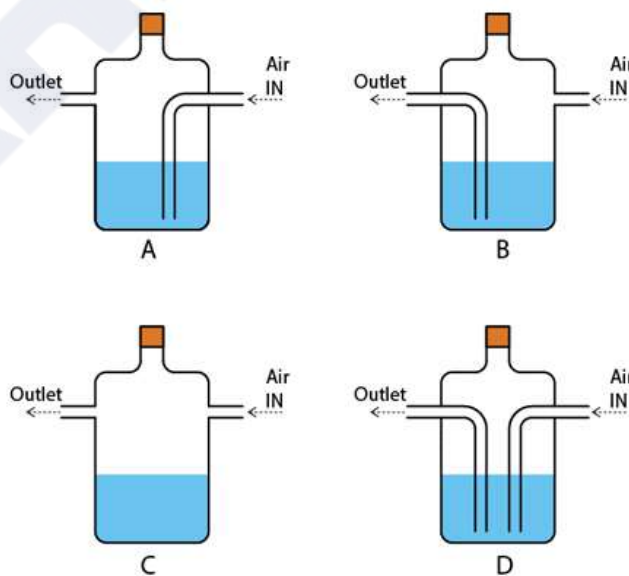
2

3

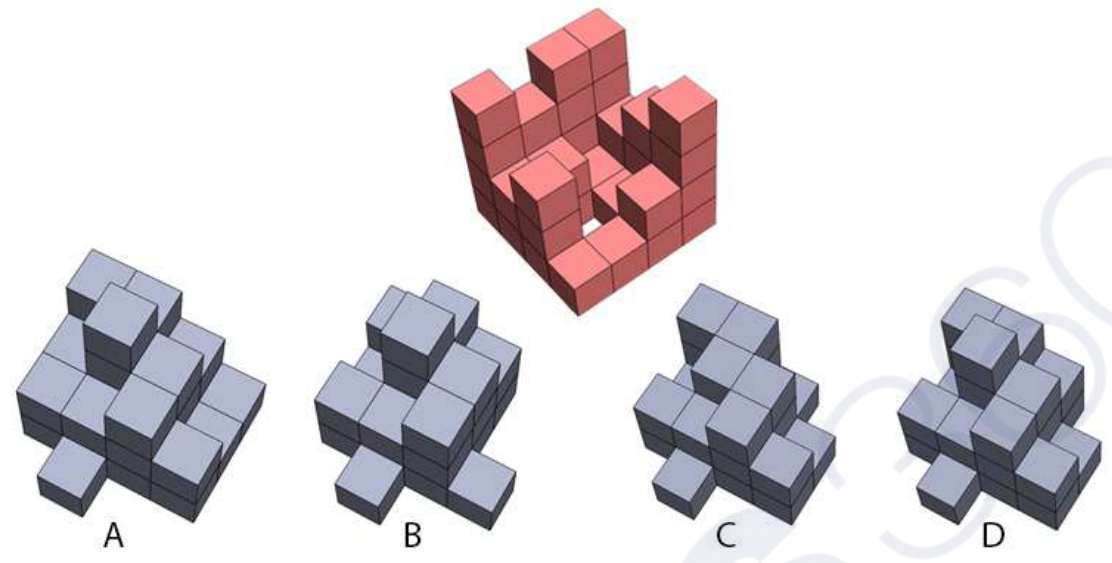
4

- A. P - 3, Q - 1, R - 4, S - 2
- B. P - 4, Q - 2, R - 1, S - 3
- C. P - 3, Q - 4, R - 1, S - 2
- D. P - 1, Q - 3, R - 2, S - 4

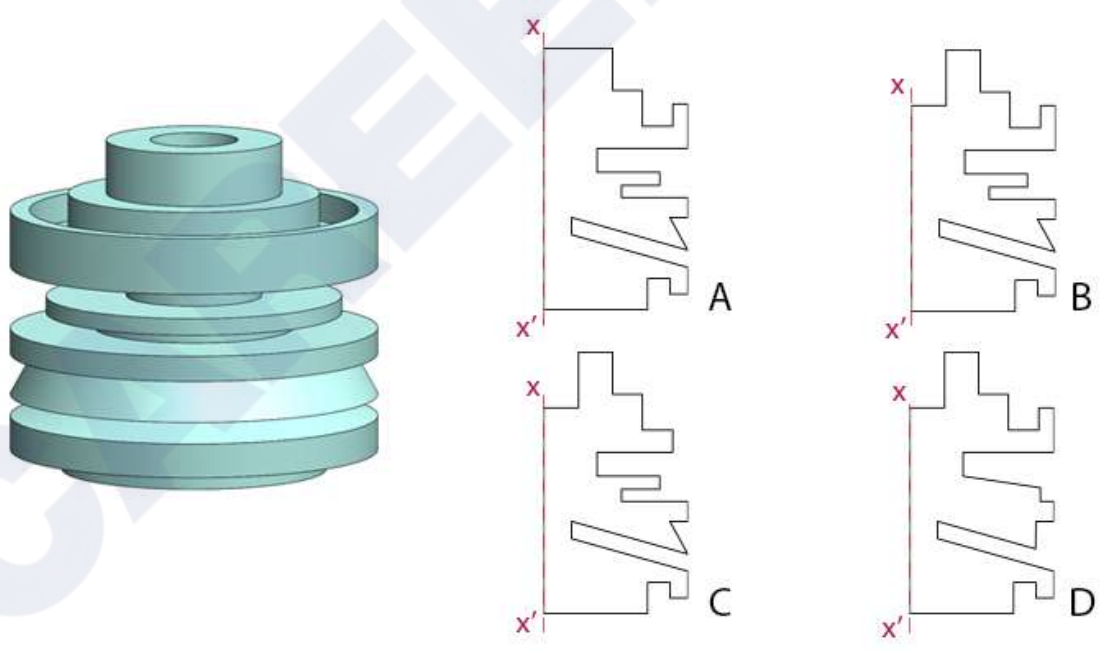
**Q.34** Image below shows configurations of jars filled with water. Which option will work as an air filter?



**Q.35** Which of the options, when combined with block shown on top, will result in perfect 4x4x4 cube?



**Q.36** Which of the options will result in the form shown on the left, when revolved around x-x' axis?



**Q.37** Figure 1 shows the skeleton of a T-rex dinosaur. Identify the correct distorted silhouette from the given options.

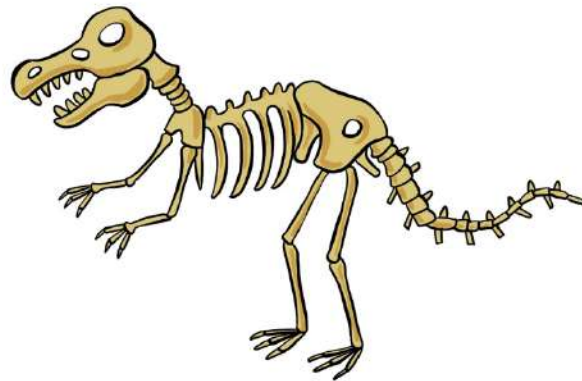
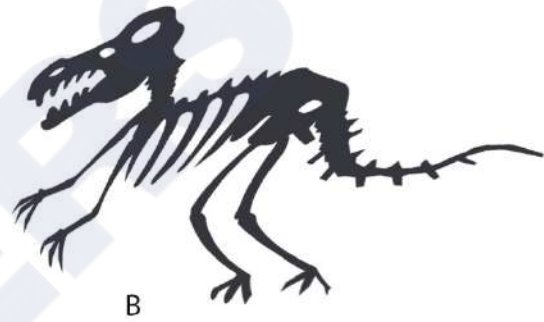


Figure.1



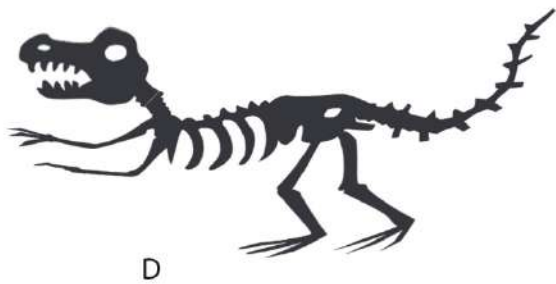
A



B

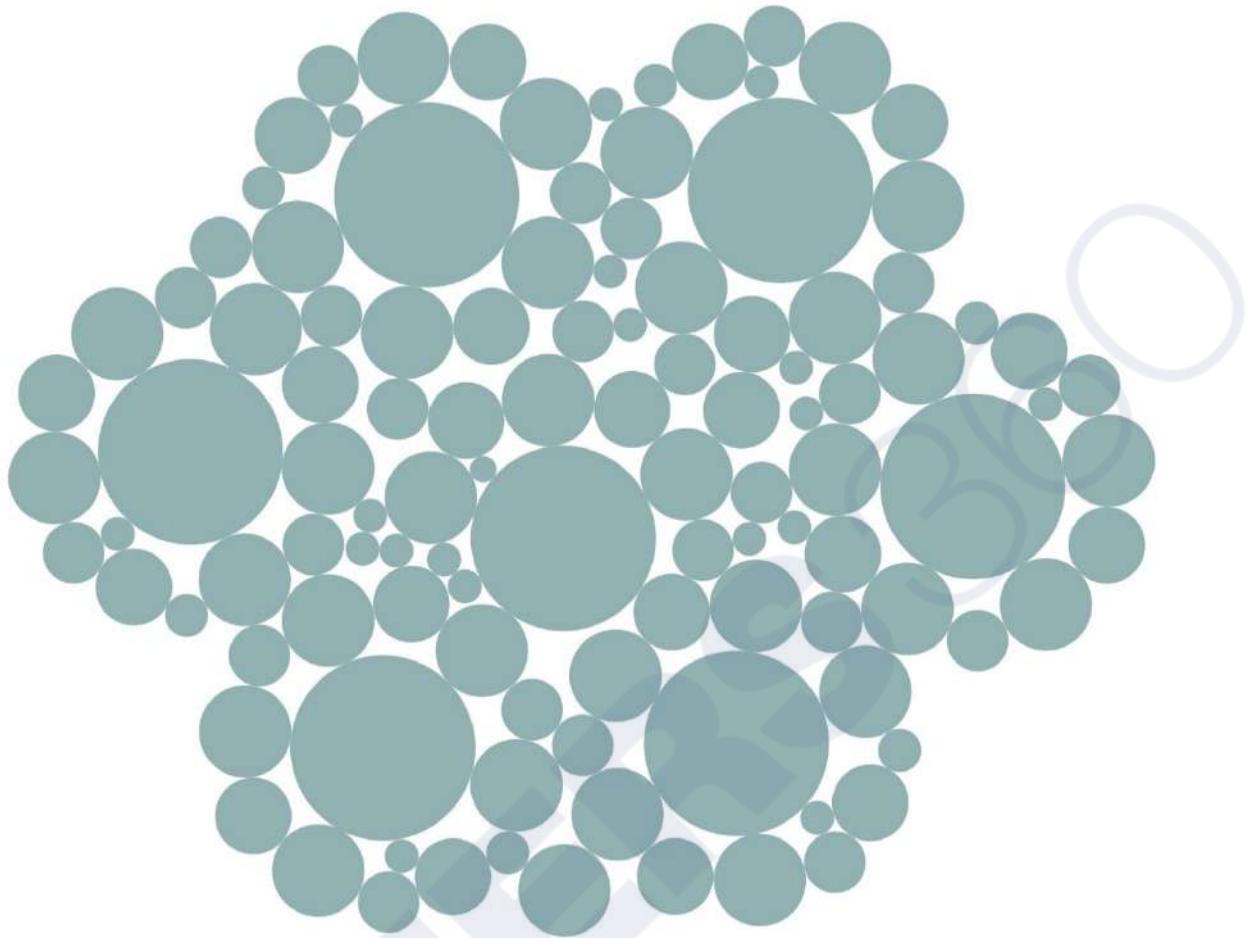


C



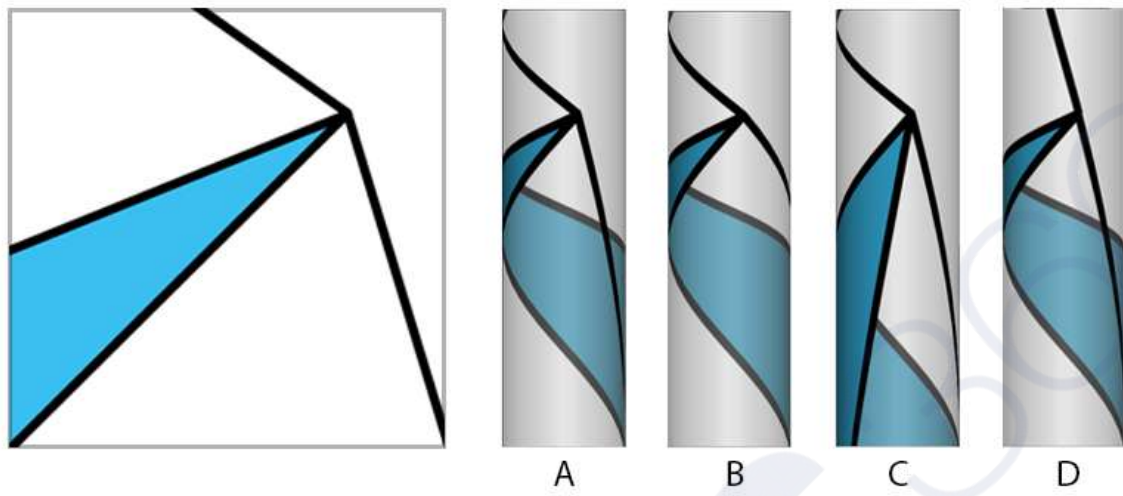
D

**Q.38** Circles of how many different radii are needed to construct the following figure?

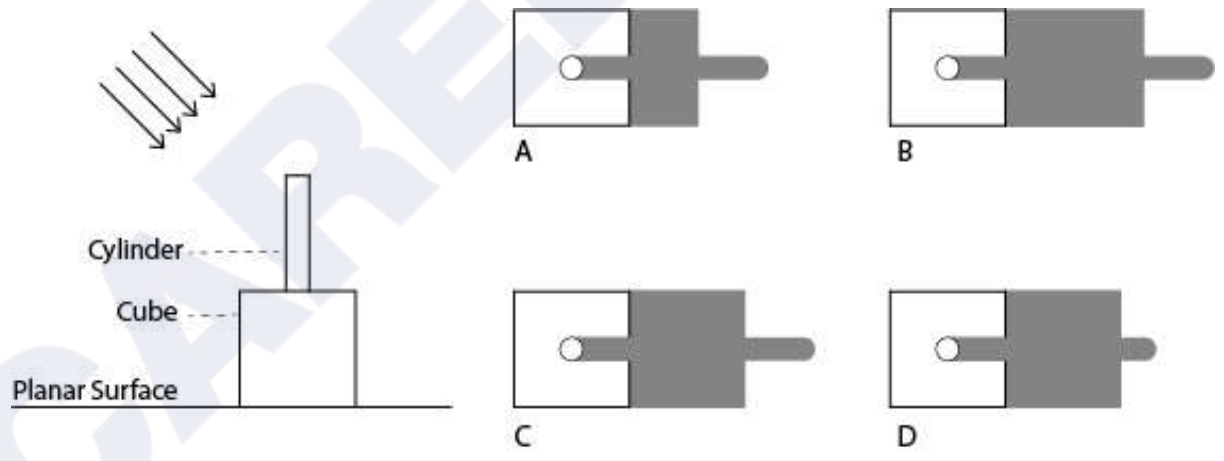


- A. 4
- B. 5
- C. 6
- D. 7

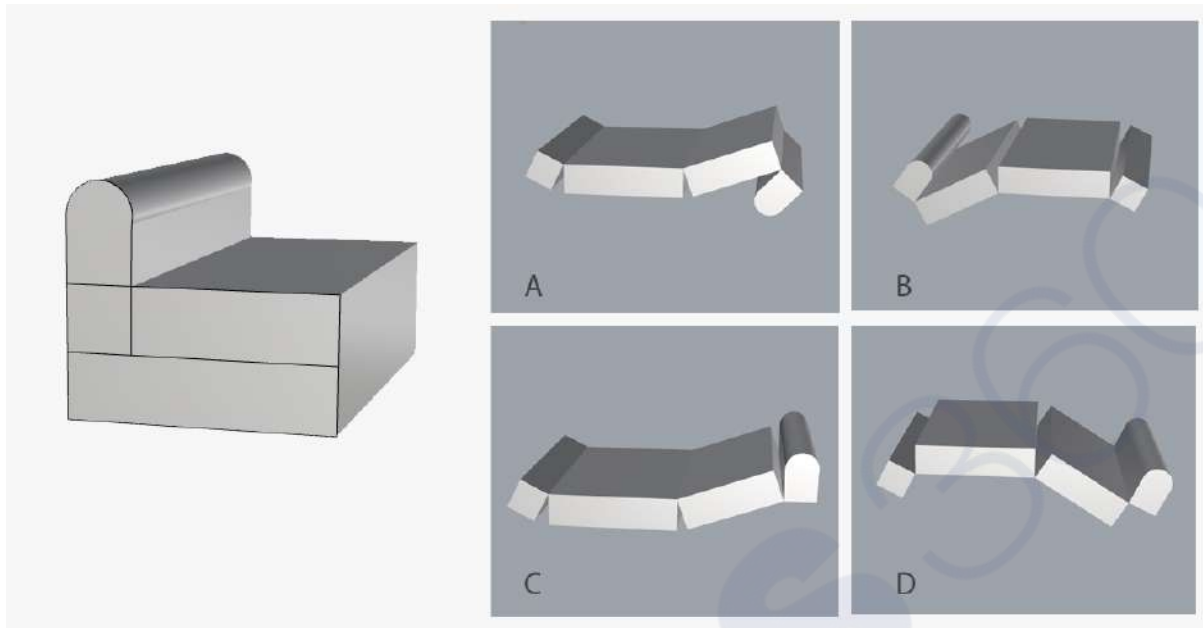
**Q.39** A printed transparent sticker (as shown on the left) is applied onto a glass cylinder such that the vertical edges meet. Which option is the correct representation?



**Q.40** Image on the left shows a cylinder kept on the top of a cube. Height of the cylinder and side of the cube are equal. Parallel rays of light are falling on them at an angle of 45 degree. Which option shows the correct shadow?



**Q.41** Shown on the left is a futon that becomes a mattress when opened and folds into a seat. Which option **CANNOT** be folded as a seat?



CAREERS

## **Part B**

**All questions are mandatory**

### **Q.1 Sketching** (20 marks)

A sample is being collected for an RT-PCR swab test for COVID-19. The man collecting the sample is standing in a PPE (protective) suit. The lady who is being tested is sitting on a chair in front of him. She shows uneasiness through her facial expression when a swab is inserted in her nose.

Draw a free-hand sketch of the moment described above. Drawing of surroundings is not necessary.

#### **Evaluation criteria:**

- Quality of composition
- Observation and drawing skills
- Expression of the person being tested
- Scale and relative proportions
- Use of light and shade

**Q.2 Creativity** (4 x 5 = 20 marks)

Building upon the visual elements given in the five boxes, create recognizable images and give a title to each one. Use only BLACK pencil/pen. Draw only within the boundaries of the boxes.

**Evaluation criteria:**

- Originality – ability to produce unusual response
- Emotional expressiveness – ability to communicate feelings and emotions non-verbally through figures
- Humour / surprise – ability to depict conceptual and perceptual absurdity and amusing combinations
- Richness – ability to create strong, sharp and distinct images

**Q.3 Visual Sensitivity** (4x5 = 20 marks)

Create visual icons in the boxes given, for the following in an Indian mela (fair/exhibition)

1. Information Desk
2. Craft zone
3. Children zone
4. Game zone

**Evaluation criteria:**

- Aesthetics of 2D form
- Effectiveness to convey meaning
- Consistency of visual language (style)
- Composition

#### Q.4 Form sensitivity (20 marks)

Three views of a building are shown below. Visualise the form of an electric iron (for ironing clothes) based on the image(s) of the given building. It should match the design language with relevant details. Sketch and render the form of the electric iron.



#### Evaluation Criteria:

- Sensitivity towards form
- Consistency with the visual language of the form
- Relevant details of the iron
- Surface shading
- Quality of lines/strokes

**Q.5 Problem identification** (10 + 2x5 = 20 marks)



Image source: *thehindu.com*

Getting into the general compartment of a long-distance train is not a pleasant experience, especially for women, children, elderly and the disabled. The photo depicts one such scene.

In the space provided in the answer booklet, list TEN unique design problems or opportunities in this situation. Each problem or opportunity could be based on either what you can observe in the photo or your experiences as a passenger. Each problem or opportunity should have potential for a design solution. For example, large crowds or less availability of seats are not design problems. (10 marks)

Within the space provided clearly illustrate TWO design problems or opportunities that you consider to be the most important. (2x5 marks)

Focus on depicting problems and opportunities. DO NOT provide solutions.

**Evaluation criteria:**

1. Severity of the identified problems
2. Diversity of observations
3. Analytical skills
4. Communication

**CEED 2021  
Final Answer Key**

<b>SECTION – I (NAT)</b>									
<b>Q. No.</b>	<b>KEY RANGE</b>	<b>Q. No.</b>	<b>KEY RANGE</b>	<b>Q. No.</b>	<b>KEY RANGE</b>	<b>Q. No.</b>	<b>KEY RANGE</b>	<b>Q. No.</b>	<b>KEY RANGE</b>
<b>01</b>	72	<b>02</b>	3	<b>03</b>	68	<b>04</b>	55	<b>05</b>	34
<b>06</b>	5	<b>07</b>	94.2 (92.9 – 94.6)	<b>08</b>	2.25 (2.24-2.26)				

<b>SECTION – II (MSQ)</b>									
<b>Q.No.</b>	<b>KEYS</b>	<b>Q.No.</b>	<b>KEYS</b>	<b>Q.No.</b>	<b>KEYS</b>	<b>Q.No.</b>	<b>KEYS</b>	<b>Q.No.</b>	<b>KEYS</b>
<b>09</b>	A, D	<b>10</b>	A, C	<b>11</b>	A, C	<b>12</b>	A, C, D	<b>13</b>	A, C, D
<b>14</b>	A, B, D	<b>15</b>	A, D	<b>16</b>	A	<b>17</b>	B, C	<b>18</b>	B, D

<b>SECTION – III (MCQ)</b>									
<b>Q.No.</b>	<b>KEY</b>	<b>Q.No.</b>	<b>KEY</b>	<b>Q.No.</b>	<b>KEY</b>	<b>Q.No.</b>	<b>KEY</b>	<b>Q.No.</b>	<b>KEY</b>
<b>19</b>	C	<b>20</b>	D	<b>21</b>	C	<b>22</b>	B	<b>23</b>	D
<b>24</b>	A	<b>25</b>	A	<b>26</b>	A	<b>27</b>	B	<b>28</b>	B
<b>29</b>	C	<b>30</b>	C	<b>31</b>	D	<b>32</b>	B	<b>33</b>	C
<b>34</b>	C	<b>35</b>	B	<b>36</b>	B	<b>37</b>	D	<b>38</b>	C
<b>39</b>	D	<b>40</b>	B	<b>41</b>	A				

**Common Entrance Examination for Design**

**CEED 2021**

**Question Paper**

**17<sup>th</sup> January 2021**

CAREERS360

## INSTRUCTIONS

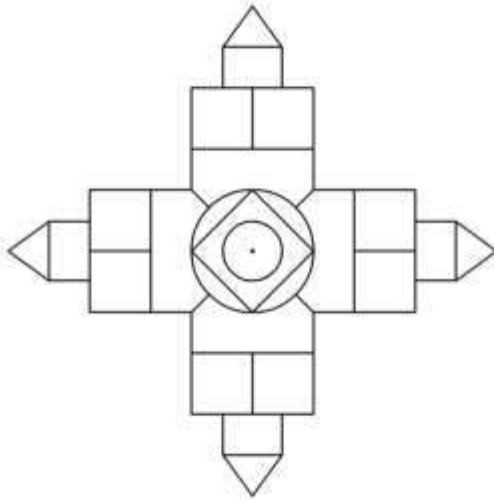
1. The total duration of the examination is 3 hours. The question paper contains two parts - Part A and Part B. The duration of Part A is one hour. The duration of Part B is two hours. Part B will start only after Part A ends. Part A cannot be attempted once Part B commences.
2. Questions of Part A and Part B will appear on the computer. Answers to **Part A** have to be entered in the **computer**. Answers to **Part B** need to be given in the **answer booklet** provided by the invigilator.
3. Part A carries a total of 100 marks. It contains 3 sections. All questions are mandatory. The following table summarises the marking scheme of Part A:

<b>Part A Section</b>	<b>Type of questions</b>	<b>Number of questions</b>	<b>Marks for each correct answer</b>	<b>Marks for each wrong answer</b>	<b>Marks for each question not attempted</b>	<b>Total marks for the section</b>
I	Numerical Answer Type (NAT)	8	3	0	0	24
II	Multiple Select Question (MSQ)	10	3	-0.2	0	30
III	Multiple Choice Question (MCQ)	23	2	-0.5	0	46

4. 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.
5. 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. Zero marks will be awarded if question is not attempted. In all other cases, **-0.2 marks will be awarded**.
6. 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**. Questions not attempted will be awarded zero marks.
7. Scribble pads will be provided for rough work for Part A. These have to be returned to the invigilator at the **end of the Part A exam**.
8. 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.
9. In Part B, colour pencils, crayons, sketch pens etc. may be used unless otherwise specified in the questions.
10. Charts, graph sheets, tracing papers, tables, calculators, cellular phones and other electronic gadgets are not allowed in the examination hall.

**Part A – Section I: Numerical Answer Type Questions**

**Q.01** The front view of a solid object is shown in the image. If the views from all six sides are the same, how many surfaces does it have?

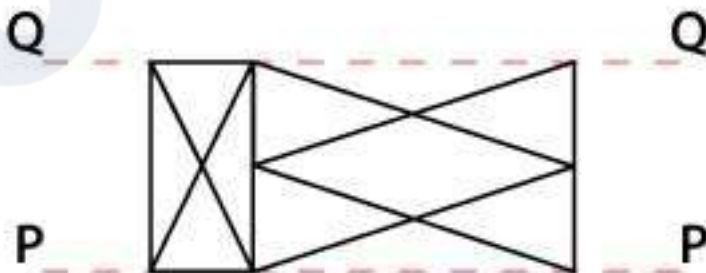


**Q.02**



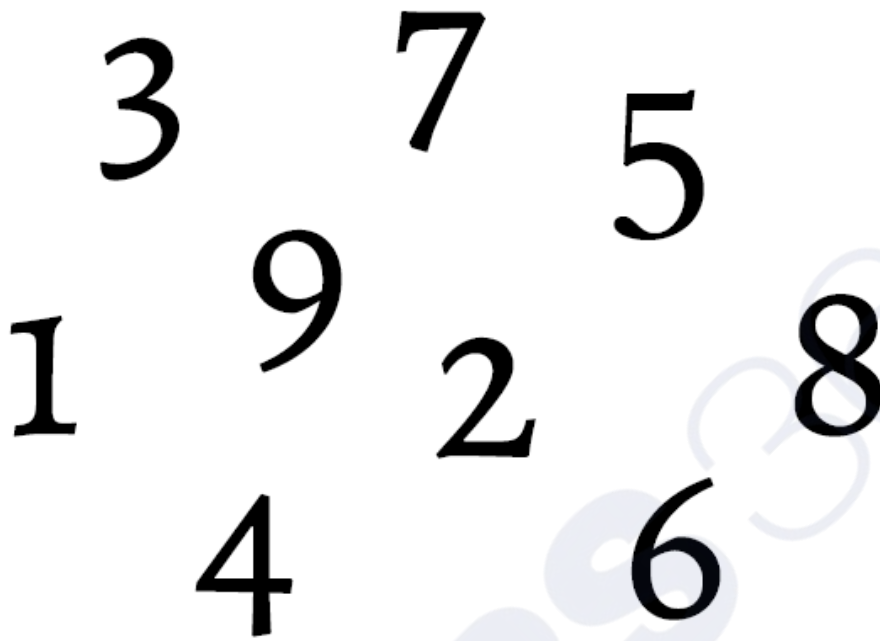
$$\frac{\text{Area of the hexagon}}{\text{Area of the grey triangle}} = ?$$

**Q.03** The shown figure is first cloned and flipped on the axis PP, and the resulting image is cloned and flipped on the axis QQ. How many triangles does the resulting image have?

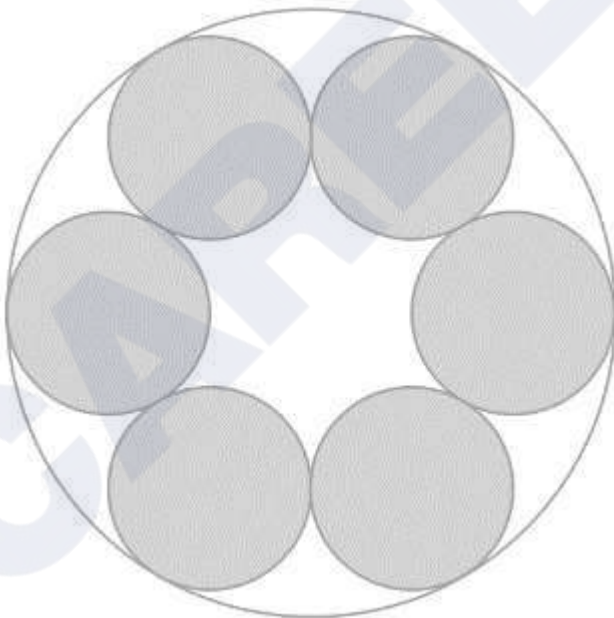




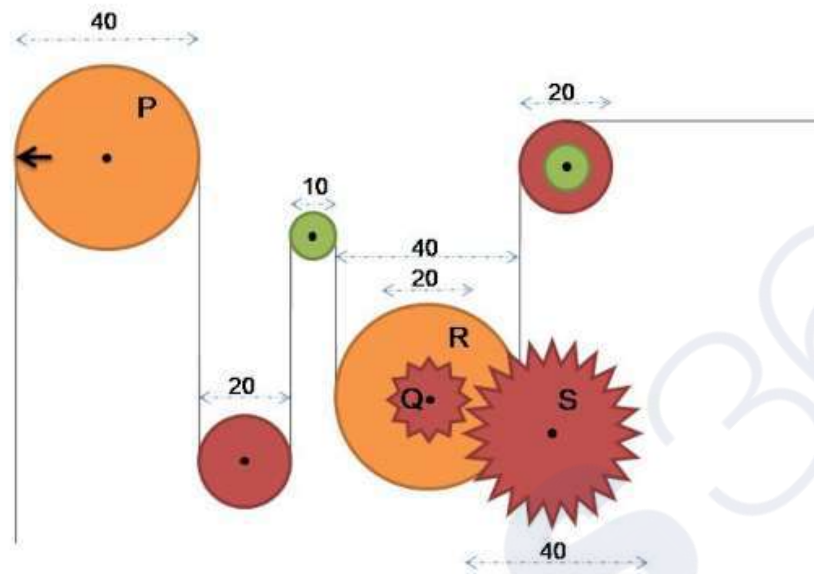
**Q.06** Find the digit that is not written in the same font as others.



**Q.07** Six circular biscuits of diameter 10 cm are arranged on a circular plate as shown below. What is the circumference of the plate in centimetres?

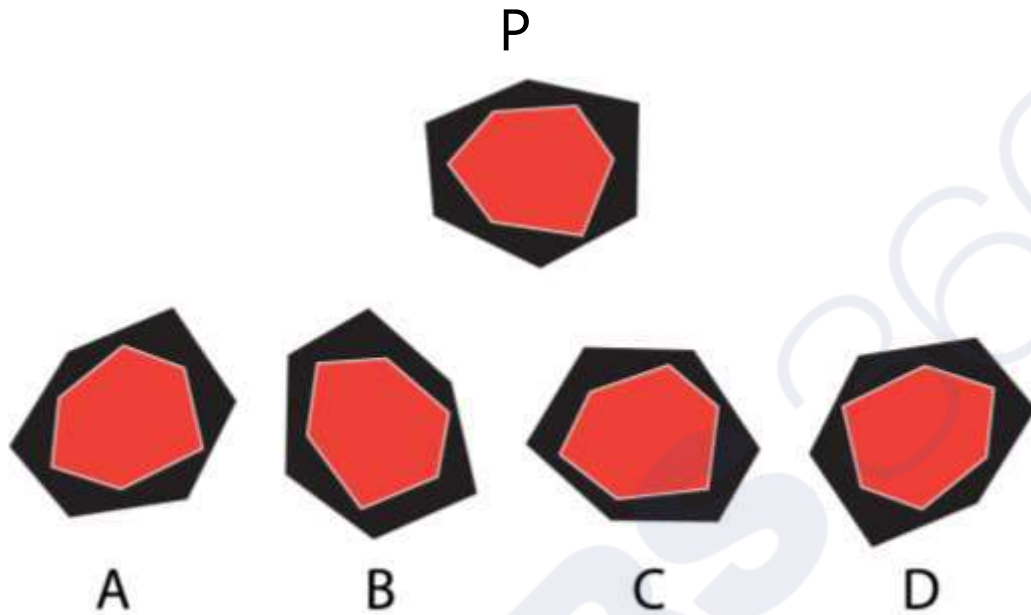


**Q.08** Gear Q is fixed on the pulley R. If pulley P undergoes 4.5 full rotations, how many rotations will gear S undergo?

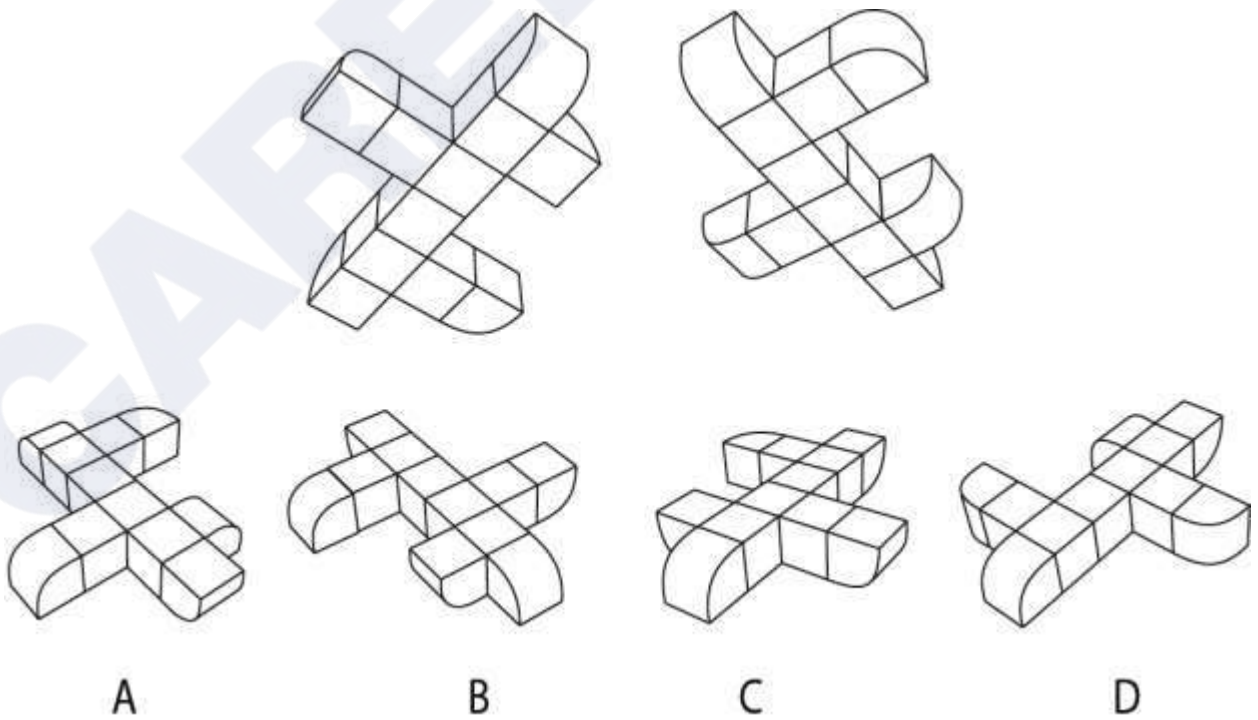


**Part A – Section II: Multiple Select Questions**

**Q.9** Which of the options is/are rotations of the figure P?



**Q.10** Two views of a solid are shown. Which of the options is/are the view/s of the same solid?

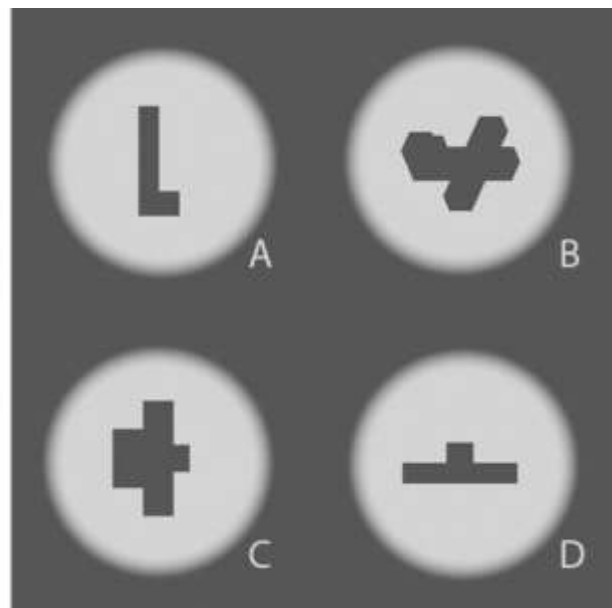


**Q.11** The image shows two views of a metal artefact. It is made using a unique traditional process. Which of the following options is/are TRUE?



- A. It is an artistic version of an animal with decorative elements.
- B. The metal body parts are fused together by welding.
- C. The connection between the tail and hind leg is due to the process of making it.
- D. It can be used as a kid's toy.

**Q.12** A solid object under a spotlight forms a shadow as shown in the image. Which of the options can be produced by rotating the object?



**Q.13** P, Q, R and S are masks made of wood, rubber, plastic and metal, respectively. Which of the following statements is/are TRUE?



P



Q



R



S

- A. Q is mass producible with one-piece mould
- B. R requires one-piece mould to mass produce
- C. S can be achieved with one-piece mould
- D. P is a unique mask and cannot be mass produced

**Q.14** From which of the options, six pieces of shape S can be cut?



A



B

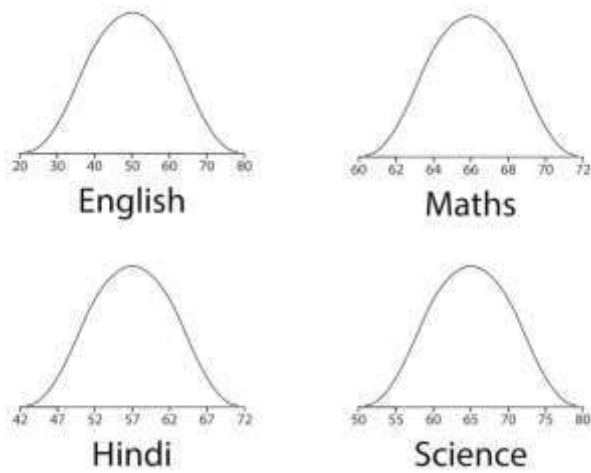


C



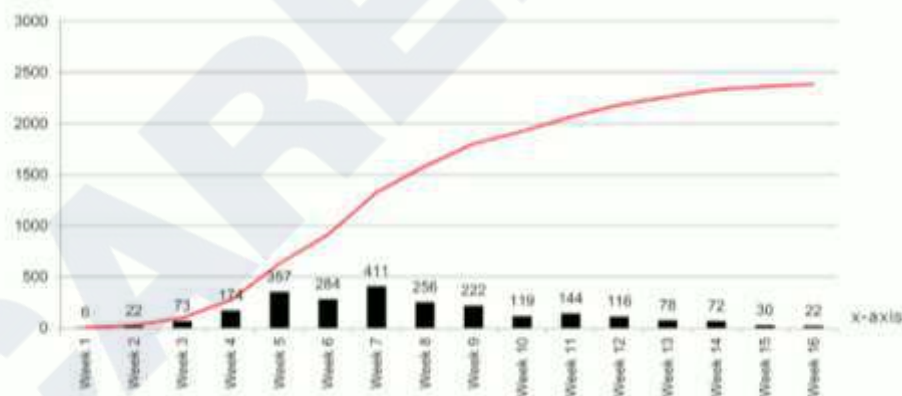
D

**Q.15** The image shows distribution of marks secured by 2500 students of a particular district in four subjects. Which of the statements must be TRUE?



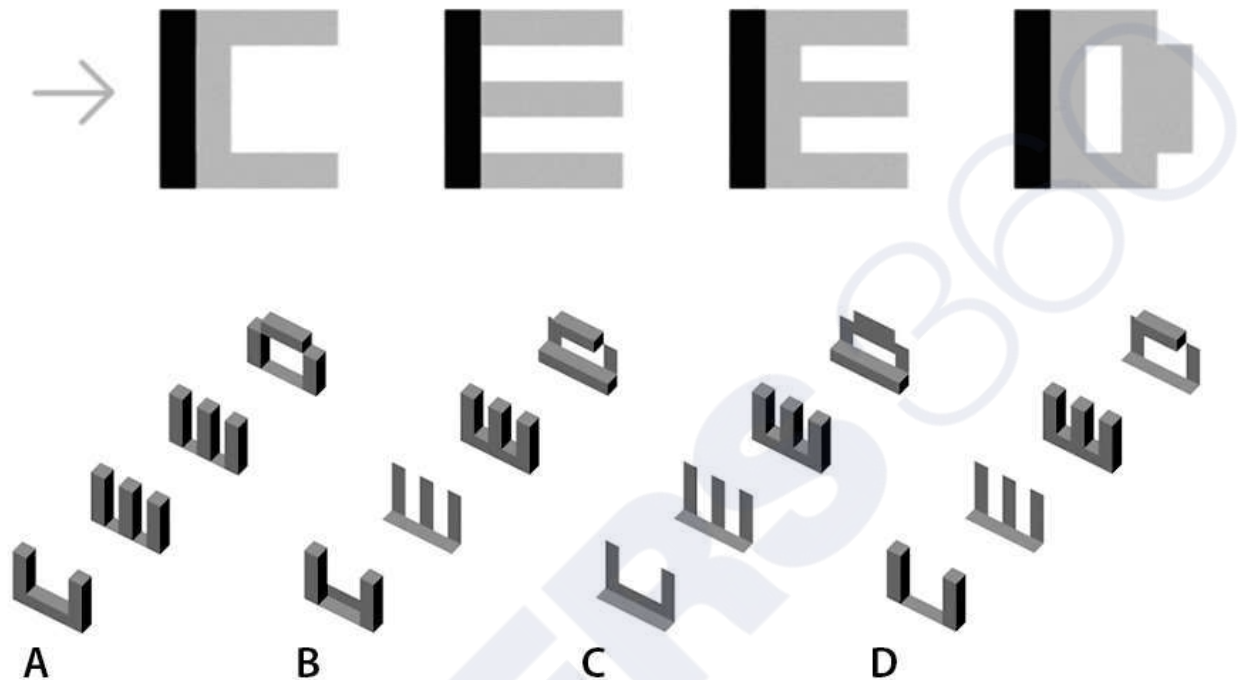
- A. If 50 marks are required for passing, more students will fail in English than in Hindi
- B. If 75 marks are required for securing a distinction, most distinctions will be awarded in English
- C. The average marks secured in Science is highest compared to other subjects
- D. Students have performed more uniformly in Maths than in any other subject

**Q.16** The figure depicts occurrence of both new and cumulative COVID-19 cases in a small town. Which of the following statements is/are TRUE?



- A. The new cases peaked during week five and seven.
- B. The total number of active cases at the end of 10<sup>th</sup> week was 1194, if 700 people have recovered.
- C. Once there are no new cases of infection and all people have recovered, the red line will touch the X-axis.
- D. If all patients tested negative after 4 weeks from the week of testing positive, total active cases at the end of 15<sup>th</sup> week is 202.

**Q.17** The top view of four objects, resting on a planar ground, is shown in black colour in the given figure. When light falls on them at an angle of 45 degrees from the ground in the direction marked in the image, corresponding shadows are formed on the ground. Which option(s) depict(s) the correct arrangement of the objects?



**Q.18** Consider the following sentences from the Nobel Lecture of the writer Doris Lessing:

*“That poor girl trudging through the dust dreaming of an education for her children, do we think that we are better than she is – we, stuffed full of food, our cupboards full of clothes, stifling in our superfluities?”*

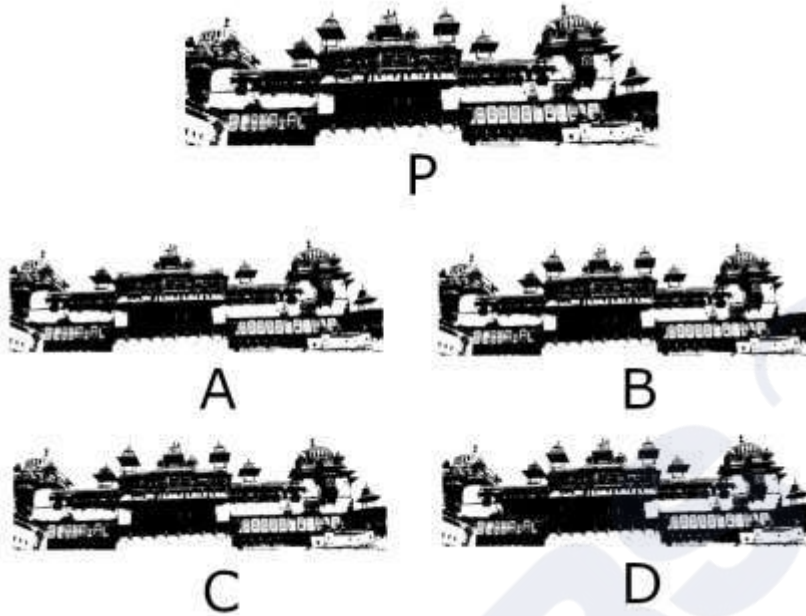
*I think it is that girl, and the women who were talking about books and an education when they had not eaten for three days, that may yet define us.”*

Which of the option(s) is/are implied by the quote?

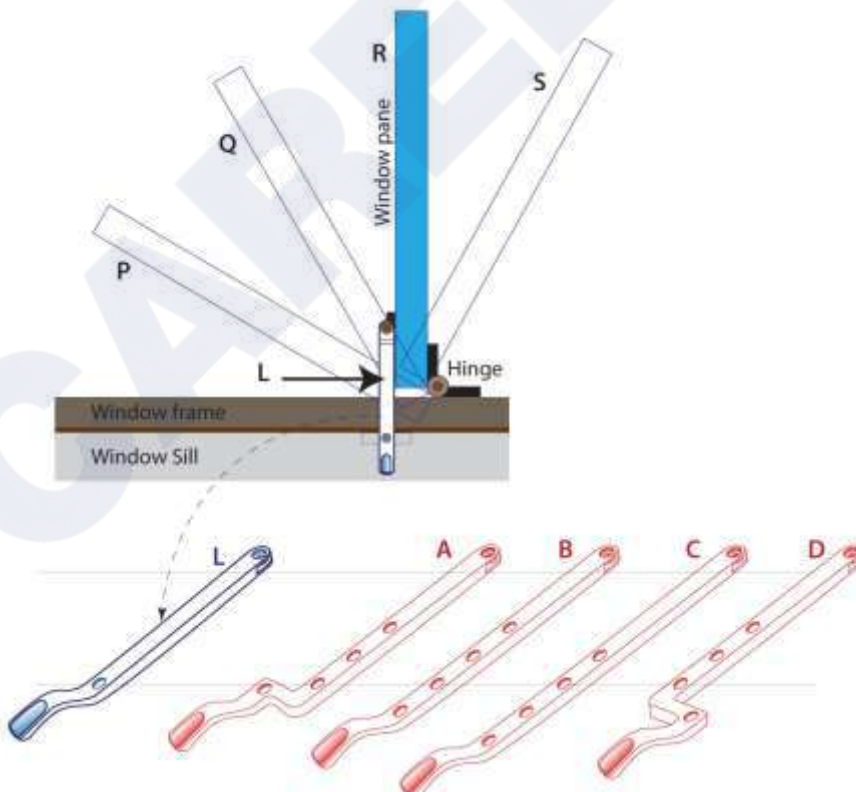
- A. Poor people should not concentrate on superfluous things like books.
- B. Even poor people who go without food for days may care about books and education.
- C. For people to think about books, they first have to be well fed and clothed.
- D. Excessive consumption (of food and clothing) is superfluous and stifling.

**Part A – Section III: Multiple Choice Questions**

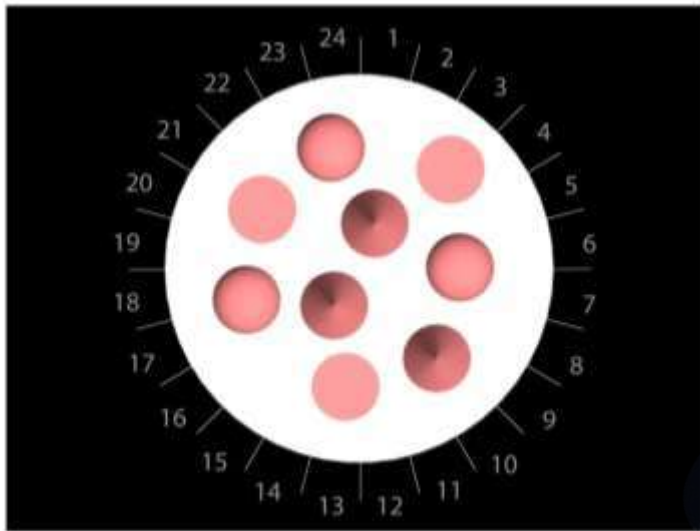
**Q.19** Which option is a scaled version of image P?



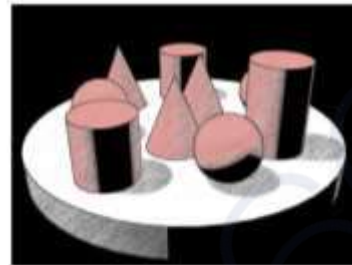
**Q.20** An open window is shown in top view. It has a locking lever L which holds the window pane at only position R. Which locking lever out of the given options will make it possible to hold the window pane at position P, Q, R and S?



**Q.21** Figure P shows the top view of a circular table top with few objects arranged on it for a sketching class. Numbers 1 to 24 in figure P represent different directions around the table from which students are sketching the objects. Which option gives the directions from which the sketches in Figure Q and R are drawn?



P



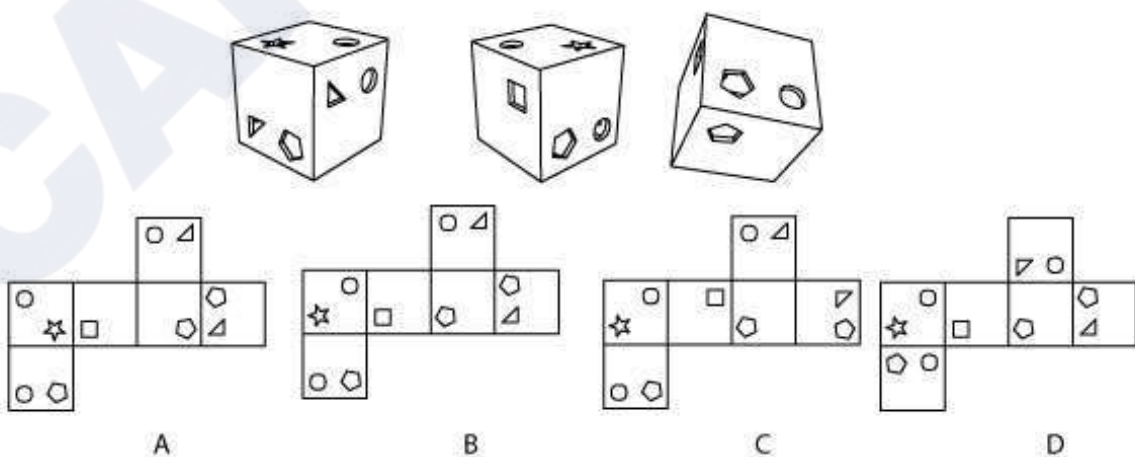
Q



R

- A. Q:19, R:5
- B. Q:8, R:15
- C. Q:1, R:16
- D. Q:24, R:15

**Q 22** The image shows different views of a cube made out of panels with cut-outs. Which option can be folded to make the given cube?



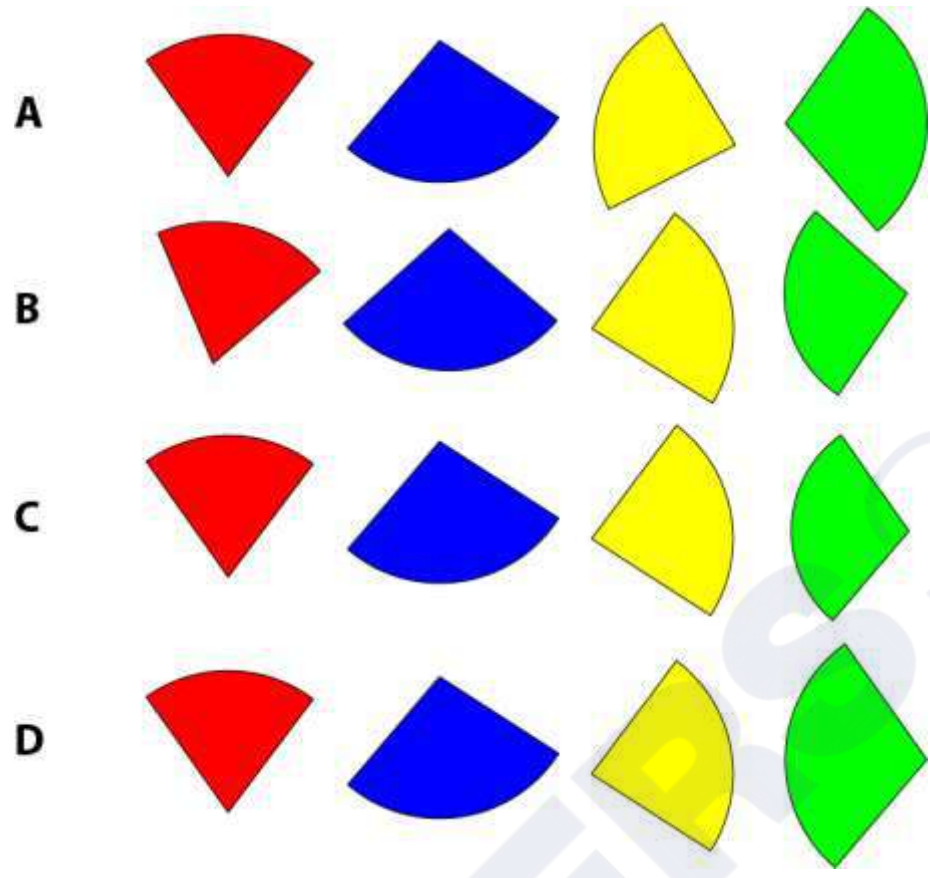
A

B

C

D

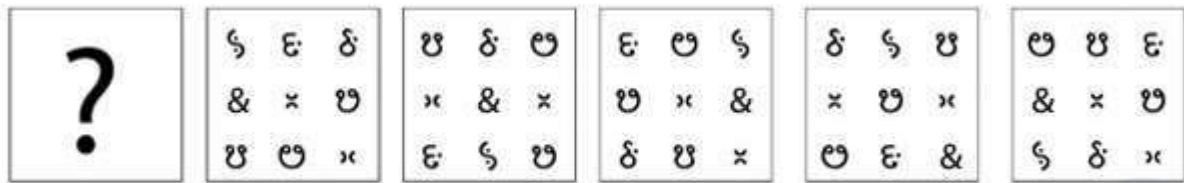
**Q.23** Which set of pieces can form a full circle, if rotation of pieces is not permitted?



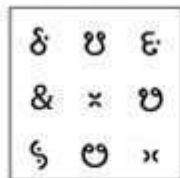
**Q.24** Which option is the correct logo?



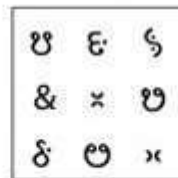
**Q.25** Which option will replace the question mark?



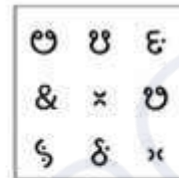
A



B

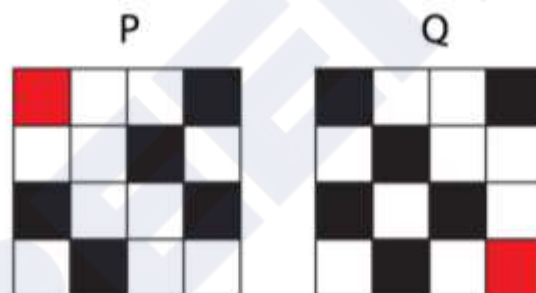


C



D

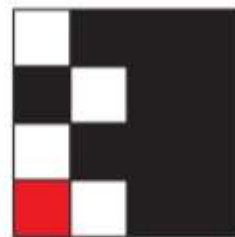
**Q.26** P and Q are two grids, in which white squares are transparent. P is rotated 90 degrees counter-clockwise and Q is rotated 90 degrees clockwise. What would be the resulting figure if the rotated grids are overlapped?



A



B

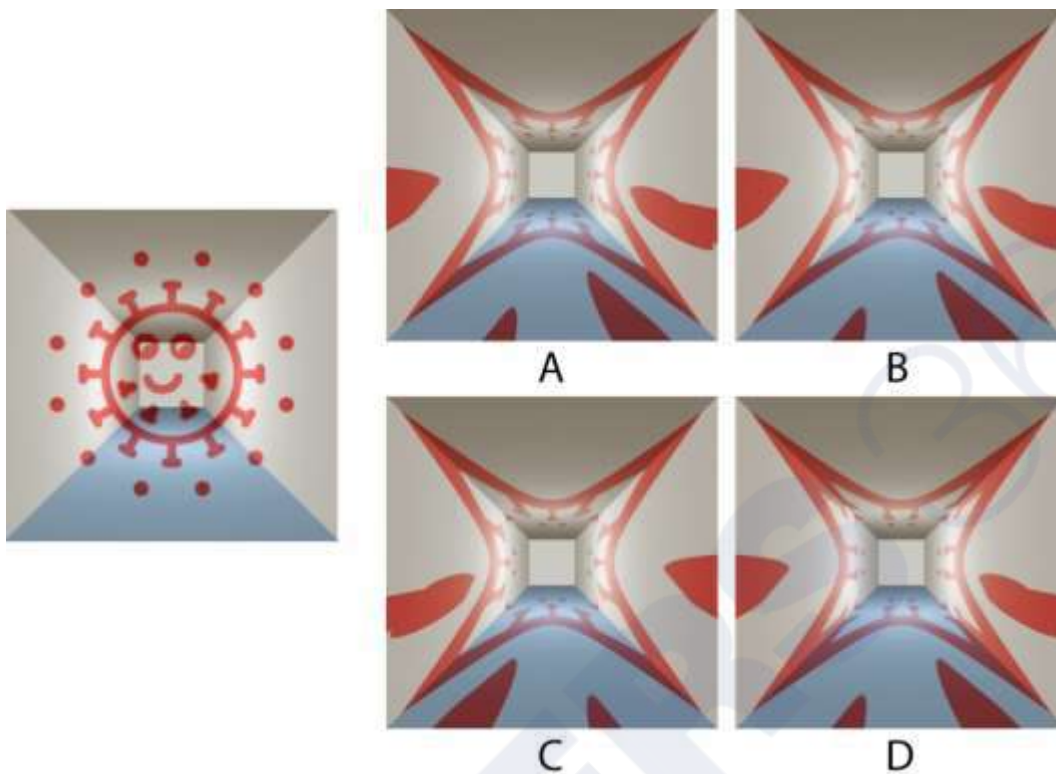


C

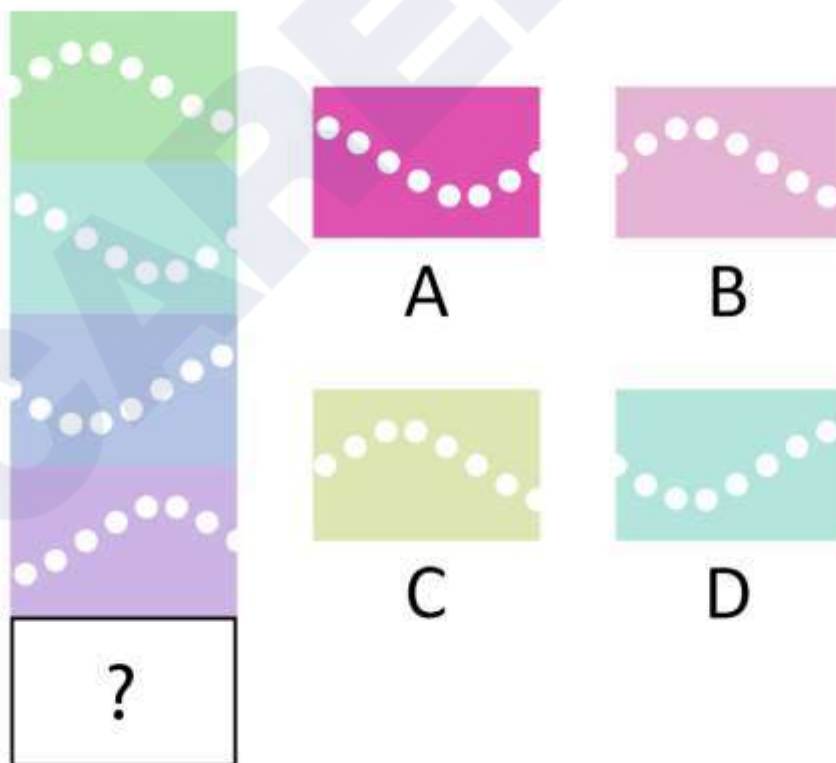


D

**Q.27** An artwork drawn on the walls, ceiling and floor of a long corridor, when viewed from a specific angle, creates an illusion as shown in the image on the left. Which option correctly depicts this artwork as seen from the opposite side of the corridor?



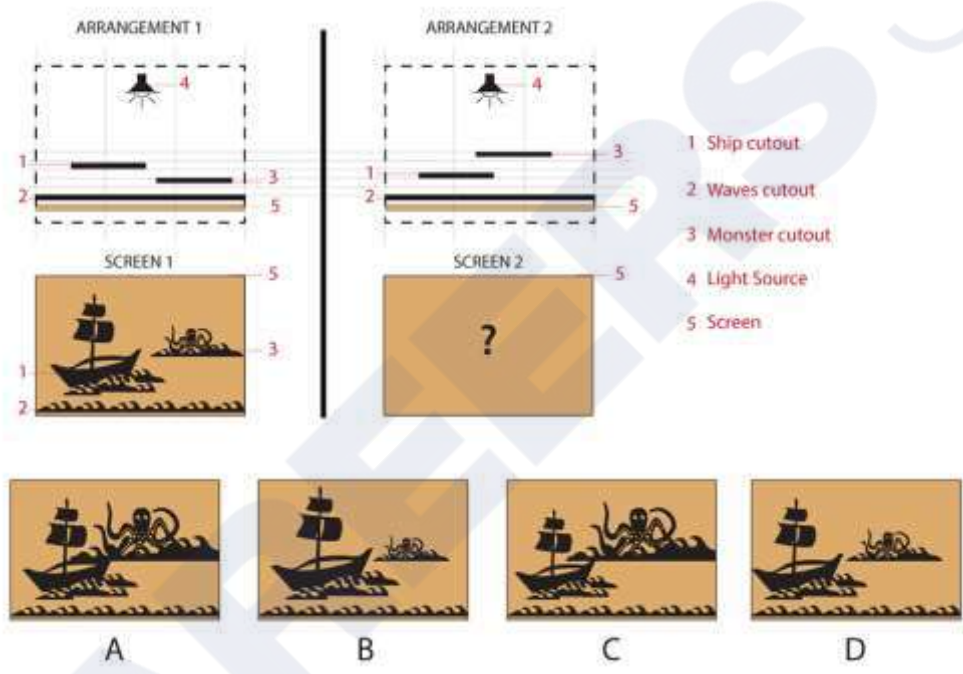
**Q.28** Which option will replace the question mark?



**Q.29** In order to fit a metal rim to the wooden wheel of a bullock cart, the metal rim is \_\_\_\_\_, and placed on the wooden wheel and \_\_\_\_\_. This process works because \_\_\_\_\_.

- A. Heated, cooled, the metal expands as it cools
- B. Cooled, heated, the metal shrinks as it cools
- C. Heated, cooled, the metal shrinks as it cools
- D. Cooled, heated, the metal expands as it cools

**Q.30** Figure on left shows a screen from a shadow puppetry show with the ARRANGEMENT 1 behind the screen. Which option will be the closest representation of the screen as a result of ARRANGEMENT 2?



Q.31



P



Q



R



S

- A. P – Tamilnadu, Q – Delhi NCR, R – Odisha, S – Gujarat
- B. P – Tamilnadu, Q – Uttar Pradesh, R – Gujarat, S – Odisha
- C. P – Kerala, Q – Maharashtra, R – Odisha, S – Gujarat
- D. P – Tamilnadu, Q – Maharashtra, R – Odisha, S – Gujarat

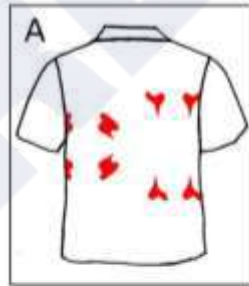
**Q.32** P shows the way a T-shirt is folded. Q shows the image of ink spilled over such a folded T-shirt. If the T shirt is unfolded and viewed from behind, which image most accurately represents the ink stain?



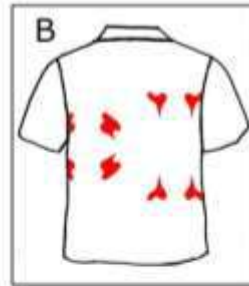
P



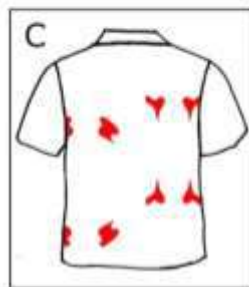
Q



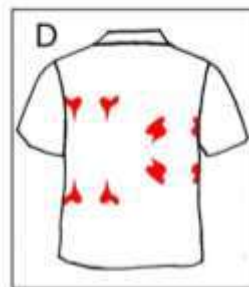
A



B



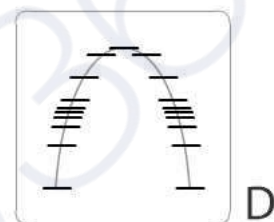
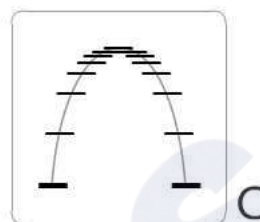
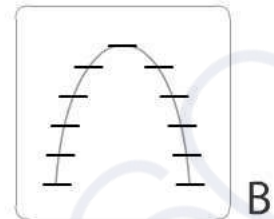
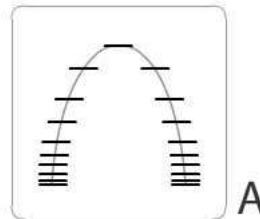
C



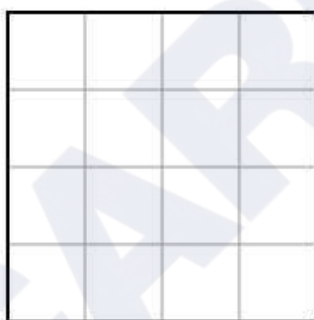
D

**Q.33** [This question contains an [animated GIF image.](#)]

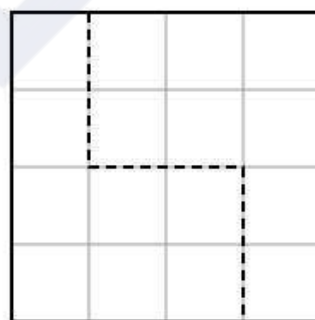
Trevo is bouncing back and forth. To create this animation, the animator used a reference sketch to mark each position of Trevo during the bouncing. Which option correctly represents the positions of Trevo in animator's reference sketch?



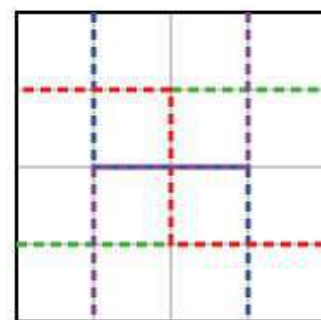
**Q.34** Figure P shows a square tile with a 4×4 grid marked on it. One of the ways the tile can be cut along the grid lines into two similar and contiguous pieces is shown in figure Q. The different configurations of this cut, shown in figure R, are counted as the same cut. In how many ways, **excluding** the cut shown in Q, can the tile be cut into two similar and contiguous pieces along the grid lines?



P



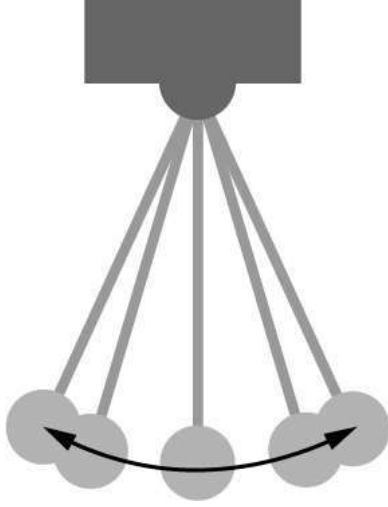
Q



R

- A. 3
- B. 4
- C. 5
- D. 6

**Q.35** The image shows a swinging pendulum. As it swings, it reaches an extreme position and then reverses its motion. In animation, what is this commonly referred to as?



- A. Pendulum principle
- B. Slow in Slow out
- C. Smooth Motion
- D. Squash and Stretch

**Q.36** How many fonts have been used in the words given below?

நட்டாங்கல்லு நட்டாங்கல்லு  
நட்டாங்கல்லு நட்டாங்கல்லு  
நட்டாங்கல்லு நட்டாங்கல்லு  
நட்டாங்கல்லு நட்டாங்கல்லு

- A. 4
- B. 5
- C. 6
- D. 7

**Q.37** The image is made by overlapping the first word rotated 90 degrees clockwise with the second word rotated 90 degrees counter-clockwise. Which are the words?



- A. BROOCH and BREACH
- B. BREACH and BREACH
- C. BROACH and BROOCH
- D. BROACH and BREACH

**Q.38** [This question contains an [animated GIF image.](#)]

An animation is shown of a person speaking. Which option most accurately matches this animation?



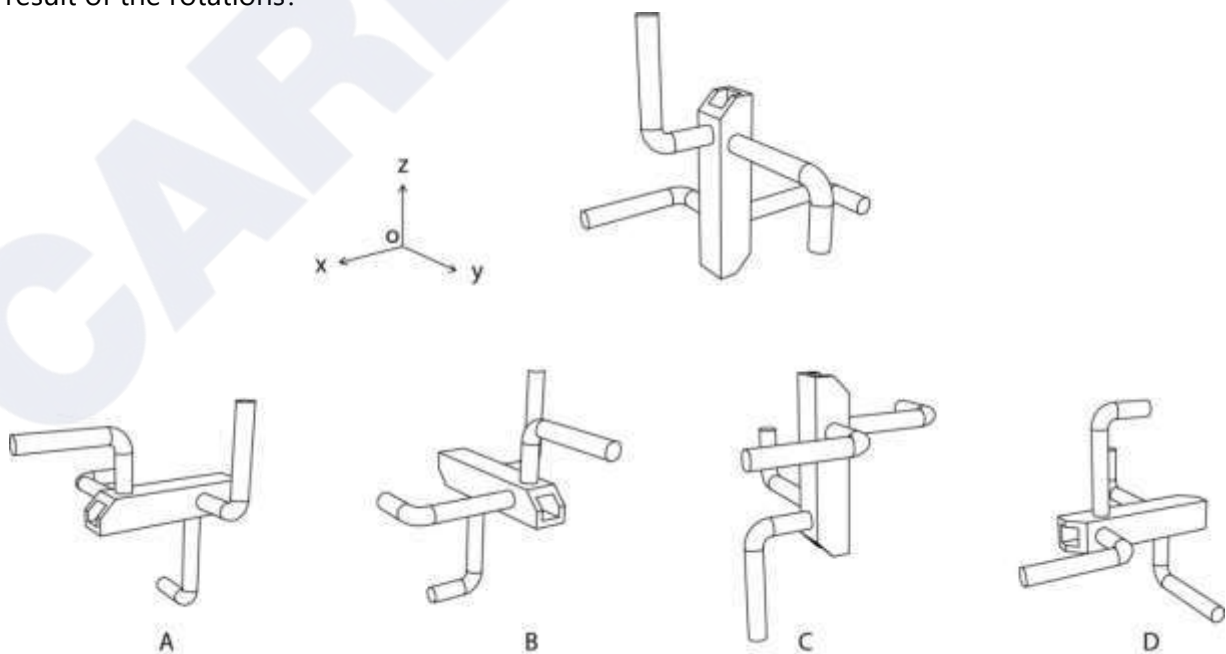
- A. Well yes, I know what you mean.
- B. Well yes, I do like coffee.
- C. Well yes, I may go for tea.
- D. Well yes, I will go to zoo.

**Q.39** The figure shows perspective views of the same solid object. Which option shows the count of the total number of surfaces?



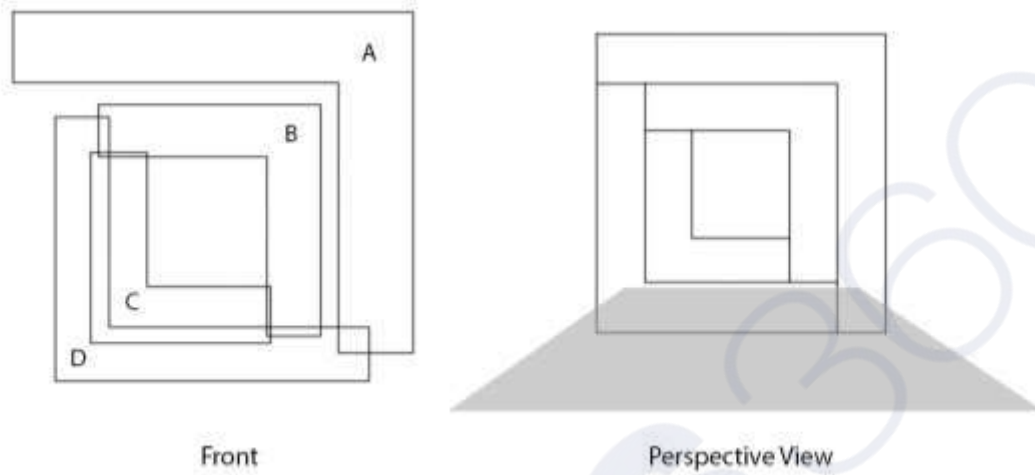
- A. 15
- B. 20
- C. 19
- D. 17

**Q.40** Perspective view of an object is shown below. The object is successively rotated 180 degrees clockwise about x-axis, 90 degrees clockwise about y-axis and 90 degrees anticlockwise about z-axis. All rotations have to be viewed from a point on the positive axis facing towards the origin. Which one of the following perspective view options will be the result of the rotations?



**Q.41** Four transparent planes A, B, C and D are shown in front view on the left. But when viewed in perspective, they appear like the image shown on the right.

Which plane is the farthest from the viewer?



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## Part B

### All questions are mandatory

#### **Q.1 Sketching** (20 marks = 10+10)

A comic book is to be illustrated that tells the story of Rohan. In the morning, when he goes to school, Rohan looks like the image given below, well dressed with combed hair and ironed clothes. But by the time he returns home, like any playful young boy, he has a dishevelled look with dirt and grime all over. In summer he loves to shoot mangoes out of the tree with his catapult and during monsoon he loves to play football despite the puddles.

Create separate illustrations of the character in the following two situations

1. Rohan shooting the mango out of the tree. (10 marks)
2. Rohan kicking the football oblivious of the muddy ground after rains. (10 marks)



#### **Additional Instructions:**

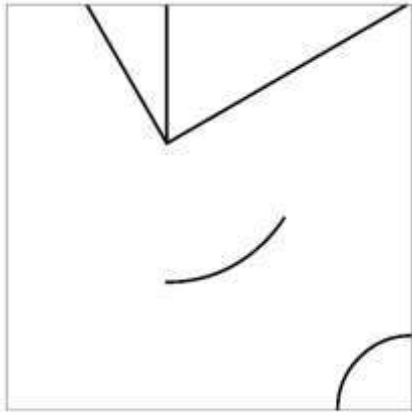
- Make a line drawing using only pencils. Do not use any kind of colour.
- Do not illustrate the surroundings, but only the boy and what he is physically interacting with. Do not draw the tree or the entire playground but only the catapult and immediate floor he is standing on if the composition requires it.

#### **Evaluation criteria:**

1. Ability to keep the character consistent
2. Expression and body gesture of the character
3. Line quality and finish of the drawing

**Q.2 Creativity** (20 marks = 10x2)

Building upon the visual elements given in the ten boxes, create recognizable images and give a title to each. A theme for each of the first three boxes has been given as printed in the answer booklet. Use only **BLACK** pencil/pen. Draw only within the boundaries of the boxes.

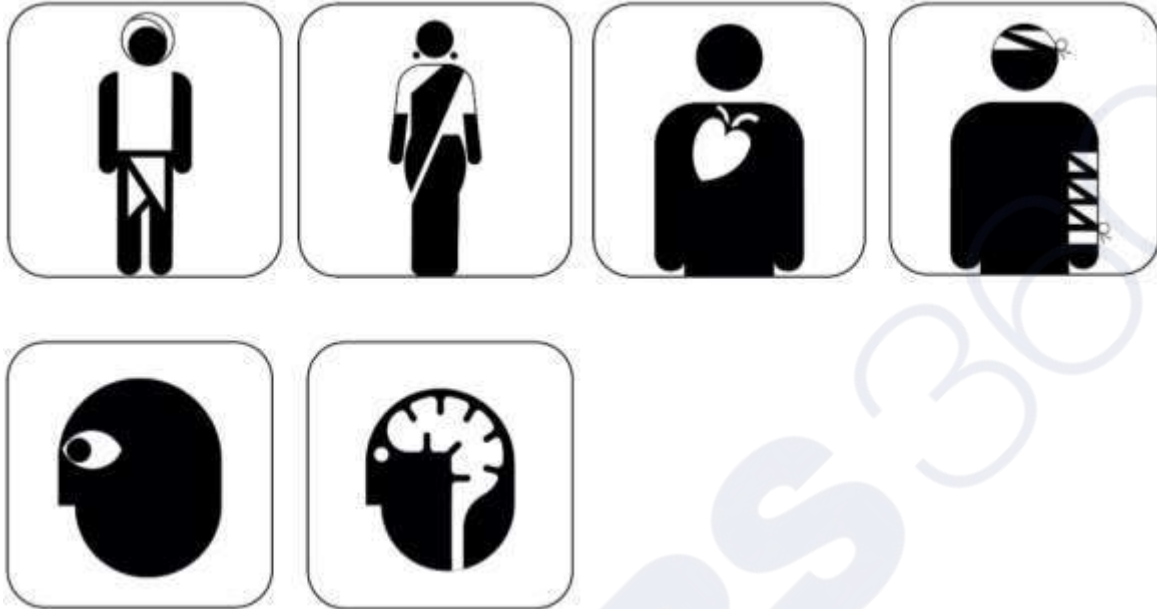


**Evaluation criteria:**

Originality and diversity of ideas, clarity and neatness of sketches

**Q.3 Visual Sensitivity** (20 marks = 4x5)

A rural hospital uses the following icon system to depict Male, Female, Cardiology, Casualty, Ophthalmology and Neurology.



The hospital then decides to expand, and opens four new wards which are as follows:

- COVID-19 Isolation Ward
- Cancer Ward
- Paediatric (Children) Ward
- Maternity Ward

Create icons for these four wards using only **BLACK** colour. All icons should follow the same visual language. Draw the icons in squares provided in the answer booklet.

**Evaluation criteria:**

1. Consistency with given examples
2. Composition
3. Clarity of communication

#### **Q.4 Form sensitivity** (20 marks)

Image of a kid's water bottle is shown below. Visualise a lunch box to pair with it. It should be matching in design language with relevant details. Sketch and render the bottle and the lunch box with required graphics.



#### **Evaluation Criteria:**

1. Originality in the form of the lunch box, and its proportion
2. Visual consistency with the form of the water bottle.
3. Relevant details for the lunch box.
4. Surface shading
5. Quality of line/strokes

**Q.5 Problem identification** (20 marks= 5 + 3x5)

Shown below is a picture of a wash basin in a primary school.



In the space provided in the answer booklet, list down ten various problems related to the possibility of a viral infection like COVID-19 spreading in the school. (5 marks)

Identify three problems that you consider to be the most important and clearly illustrate them.

You will be evaluated for:

1. Quality and diversity of your observation
2. Analytical skills
3. Communication

## CEED 2020 ANSWER KEY

### SECTION – I (NAT)

Q. No.	KEY RANGE	Q. No.	KEY RANGE	Q. No.	KEY RANGE	Q. No.	KEY RANGE	Q. No.	KEY RANGE
01	14	02	6	03	20	04	28	05	18
06	8	07	1690	08	24				

### SECTION – II (MSQ)

Q.No.	KEYS	Q.No.	KEYS	Q.No.	KEYS	Q.No.	KEYS	Q.No.	KEYS
09	A, B, D	10	A, D	11	C	12	B	13	C,D
14	B	15	B, C	16	A, B, C, D	17	C, D	18	D

### SECTION – III (MCQ)

Q.No.	KEY	Q.No.	KEY	Q.No.	KEY	Q.No.	KEY	Q.No.	KEY
19	C	20	FULL MARKS	21	C	22	C	23	C
24	C	25	A	26	A	27	C	28	B
29	D	30	C	31	B	32	D	33	B
34	A	35	C	36	D	37	C	38	D
39	A	40	D	41	B				

Q. 20: Full marks are given to all the candidates as it is possible to have more than one solution

**Common Entrance Examination for Design**

**CEED 2020**

**Question Paper**

CAREERS360

## INSTRUCTIONS

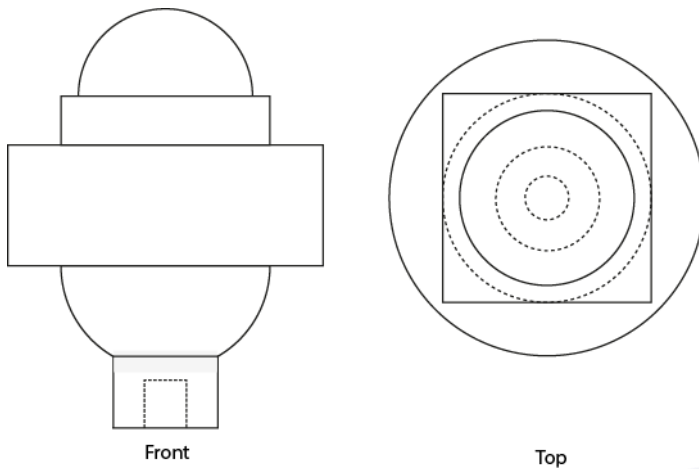
1. The total duration of the examination is 3 hours. The question paper contains two parts - Part A and Part B. The duration of Part A is one hour. The duration of Part B is two hours. Part B will start only after Part A ends. Part A cannot be attempted once Part B commences.
2. Questions of Part A and Part B will appear on the computer. Answers to **Part A** have to be entered in the **computer**. Answers to **Part B** need to be given in the **answer booklet** provided by the invigilator.
3. Part A carries a total of 100 marks. It contains 3 sections. All questions are mandatory. The following table summarises the marking scheme of Part A:

Part A Section	Type of questions	Number of questions	Marks for each correct answer	Marks for each wrong answer	Marks for each question not attempted	Total marks for the section
I	Numerical Answer Type (NAT)	8	3	0	0	24
II	Multiple Select Question (MSQ)	10	3	-0.2	0	30
III	Multiple Choice Question (MCQ)	23	2	-0.5	0	46

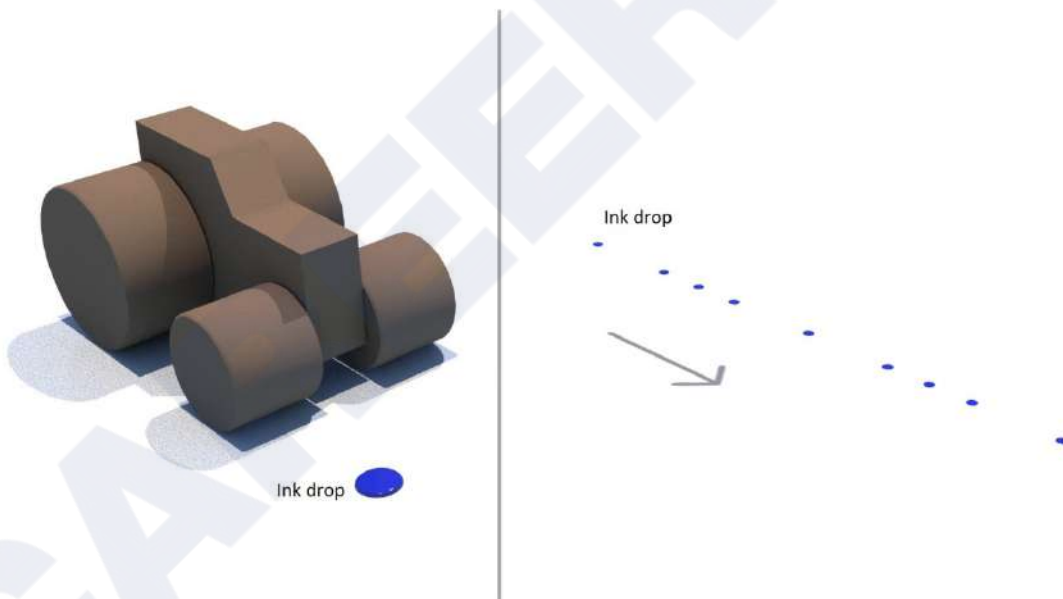
4. For each NAT question, the answer is a **number**. The answer needs to be entered using the virtual keyboard on the monitor. No choices will be shown for these questions. In NATs, the correct answer will be awarded **3 marks**. There is no negative or partial marking for NATs.
5. Each MSQ has four 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. Zero marks will be awarded if question is not attempted. In all other cases, **-0.2 marks will be awarded**.
6. 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**. Questions not attempted will be awarded zero marks.
7. Scribble pads will be provided for rough work for Part A. These have to be returned to the invigilator at the **end of the Part A exam**.
8. 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.
9. In Part B, colour pencils, crayons, sketch pens etc. may be used unless otherwise specified in the questions.
10. Charts, graph sheets, tracing papers, tables, calculators, cellular phones and other electronic gadgets are not allowed in the examination hall.

**Part A – Section I: Numerical Answer Type Questions**

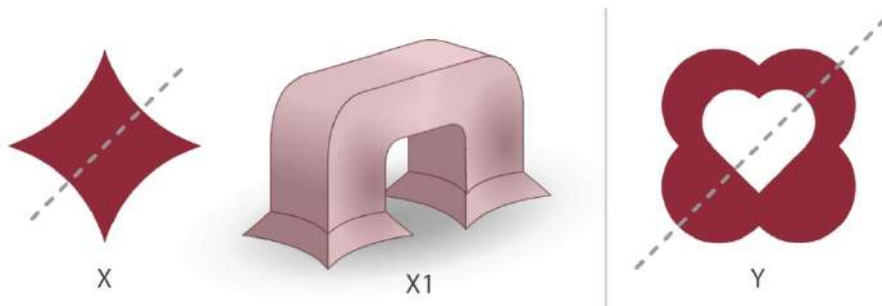
**Q.01** Two views of a solid object are shown. Count the number of surfaces.



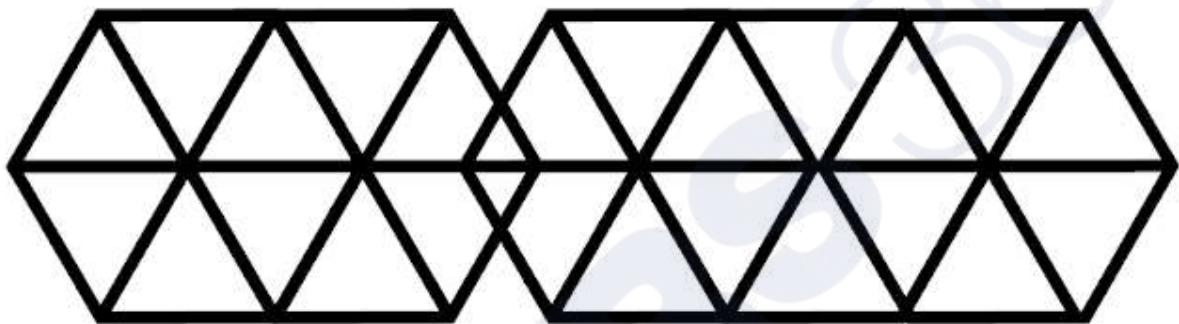
**Q.02** While Lilo was playing with a toy tractor, she rolled it over an ink drop. The image on the right shows the ink drop and the marks on the floor left by tractor's wheels. The diameter of the back wheel of the tractor is 1.5 times that of its front wheel. What is the number of revolutions made by the front wheel between the ink drop and the last mark?



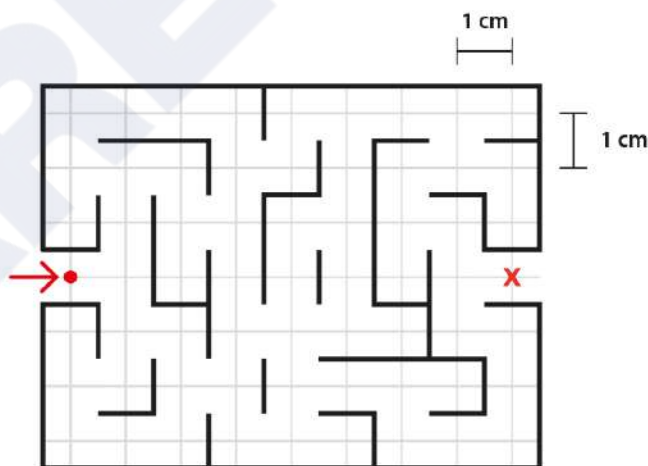
**Q.03** X1 is a 3D form generated from the shape X, using certain 3D operations. It has 14 surfaces in total. The same operations are carried out on shape Y. How many surfaces would the resulting 3D form have?



**Q.04** Count the total number of triangles.



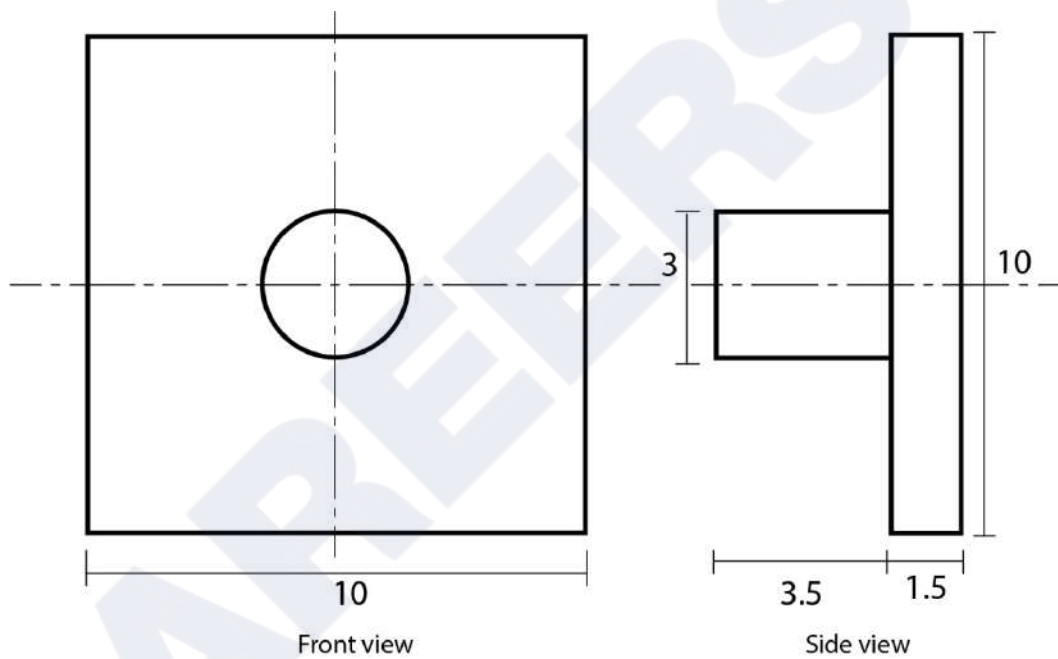
**Q.05** What is the shortest distance (in cm) for the red dot to reach the position x? The dot can travel only along the grid lines shown.



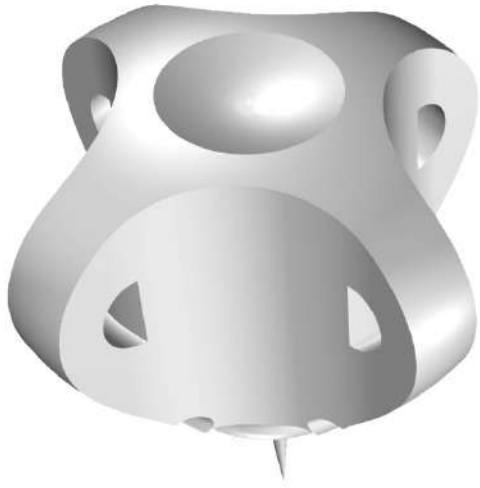
**Q.06** What is the number of differences between the two images?



**Q.07** The figure shows two views of an object. What is the least volume of a rectangular box required to pack six such objects?



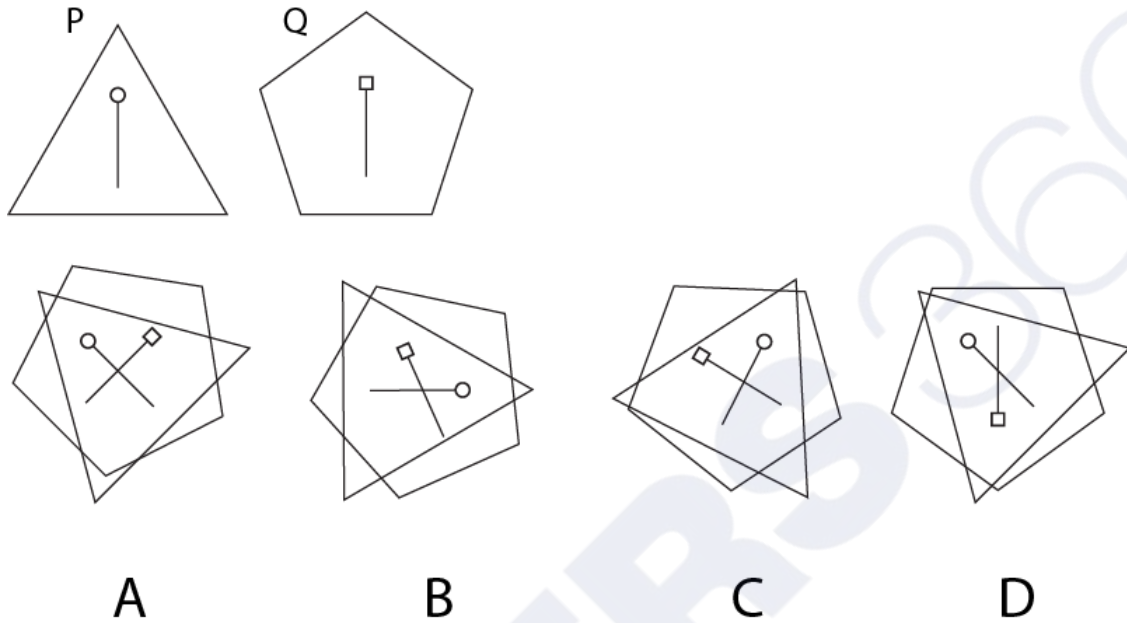
**Q.08** The figure shows two views of the same solid. Count the number of surfaces.



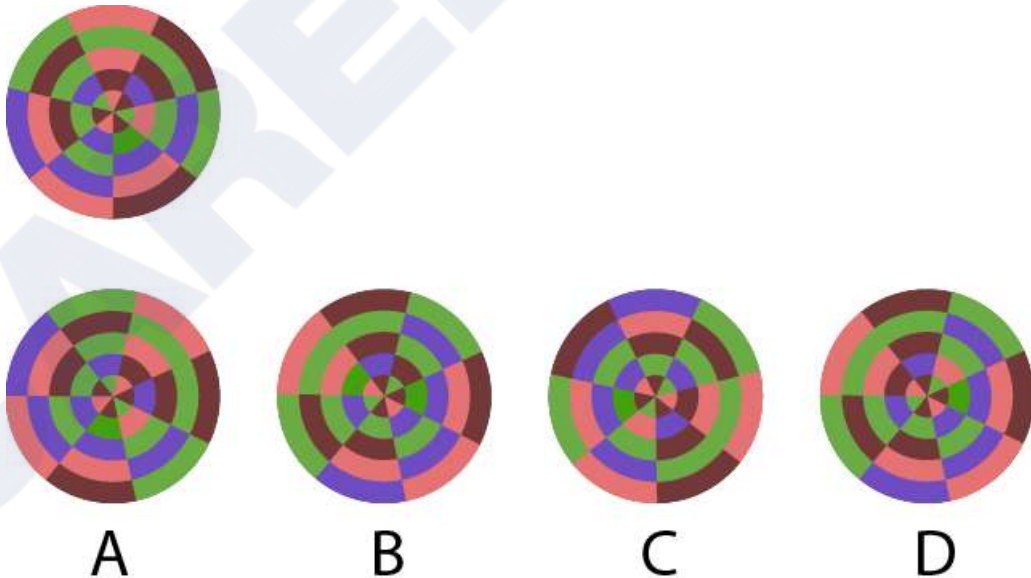
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**Part A – Section II: Multiple Select Questions**

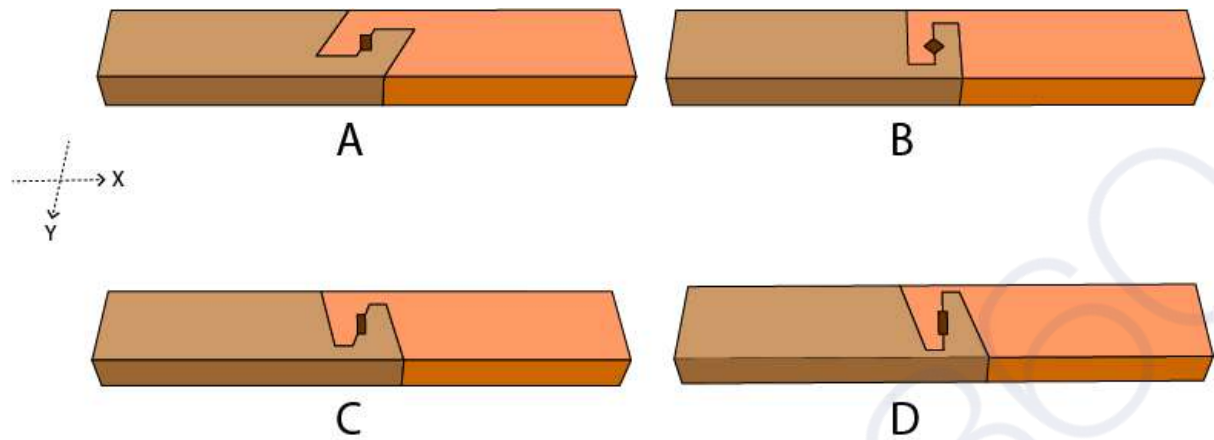
**Q.9** Triangle P and pentagon Q have markings on them as shown in the figure. If they are placed over each other, which of the following arrangements is/are possible?



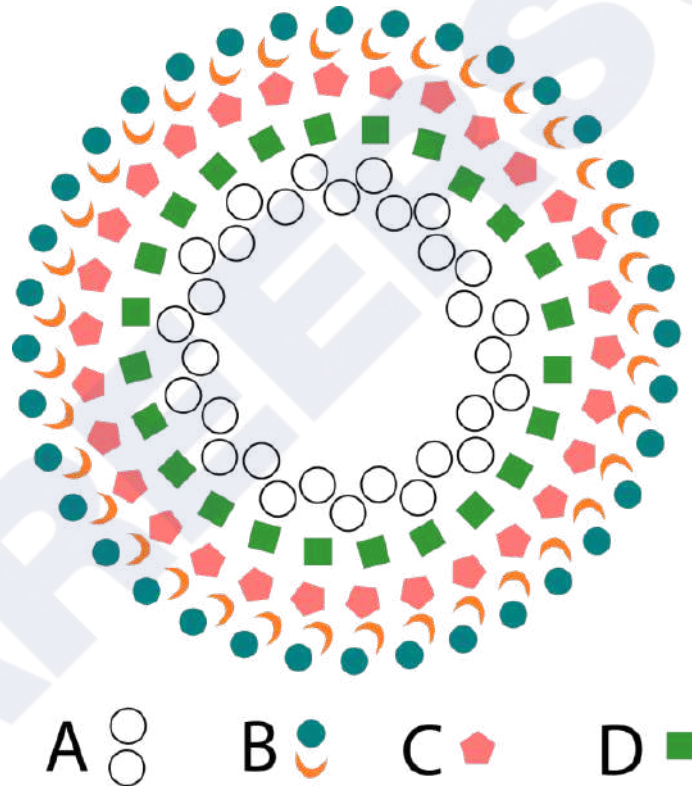
**Q.10** Which option(s) is/are simple rotations of the figure given below?



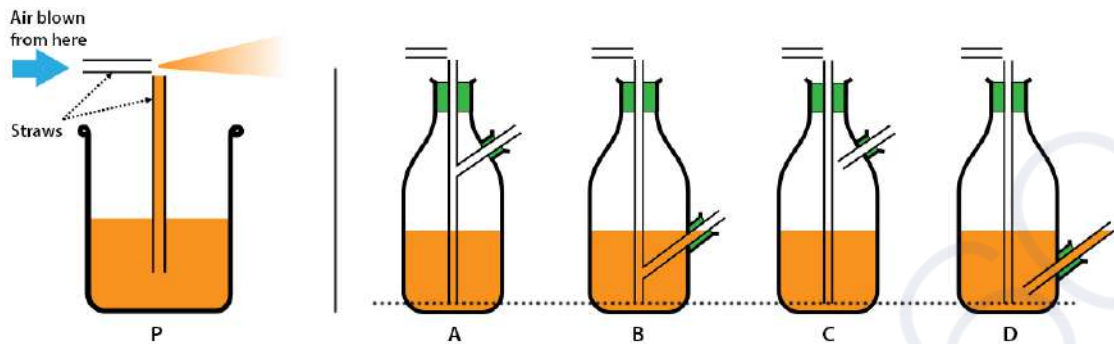
**Q.11** Given options show wooden joints, each made of 2 wooden blocks of different colours with a wooden pin at the centre. All joints can be released along the Z axis. Which of the joints can be released along the Y axis?



**Q.12** Which of the objects shown in the options form(s) a perfect circle?



**Q.13** P shows a basic schematic of how an airbrush works. In the options, the green sections are seals. Of these options, which of the design concepts of an airbrush will work continuously until the liquid in the container is exhausted up to the dotted line?



**Q.14** Which of the manufacturing processes is/are required to make a typical stainless steel spoon out of sheet metal?

- A. Casting
- B. Forming
- C. Brazing
- D. Blow moulding

**Q.15** Which of the options can be made using the rubber stamp shown in the figure?



A



B



C

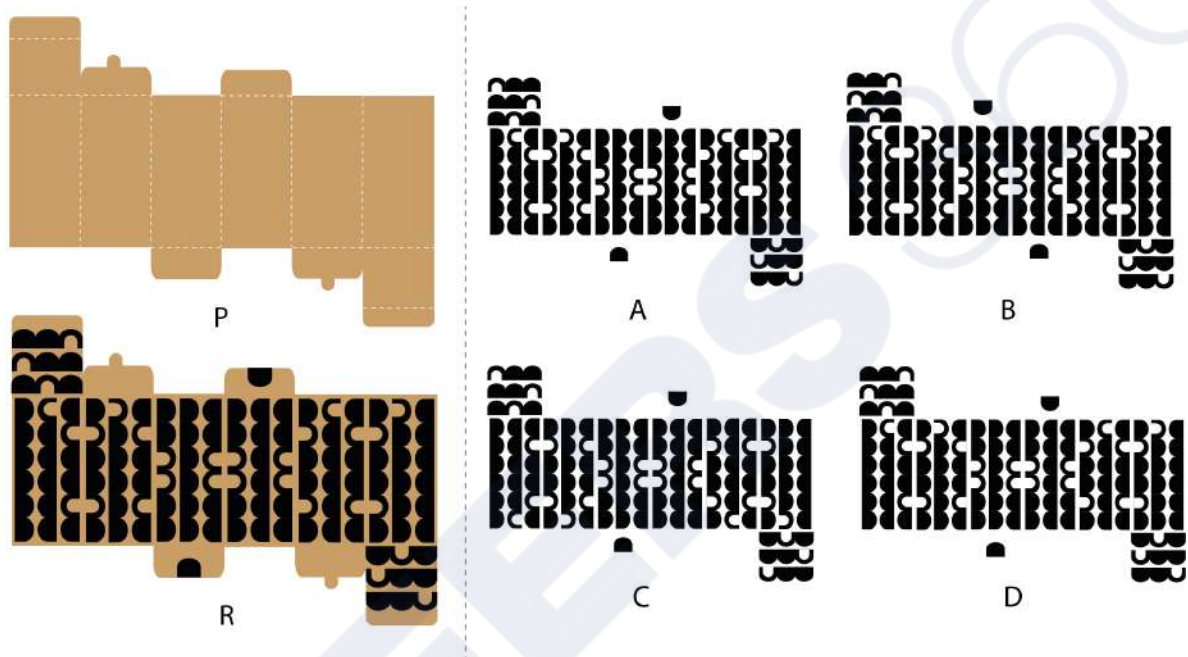


D

**Q.16** Richa has a pencil, a compass, and a post card of size 12 cm x 7 cm. Which of the following diagrams can she draw in her notebook using only these objects?

- A. Circle of radius 13 cm
- B. Equilateral triangle of side 5 cm
- C. Square of side 6 cm
- D. Regular hexagon of side 10 cm

**Q.17** Which of the options can be printed on P to get R?



**Q.18** Given below is a quote from “The Book of Why” by Judea Pearl and Dana Mackenzie.

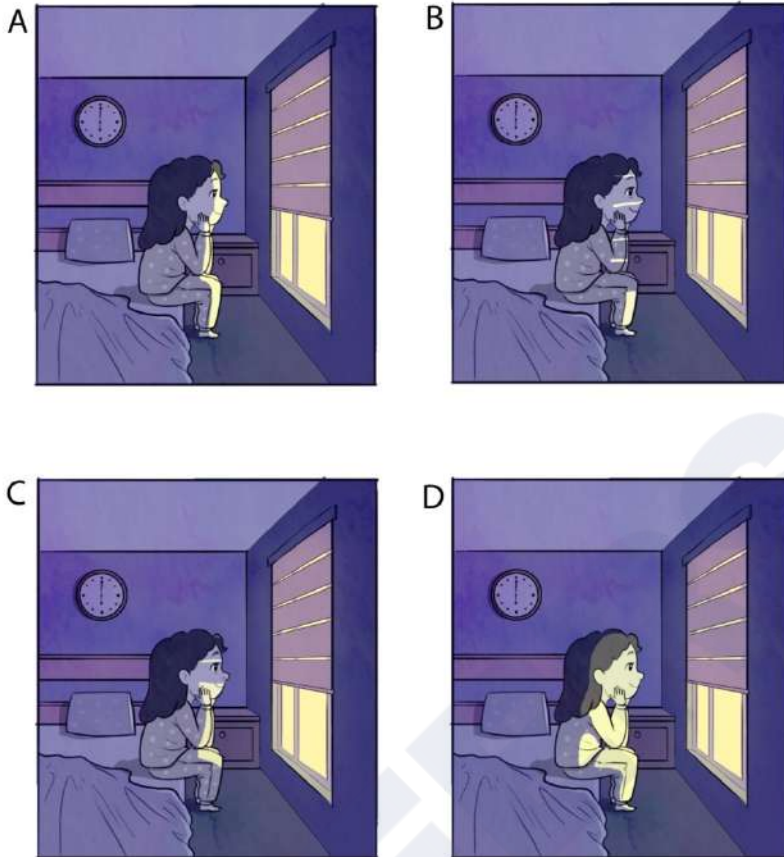
“While probabilities encode our beliefs about a static world, causality tells us whether and how probabilities change when the world changes, be it by intervention or by act of imagination.”

Which of the options is/are implied by the quote?

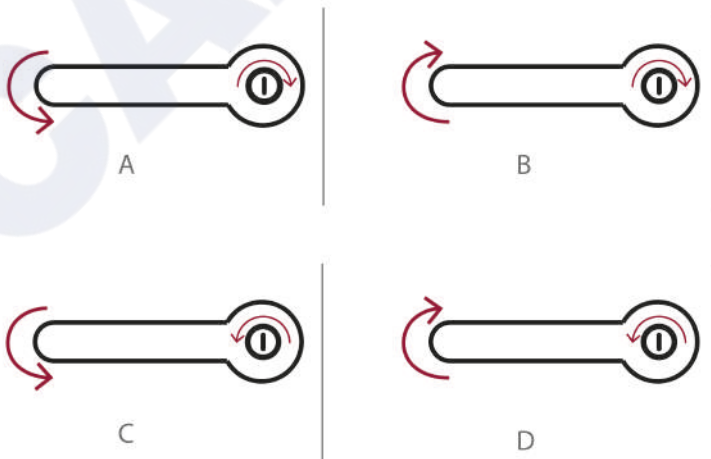
- A. No matter how much the world appears to change, it is actually quite static.
- B. Changes in the world can be predicted using probabilities.
- C. Big data accurately predicts how a new design will influence society.
- D. Causality helps us make better predictions than probabilities.

**Part A – Section III: Multiple Choice Questions**

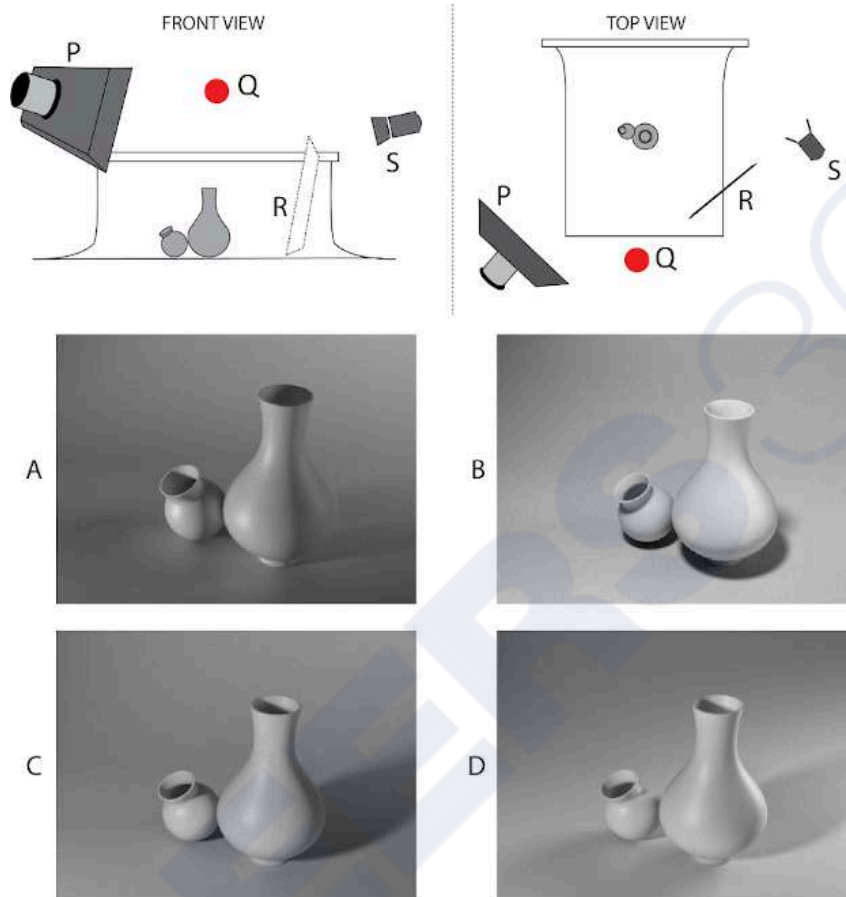
**Q.19** In the options given below Suman is watching the sunrise. What would be the most appropriate rendering of this scene?



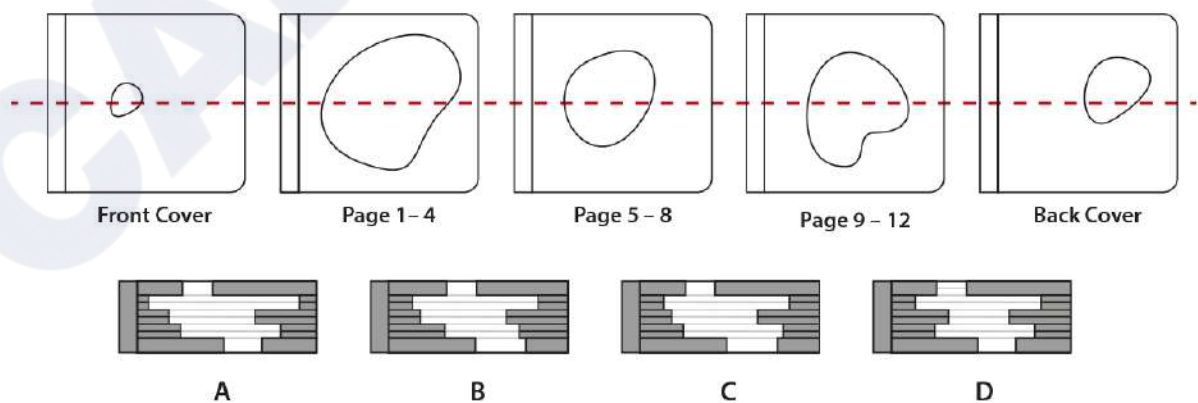
**Q.20** A door is unlocked by inserting and turning the key and opened by turning the handle. The options show the directions of turning the key and the handle. Which of the four options is ergonomically appropriate for the majority of users?



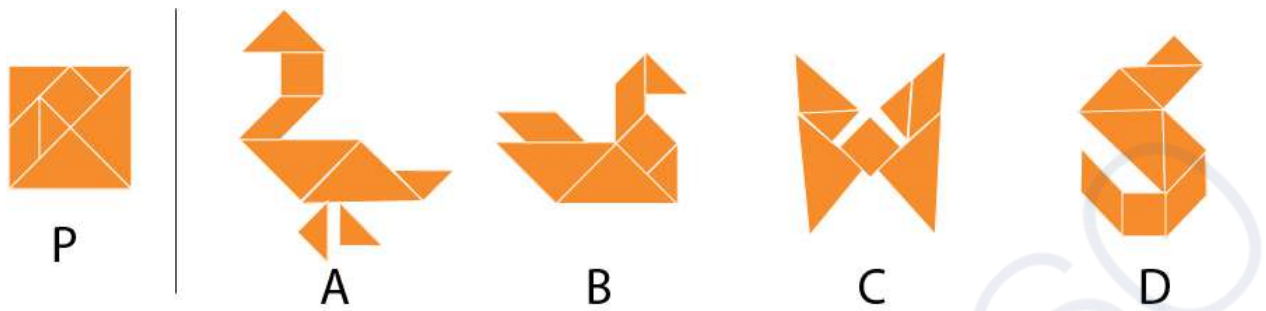
**Q.21** Top and side views of a photographer's setup for a product shoot are shown in the figure. P is the primary light source, S is the secondary light source, R is the reflector and Q is the camera position. If the Primary Light Source is at 100% intensity, and the secondary light is at 25% intensity, which one of the given options is the photograph taken using this setup?



**Q 22** Shown in the figure are pages in a children's book with holes in it. The book is cut along the red line. Which option shows the correct cross section?



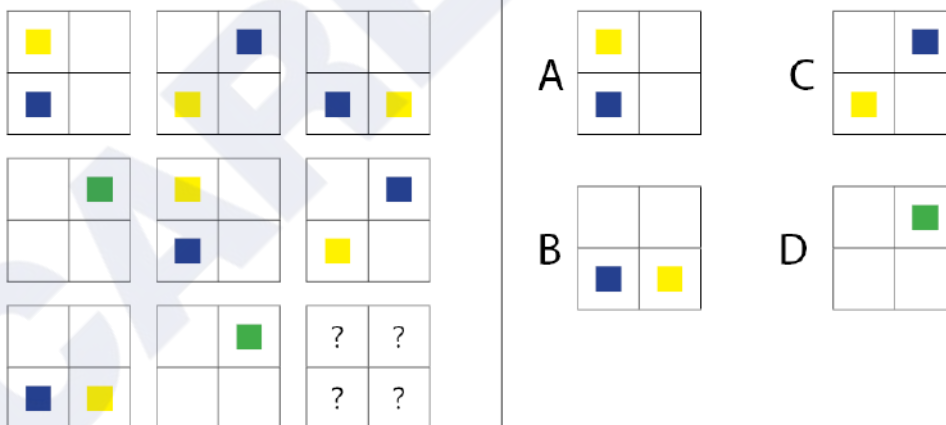
**Q.23** A child accidentally drops a square ceramic tile. It breaks into smaller pieces as shown in Figure P. To avoid a scolding, she plans to compose a mural of broken pieces to gift to her mother. Which figure out of the given options could she make?



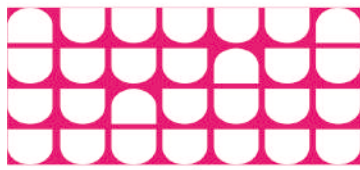
**Q.24** Identify the logo of Google Chrome.



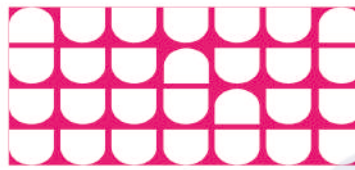
**Q.25** Which option will replace the question marks?



**Q.26** A strip of stickers is shown in the figure. What is the result after all the stickers have been removed from it?



A



B

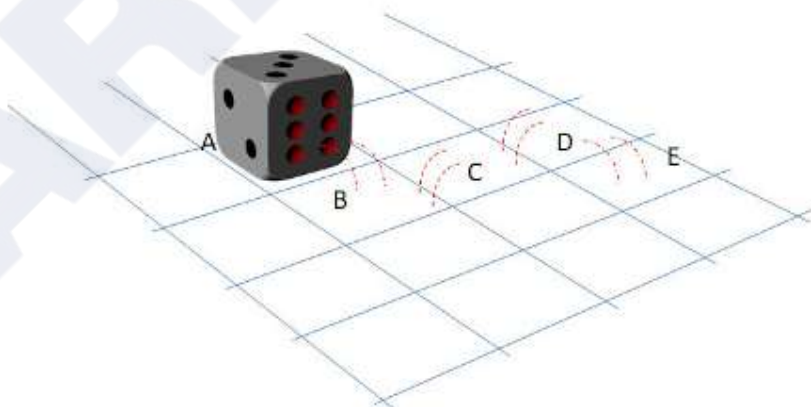


C



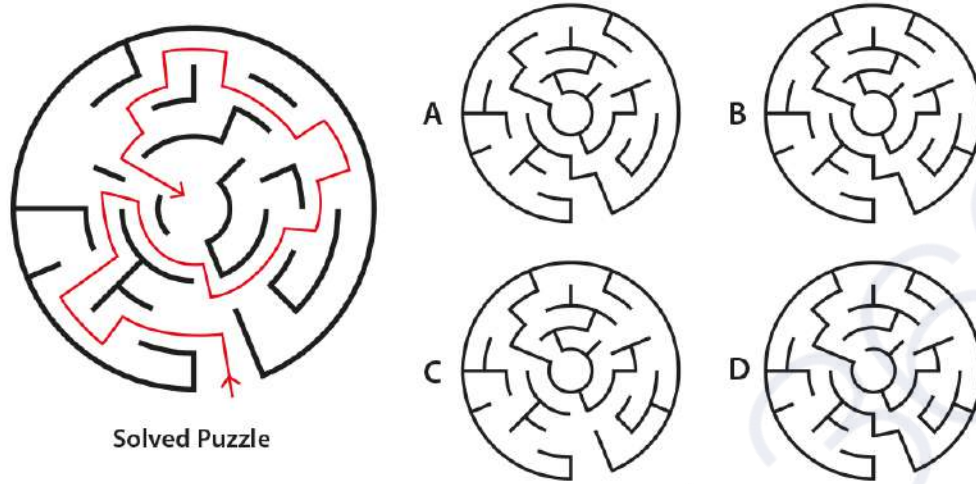
D

**Q.27** A dice is rolled from its current position (A) through B, C and D to stop at position E. What will be the number on the top of the dice at position E, if each pair of its opposite faces adds to seven?

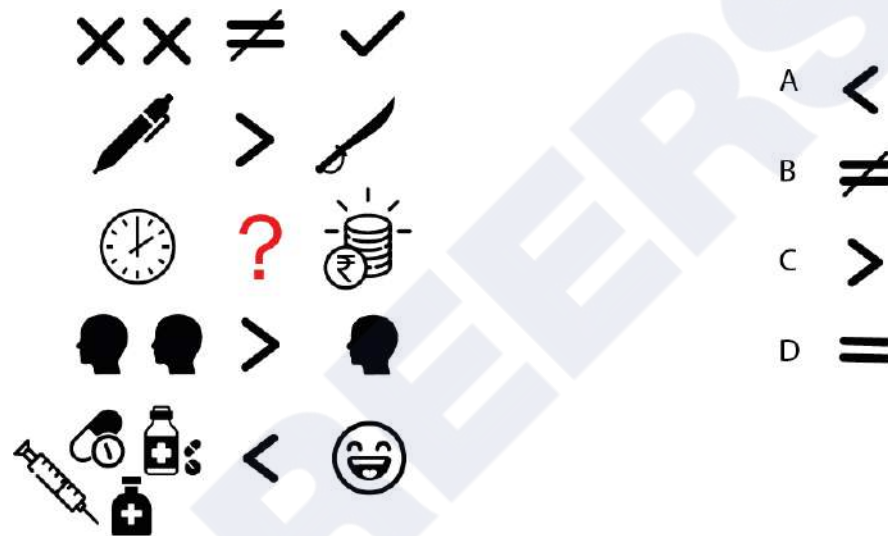


- A. One
- B. Three
- C. Four
- D. Six

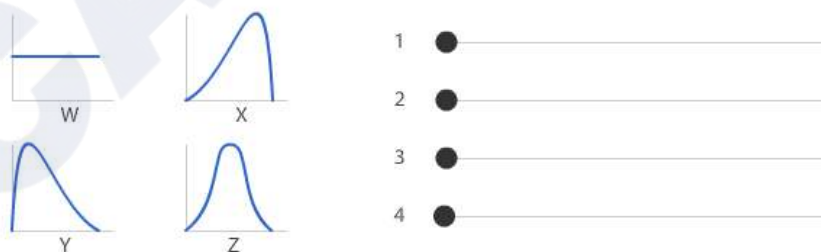
**Q.28** Shown in the figure is a solved puzzle with a unique solution (the red line) from an old newspaper. Over the course of time, a few printed lines from the puzzle have faded. Identify the original puzzle from the options.



**Q.29** Which of the given options replaces the question mark?



**Q.30** Match the graphs with the corresponding animations.



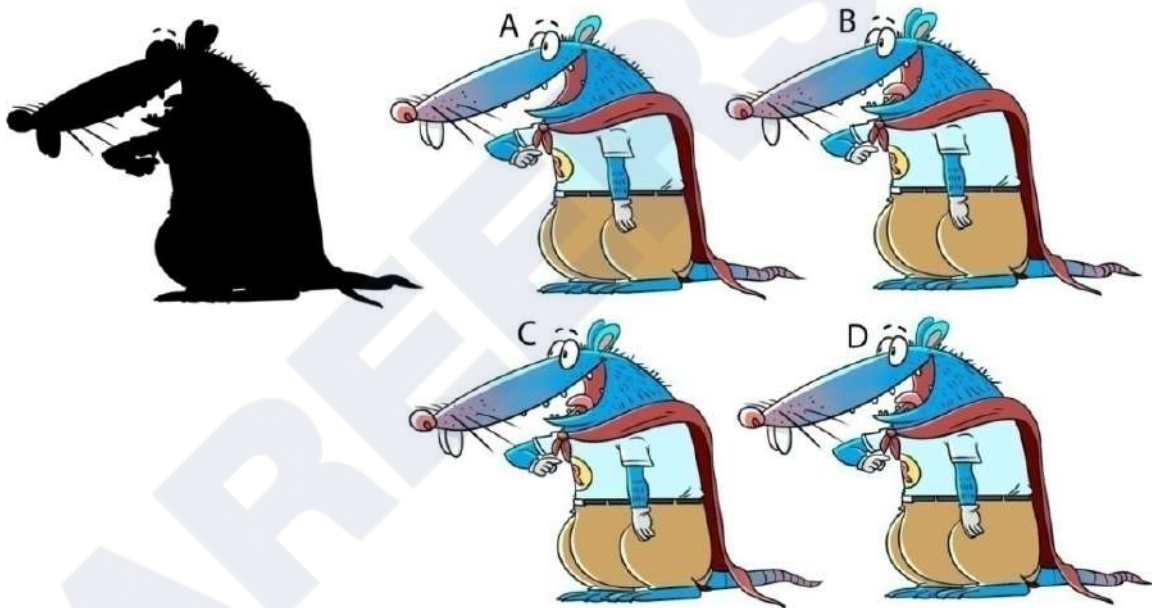
- A. 1-W, 2- X, 3-W, 4-Y
- B. 1-Y, 2- W, 3-X, 4-Z
- C. 1-Y, 2- X, 3-W, 4-Z
- D. 1-W, 2- W, 3-X, 4-Y

**Q.31** Which option matches the order of the paintings shown?



- A. Mysore Painting, Kalamkari, Madhubani, Warli
- B. Mysore Painting, Warli, Madhubani, Kalamkari
- C. Kalamkari, Warli, Madhubani, Mysore Painting
- D. Kalamkari, Madhubani, Warli, Mysore Painting

**Q.32** From the options, select the illustration that matches the given silhouette.




**Q.33** Match the logos with corresponding entities.

1		P	Aadhar
2		Q	Federation of Indian Chambers of Commerce & Industry
3		R	India Design Mark
4		S	Election Commission of India
5		T	Steel Authority of India Limited

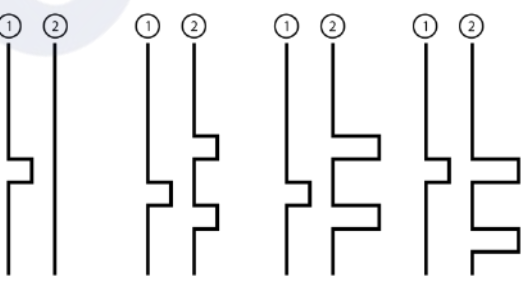
- A. 1-R, 2-T, 3-P, 4-Q, 5-S
- B. 1-S, 2-R, 3-P, 4-Q, 5-T
- C. 1-Q, 2-S, 3-P, 4-T, 5-R
- D. 1-S, 2-R, 3-P, 4-T, 5-Q

**Q.34** Choose the correct option.

①                      ②

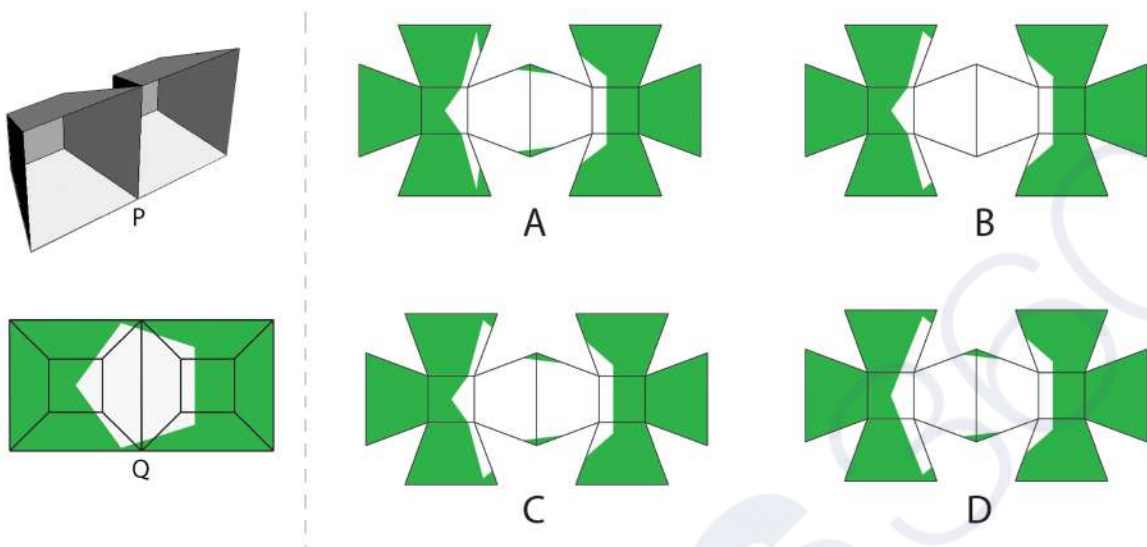


①   ②                      ①   ②                      ①   ②                      ①   ②



A                      B                      C                      D

**Q.35** Figure P shows an isometric view of an object made with a single sheet of cardboard. Figure Q shows the front view of the same object after colouring. Which option shows the object after it is cut open?



**Q.36** The words shown use a particular font. Which of the options belongs to the same font?

**ਗਰਮ ਅਨਾਰ**

**ੲ**

A

**ੲ**

B

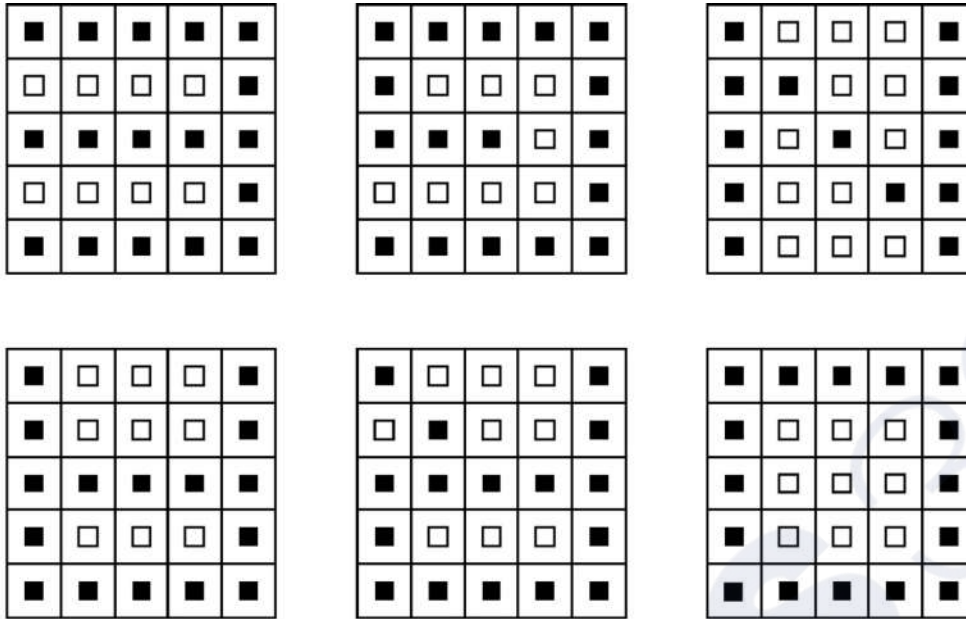
**ੲ**

C

**ੲ**

D

**Q.37** A set of six patterns is shown in the figure. Choose the option which corresponds to the set.



A



B

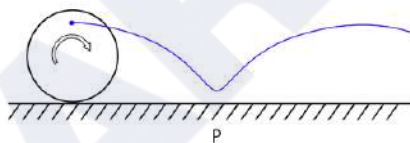


C

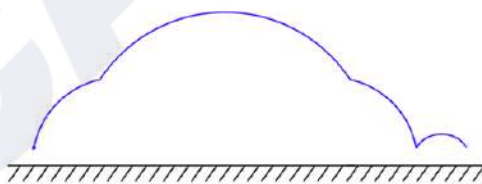


D

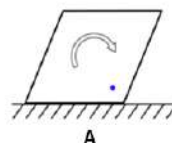
**Q.38** Figure P shows how a point on a circle traces a path when it is rolled on the ground. The point in which of the polygons shown in the options creates the path in Figure Q?



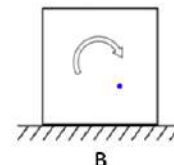
P



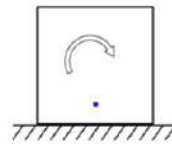
Q



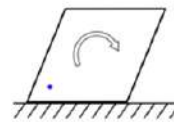
A



B

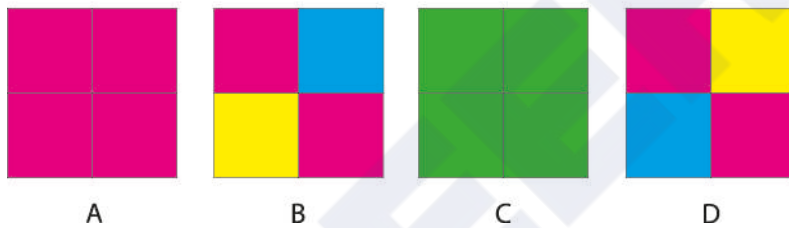
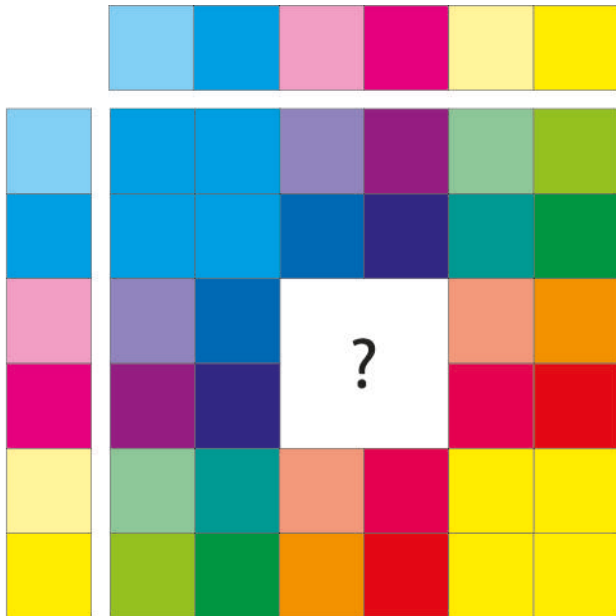


C

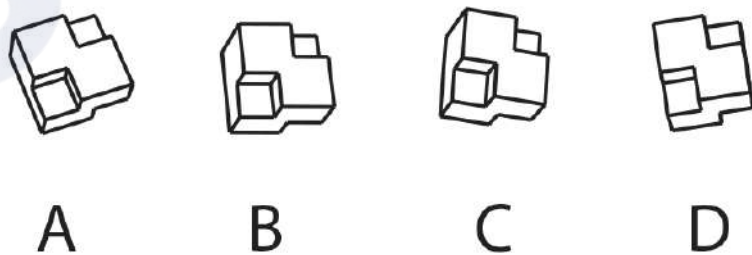


D

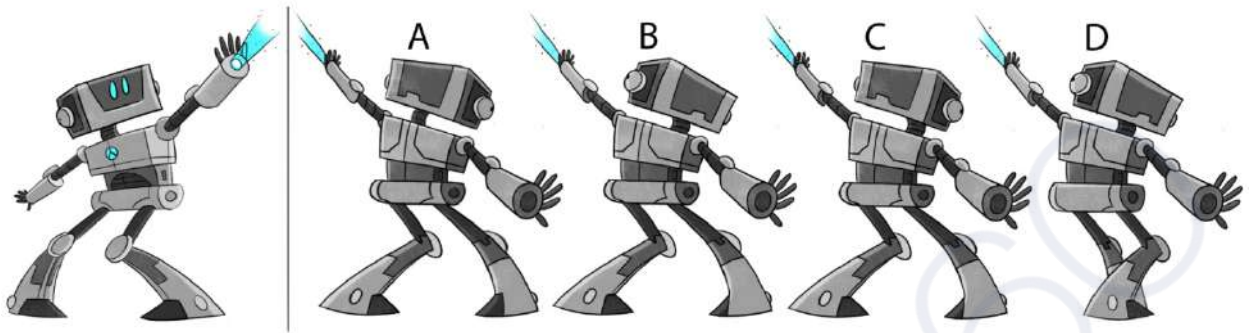
**Q.39** Which option will replace the question mark?



**Q.40** Which option will replace the question mark?



**Q.41** A robot in action is shown in the figure on the left. From the options, identify the same pose of the robot when looking at it from opposite side.



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## Part B

### All questions are mandatory

#### **Q.1 Sketching** (20 marks = 10+10)

Gouri is a fisherwoman from Versova, Mumbai. She sells fish at the same spot everyday on a dusty pavement along the main road. She gets upset and angry when someone takes her spot. She doesn't like it when customers bargain with her. .



Given the character design of Gouri as above, sketch the following:

- 1) Gouri sitting at her spot and impatiently waiting for customers. She uses a towel to chase away the flies; she hates them sitting on the fish. (10 marks)
- 2) Gouri very angry at the customer (Do not draw the customer) (10 marks)

#### **Additional Instructions:**

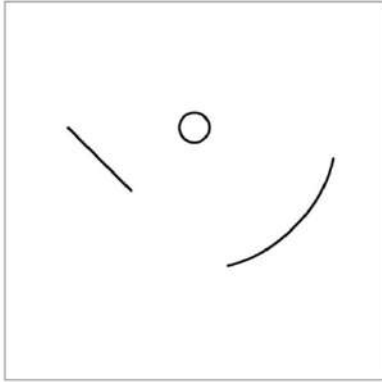
- Make a line drawing using only pencils. Do not use any kind of colour.
- Do not draw the environments.
- Do not use any drawing instrument or straight-edges such as a ruler, compass, set-square etc.

#### **Evaluation criteria:**

1. Ability to keep the character consistent
2. Expression and body gesture of the character
3. Final line quality and finish of the drawing

**Q.2 Creativity** (20 marks = 2x10)

Using the visual elements given in the ten boxes create recognizable objects and give a title to each. Use only BLACK pencil/pen. Draw only within the boundaries of the boxes.



**Evaluation criteria:**

Originality and diversity of ideas, clarity and neatness of sketches

**Q.3 Visual Sensitivity** (20 marks = 4x5)

Create 2D graphic icons for each of the images given below. All icons should belong to the same design language/style. Use only BLACK colour.



**Evaluation criteria:**

1. Consistency
2. Composition
3. 2D form

**Q.4 Form (20 marks)**

Visualize a form for a mixer-grinder body matching the design language of the given Jar.

Sketch and render the body with the jar. Use the same perspective as that of the given Jar.

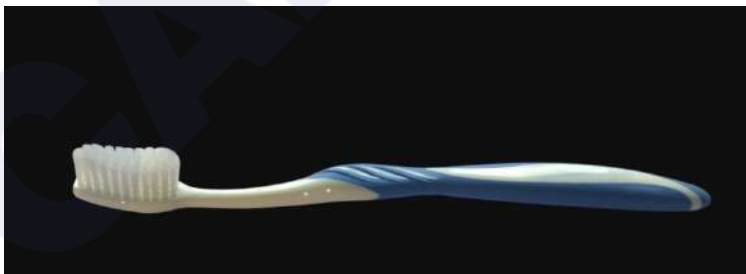


**Evaluation Criteria:**

1. Originality in the form of the body and its proportion
2. Consistency with the form of the jar.
3. Details like buttons, knobs and indicators.
4. Surface shading
5. Quality of line /strokes

**Q.5 Problem identification (20 marks)**

Shown below is the picture of a tooth brush. According to you what are the 6 most important problems that users might face while using such a toothbrush? Illustrate and annotate these problems in the space provided and describe each problem in one sentence. **Do not suggest solutions.**



**Evaluation Criteria:**

1. Quality and diversity of your observation
2. Analytical skills
3. Communication

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Common Entrance Examination for Design

# CEED 2019

Question Paper



Indian Institute of Technology Bombay

## INSTRUCTIONS

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III	Multiple Choice Question (MCQ)	25	2	-0.6	0	50

4. For each NAT question, the answer is a **real number with decimal digits up to two decimal places**. The answer needs to be entered using the virtual keyboard on the monitor. No choices will be shown for these questions. There is no negative or partial marking for NAT questions.
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7. Scribble pads will be provided for rough work for Part A. These have to be returned to the invigilator at the **end of the Part A exam**.
8. Part B carries a total of 100 marks. It contains 8 questions. You may choose to answer any **ONE** of Questions 1, 2, 3, 4 and 5. Questions 6, 7 and 8 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.
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## Part A – Section I: Numerical Answer Type Questions

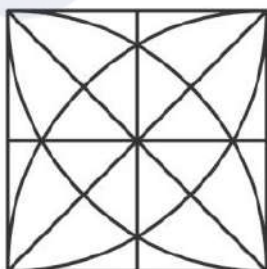
**Q.01** All the four-digit numbers except one is written using a single font. Identify the number that does not use the same font as the other numbers.

5116	4458	1379	5897
5758	4859	7565	8597
3261	9365	6535	5786
8637	1785	7388	2440
9116	1914	7451	1947

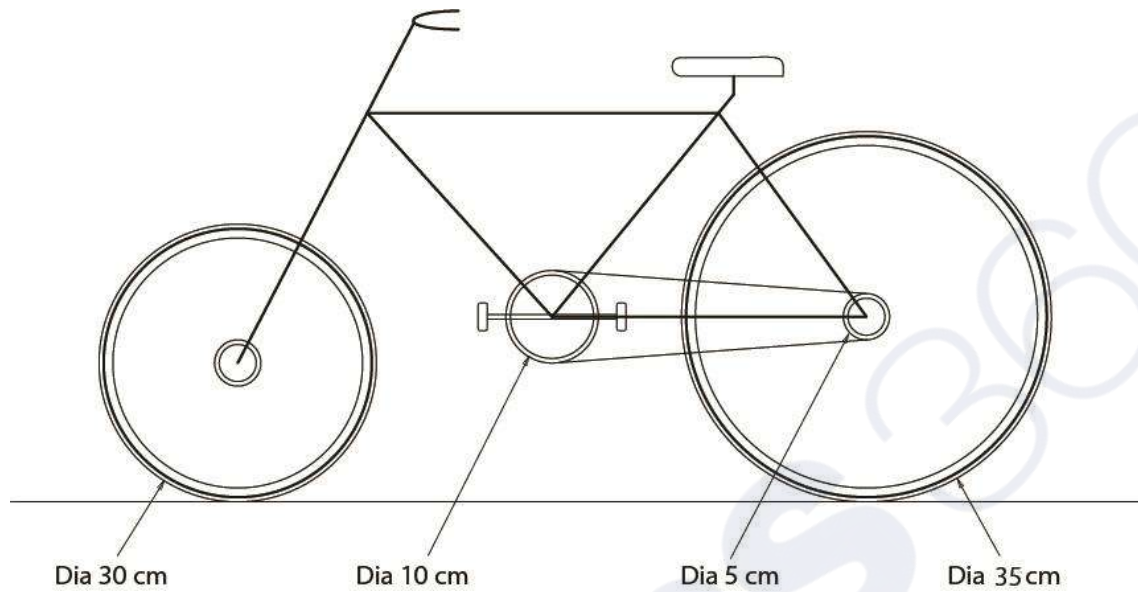
**Q.02** Find the number which will replace the question mark.

2	4	5
1	3	3
5	4	8
1	1	1
3	4	6
2	3	4
5	3	7
4	4	?

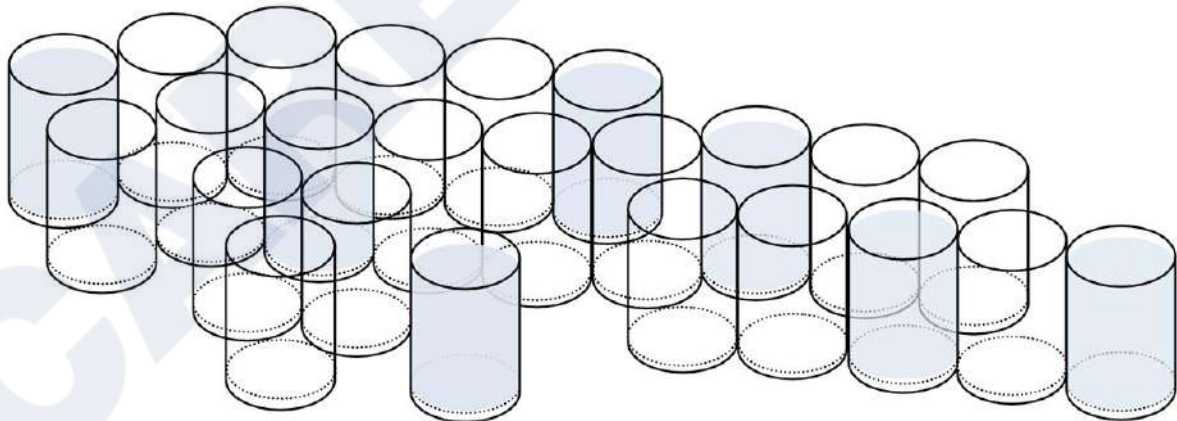
**Q.03** An intersection is a point where two or more lines/curves meet or cross. How many intersections are there in the figure given below?



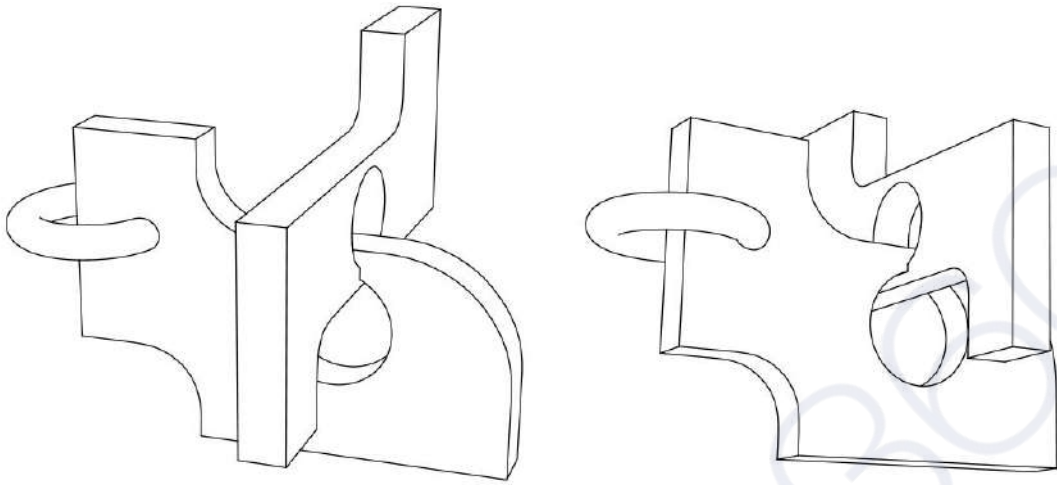
**Q.04** How much distance (in cm) will the bicycle shown below travel, if the pedal makes 1.5 revolutions? (Assume  $\pi = 22/7$ ).



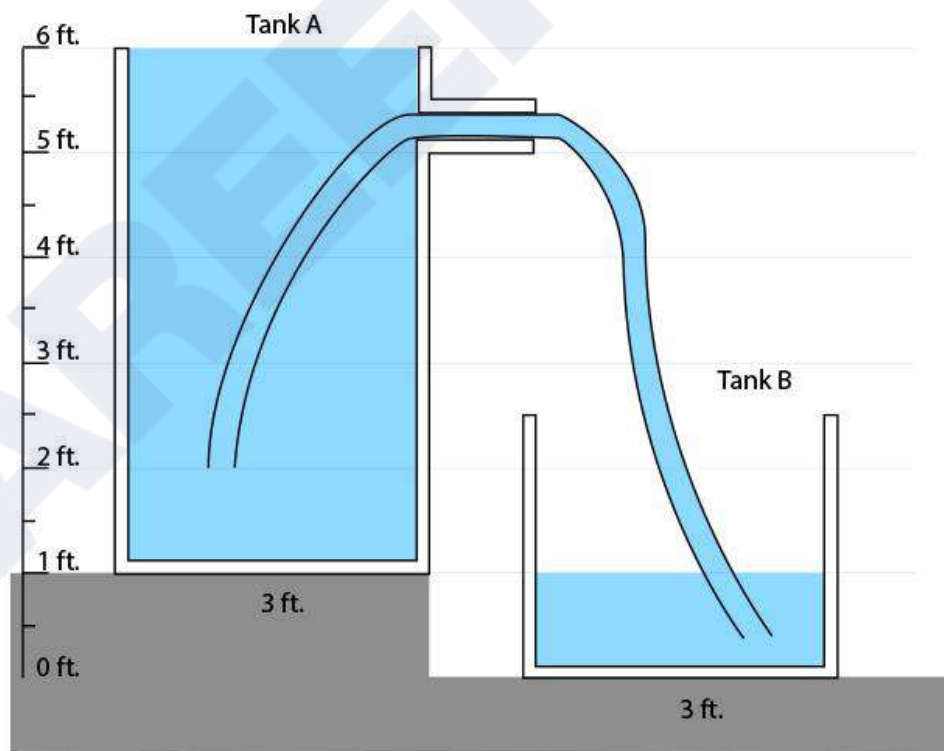
**Q.05** How many glasses will remain empty if you half-fill some of the empty glasses, from the given set of filled glasses?



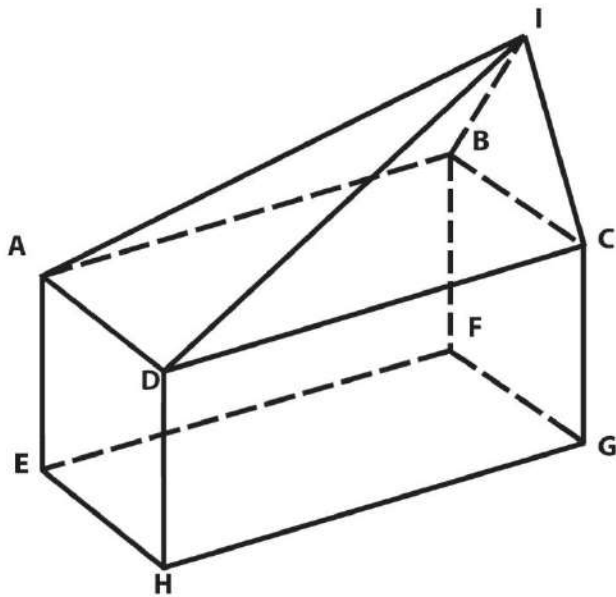
**Q.06** Two perspective views of the same solid object are shown below. How many surfaces does the object contain? Assume hidden surfaces to be flat.



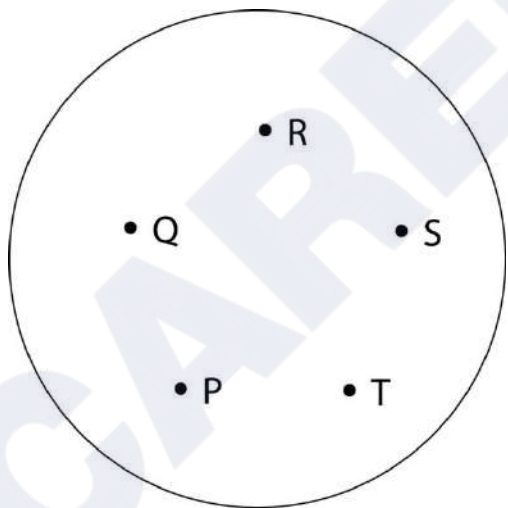
**Q.07** Two water tanks A and B of equal square base of sides 3 feet are shown below. Water flows from tank A to tank B through a tube. What will be the volume (in cubic feet) of water in Tank A when the water stops flowing?



**Q.08** A solid is shown in the figure below. The vertices ABCDEFGH form a  $4\text{ cm} \times 2\text{ cm} \times 2\text{ cm}$  cuboid. The segments AI and DI are both of length 5 cm, and points ICGFB are coplanar. What is the height (in cm) of point I from the base rectangle EFGH?



**Q.09** The figure shows the front view of a convex lens, which originally had only one edge. Five holes of different shapes, namely triangle, square, pentagon, hexagon and circle, were drilled through it at points P, Q, R, S and T in such a way that the holes were parallel to each other, perpendicular to the edge and all the holes were still within the lens edge. What is the total number of edges in the lens after the holes were drilled?



**Q.10** In terms of calories, 20 jamuns and 3 bananas combined are equivalent to one mango and one papaya combined, and 2 mangoes and 5 bananas combined are equivalent to 4 papayas and 80 jamuns combined. Then 8 papayas and 2 mangoes are equivalent to how many bananas?

## Part A – Section II: Multiple Select Questions

**Q.11** A designer has designed a logo. The form is shown on the left and its accompanying text is shown on the right. Which of the following statements about this logo is/are TRUE?



Adgula  
अडगुल

- A. If this logo is printed on an envelope with a 60 DPI dot-matrix printer, such that the total height of the logo is 2 cm, then the logo will retain its original form.
- B. If this logo is printed on a flex sheet with a 720 DPI flex printer such that the total height of the logo is 15 ft, then the logo will retain its original form.
- C. This logo can be reproduced as shown above by using a four colour screen printing process.
- D. The visual properties of the English font match the visual properties of the Hindi font.

**Q.12** Image P shows a portion of a larger photograph. Some operations have been done on that photograph using an image manipulation software. Image Q shows a portion of the resulting photograph. Identify the option(s) that specifies/specify the correct operations.



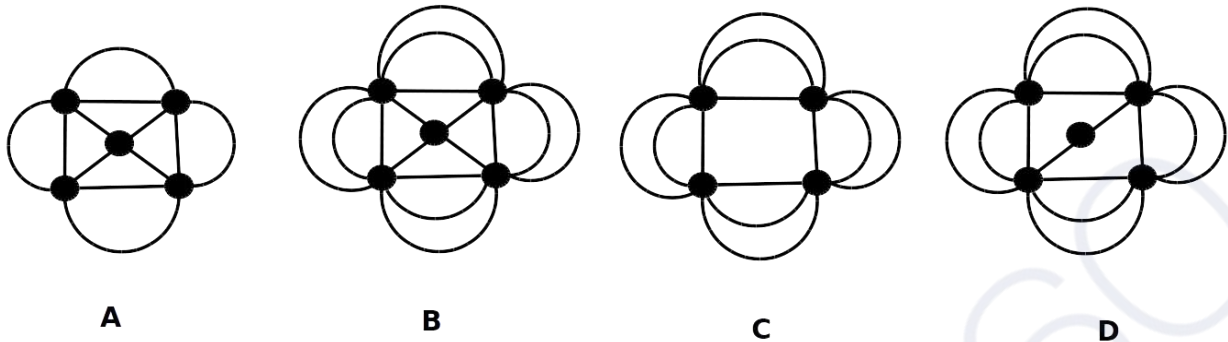
P



Q

- A. Rotate clockwise by 45 degrees, flip horizontally, then rotate clockwise by 90 degrees
- B. Rotate clockwise by 135 degrees, flip horizontally
- C. Rotate clockwise by 135 degrees, flip vertically
- D. Rotate clockwise by 90 degrees, flip horizontally, then rotate clockwise by 45 degrees

**Q.13** If you are asked to draw the following four figures with the following constraints: They must be drawn in a single stroke (without lifting the pen from paper), and each line is drawn only once. Which of the options can be drawn?

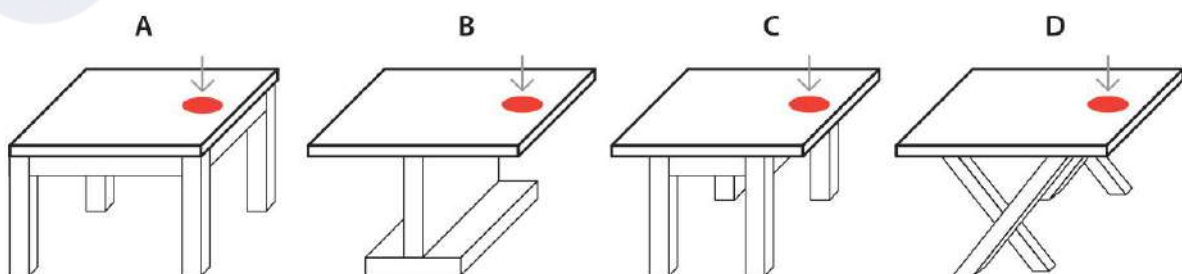


**Q.14** The pie chart shows proportions of income tax paid by a population of eight individuals. Each individual's tax share is shown in a different slice of the pie. Which of the statements can be derived from the chart shown below?

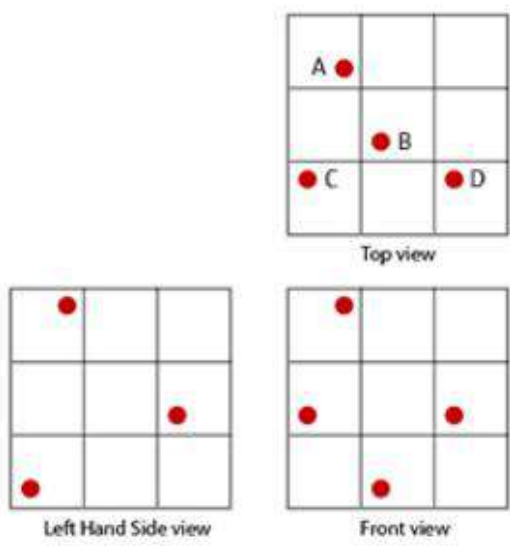


- A. About half the total tax is paid by less than half of the population.
- B. About half the total tax is paid by more than half of the population.
- C. About three-fourth of the tax is paid by three-fourth of the population.
- D. Some individuals paid more than double the taxes as compared to some others.

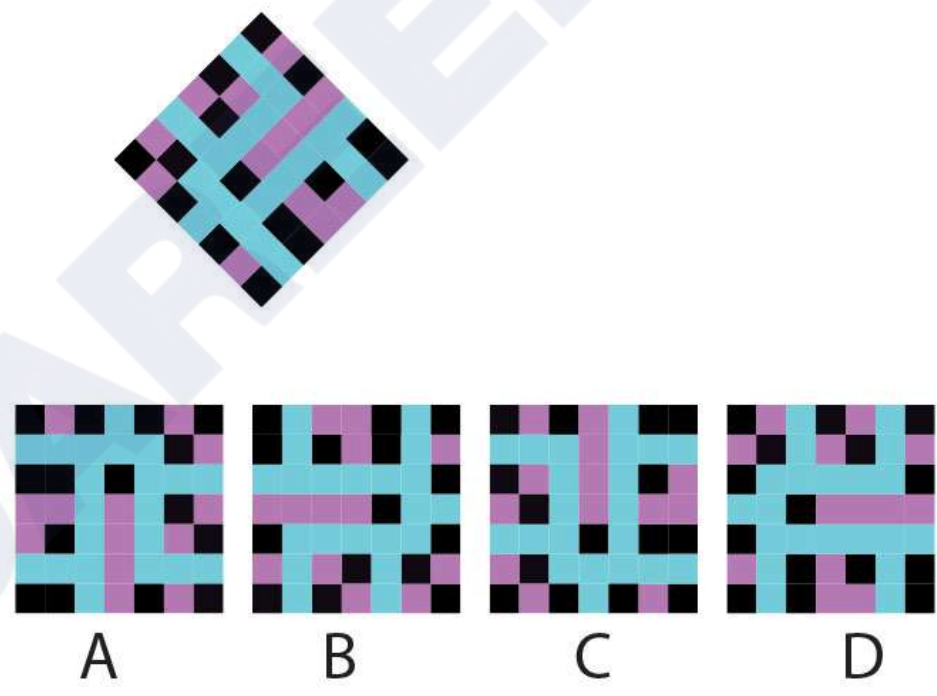
**Q.15** Four square table-tops of the same dimensions are shown below. Only the designs of their supports are different from each other. If a person stands upright on the red mark on each of the table, which of the tables will topple?



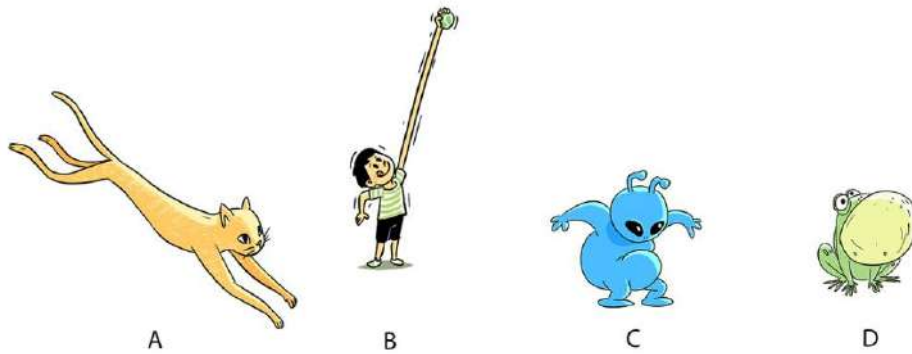
**Q.16** A glass cube with 27 equal compartments is filled with water. There are a few red balls floating inside the compartments. Three views of the cube are shown below. Identify the red ball(s) that is/are represented incorrectly in the top view.



**Q.17** Which of the options is/are simple rotations of the figure given below?



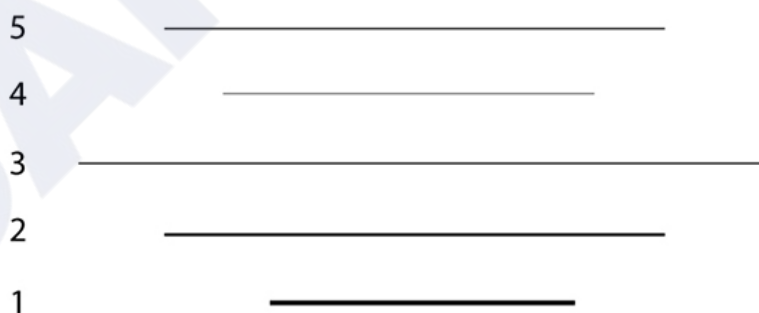
**Q.18** Which of the following drawings illustrate(s) the use of the animation principle of “Squash and Stretch”?



**Q.19** Monitors with different resolutions can be attached to a computer. The computer can also render a video at various resolutions. Assuming that the videos are played at 1:1 resolution, which of the following options is/are TRUE?

- A. Given a video, a monitor with a higher resolution will display it in a smaller size than a monitor with lower resolution.
- B. Given a video, a monitor with a higher resolution will display it in a bigger size than a monitor with lower resolution.
- C. Given a monitor, a video with higher resolution will be visible in a smaller size than a video with a lower resolution.
- D. Given a monitor, a video with higher resolution will be visible in a bigger size than a video with a lower resolution.

**Q.20** If all the lines in the image below are of the same length but of different thickness and are drawn in perspective with respect to their distance from the viewer, which of the following statements will be TRUE?



- A. Line 1 is the thickest line of all
- B. Four lines are of same thickness
- C. Line 2 and line 3 have same thickness
- D. Line 3 is the closest line of all to the viewer

## Part A – Section III: Multiple Choice Questions

Q.21 Identify the correct font used for Parle-G biscuits.

**Parle-G**

A

**Parle-G**

B

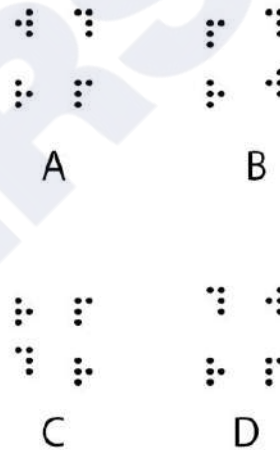
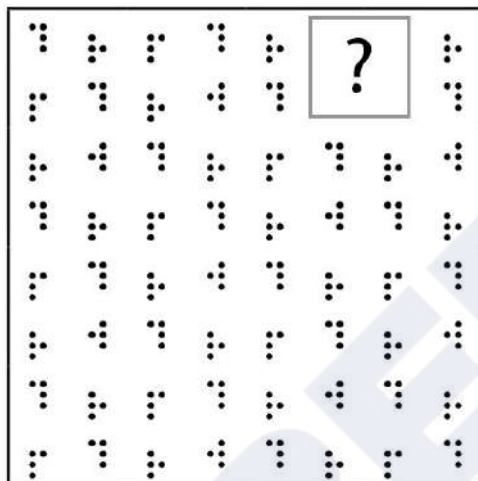
**Parle-G**

C

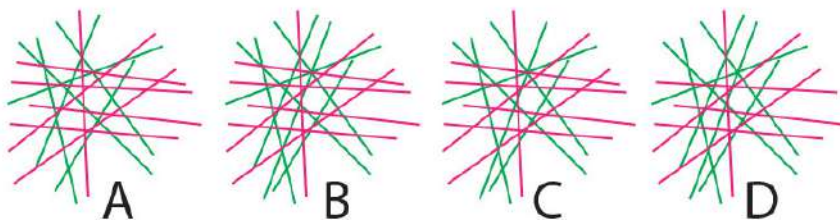
**Parle-G**

D

Q.22 Identify the option that will replace the question mark.



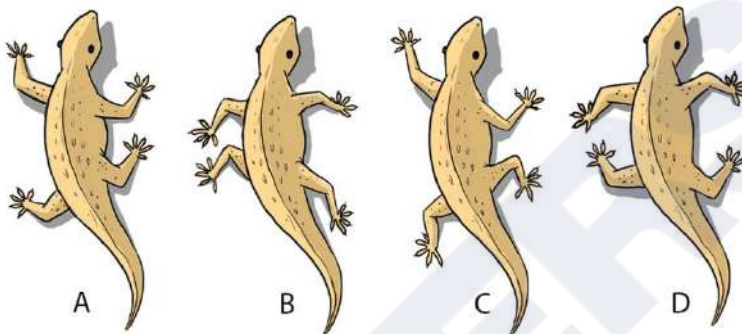
Q.23 Identify the option that will replace the question mark.



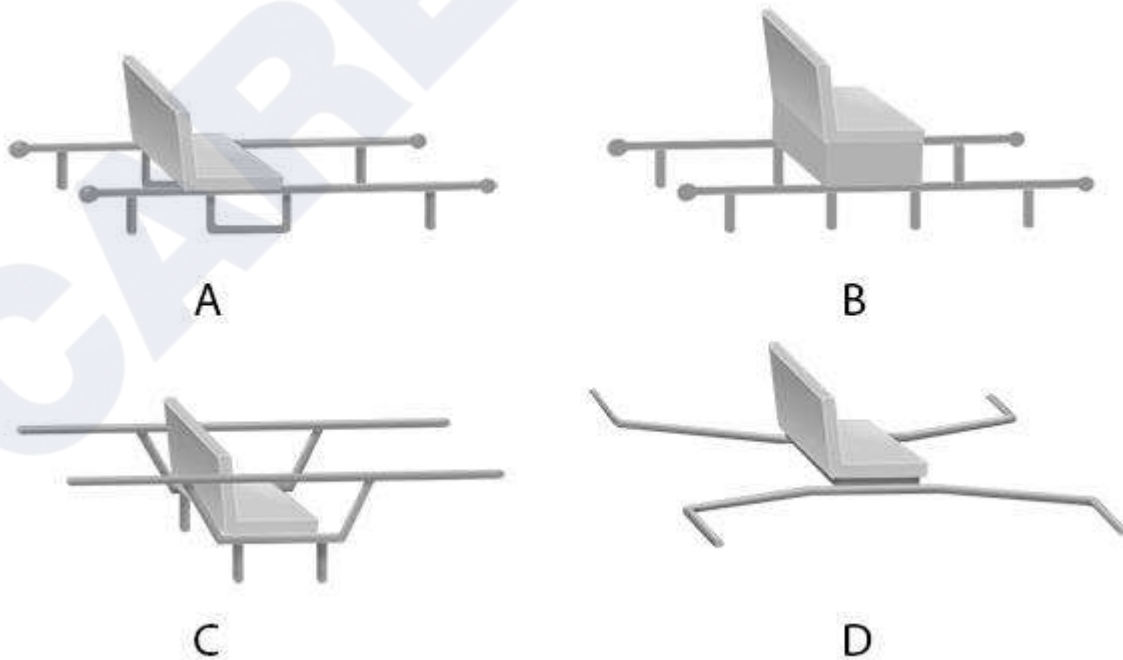
**Q.24** Shahid is feeling very sleepy. He yawns and stretches. Identify the correct image.



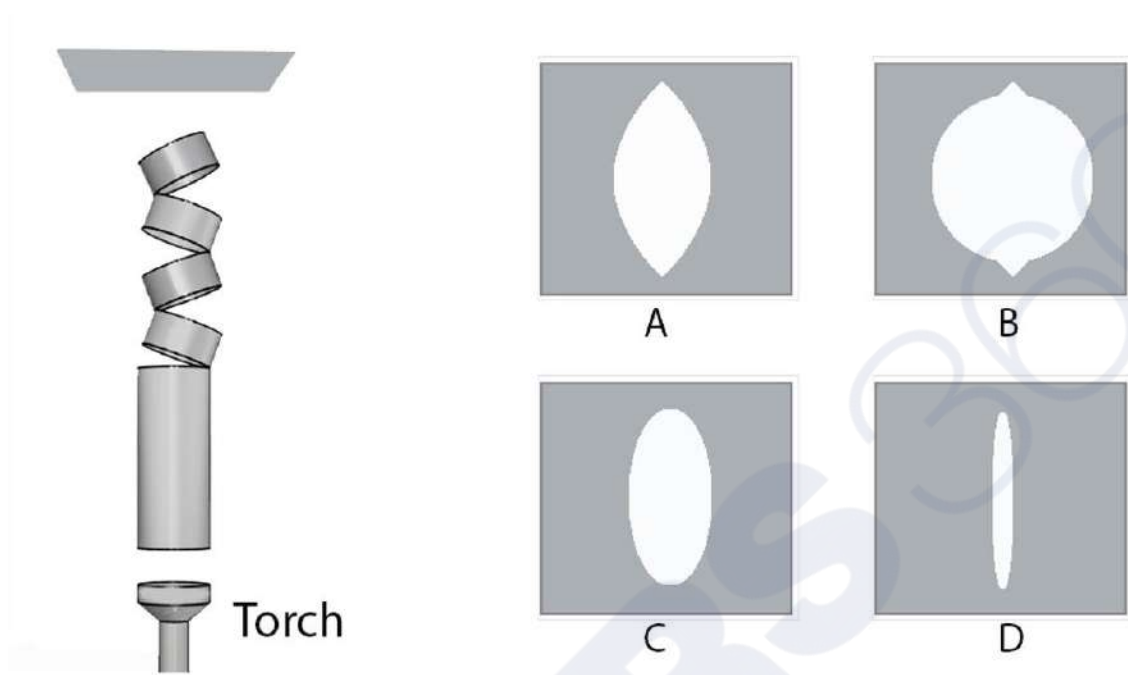
**Q.25** Which is the correct representation of the posture of a house lizard as it climbs a wall?



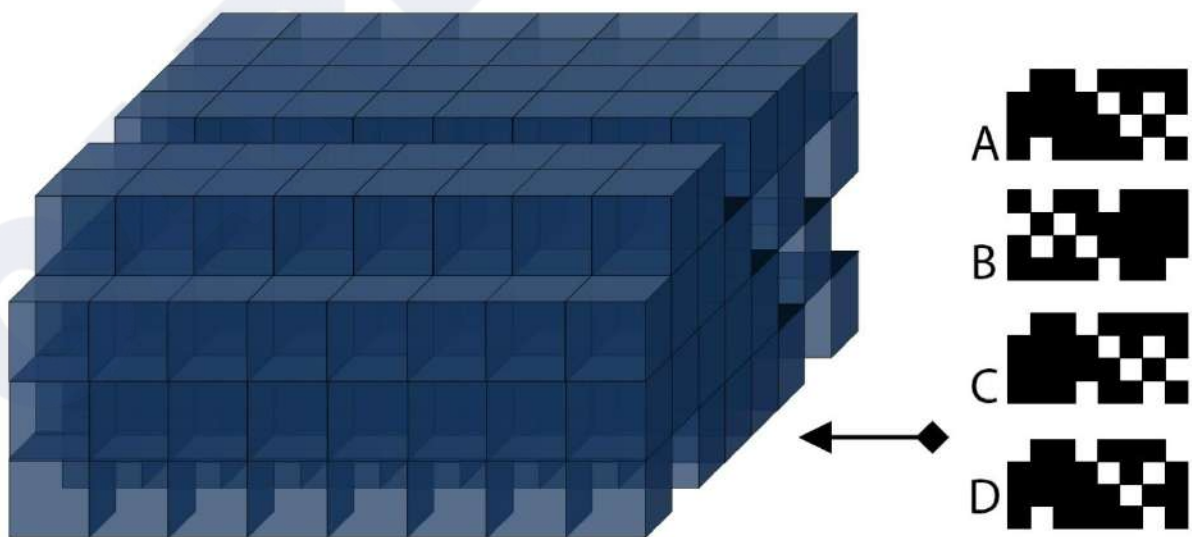
**Q.26** Which of the given configurations of *Palki* (Pallanquin) will work the best for the traveller as well as for the labourers carrying the traveller?



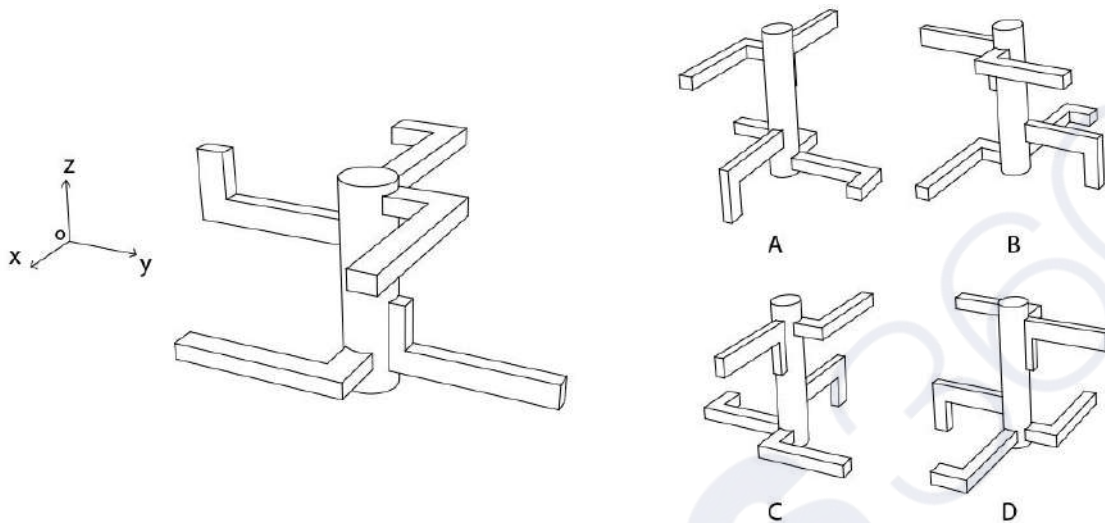
**Q.27** A hollow circular pipe with non-reflective inner surface is cut into 5 pieces and arranged as shown in the figure below. If it is illuminated from below using a torch as shown in the figure, what would be the profile of the light falling on the sheet kept above?



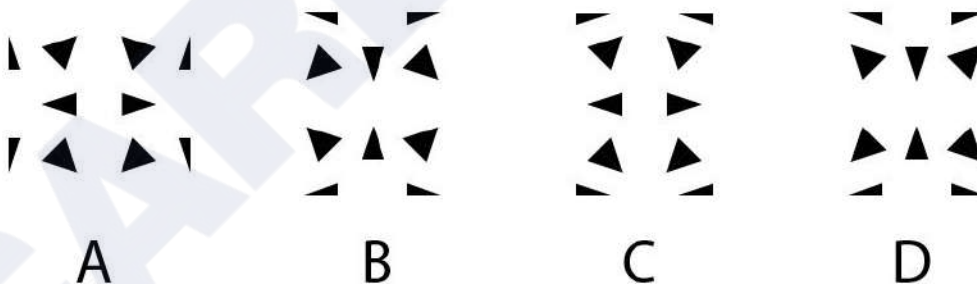
**Q.28** From a 3-dimensional structure made of cubes, eight rows of cubes have been removed as shown below. Select the correct pattern that will emerge from the side shown with an arrow.



**Q.29** Perspective view of an object is shown below. The object is rotated 90 degrees anticlockwise about z-axis (when viewed from a point on the positive z-axis towards the origin) and then rotated 180 degrees about x-axis (when viewed from a point on the positive x-axis towards the origin). Which one of the following perspective view options will be the result of the rotations?



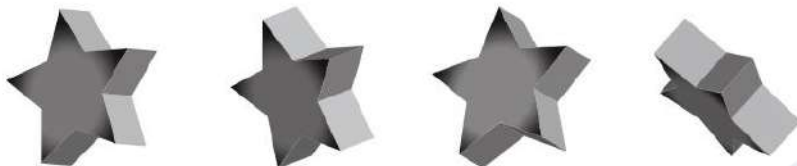
**Q.30** A square paper is folded and cut as shown below. The paper is then used as a template to spray-paint a white wall with black paint. Which pattern would be created using this template?



**Q.31** In a camera, the opening through which light enters the camera is called aperture. The distance between the closest and the farthest part of a view captured on a photograph, which is in focus, is called depth of field. Given that all other settings remain the same, which of the following is TRUE?

- A. The larger the aperture, the larger the depth of field
- B. The smaller the aperture, the larger the depth of field
- C. The depth of field is not affected by the aperture size
- D. Larger the aperture, the larger the image captured

**Q.32** Identify the option that will replace the question mark.

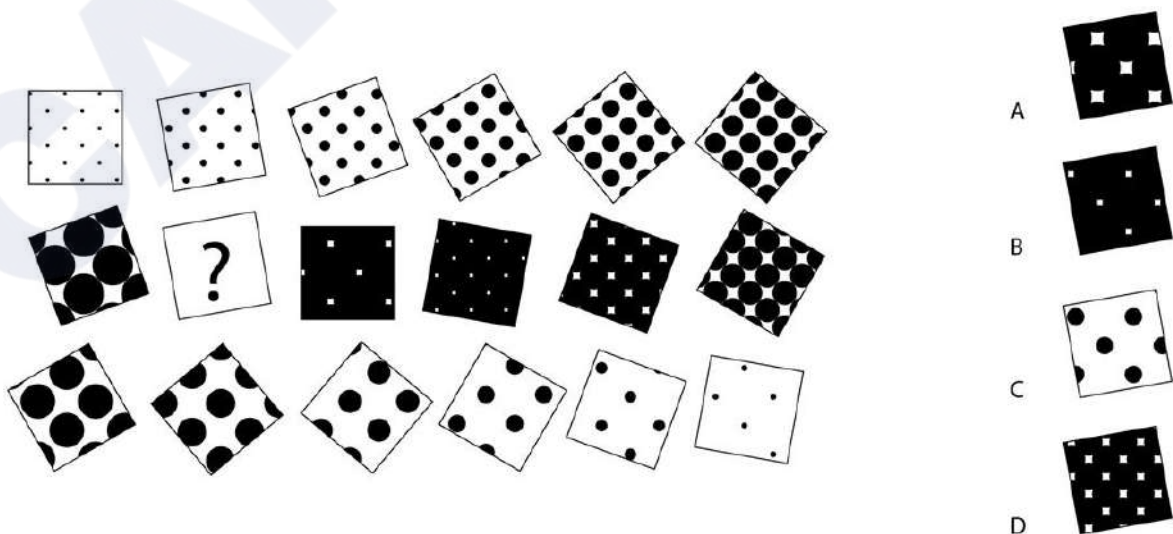


A B C D

**Q.33** A cat is sitting on a wall on the left side of a house. Identify the correct option that shows the cat's point of view as it looks at the house?



**Q.34** Identify the option that will replace the question mark.



**Q.35** Images of traditional products of certain states of India are shown below. Identify the correct set of states to which these belong. Names of the states are in a random sequence. The products are made out of clay, willow/wicker, wood and brass.



- A. Maharashtra, Nagaland, Jammu & Kashmir, Chhattisgarh
- B. Nagaland, Jammu & Kashmir, Chhattisgarh, Andhra Pradesh
- C. Jammu & Kashmir, Kerala, Andhra Pradesh, Haryana
- D. Maharashtra, Kerala, Andhra Pradesh, Haryana

**Q.36** Refer to the following image of a wooden artefact made using traditional manual tools, skills and processes. Identify the correct set of operations required to make it. The operations in the options are in a random order.



- A. Drilling, Chiselling, Casting, Cutting
- B. Chiselling, Milling, Punching, Forming
- C. Drilling, Chiselling, Cutting, Finishing
- D. Finishing, Sanding, Forming, Punching

**Q.37** Refer to the chairs shown below. Which of the following statements is TRUE?



P



Q



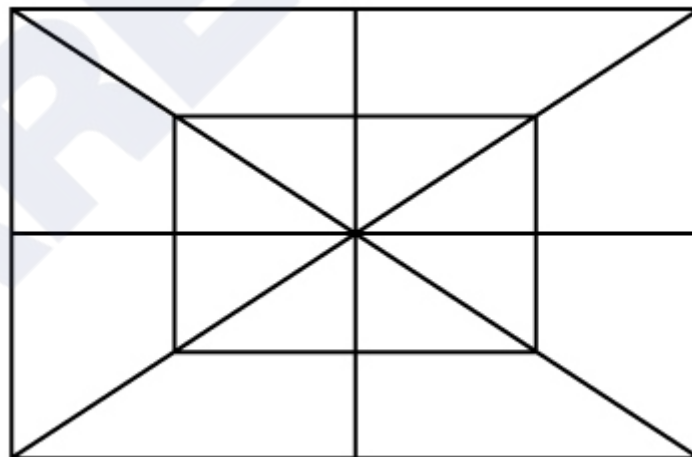
R



S

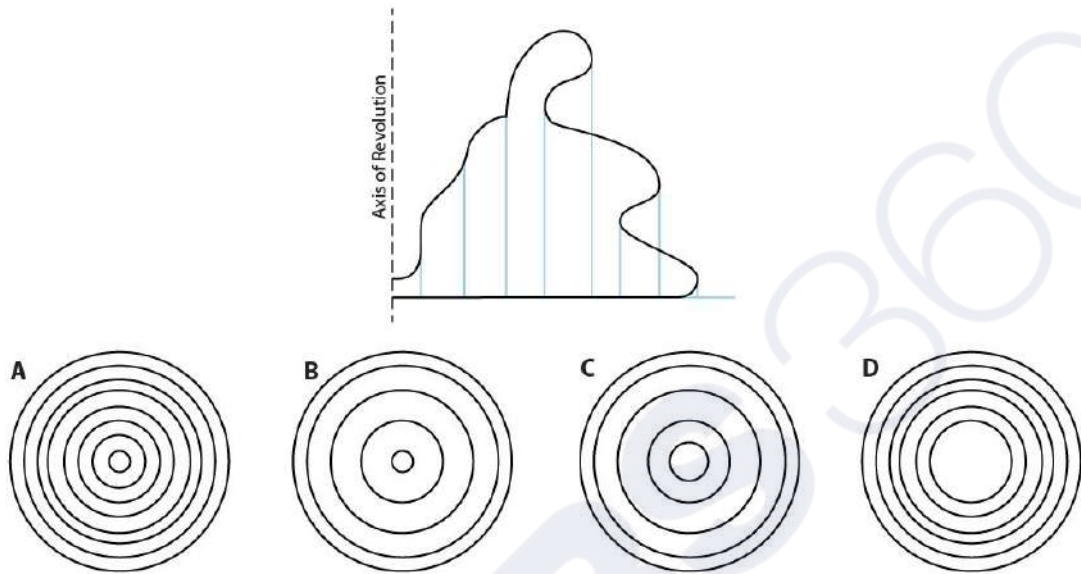
- A. R has deer elements, Q has bird elements, only P has human elements
- B. Only Q has bird elements, R has deer elements, only S and P have human elements
- C. Only Q and S have curved surfaces, Q has bird elements, only S has human elements
- D. R and S have animal elements , Q has bird, only P has human elements

**Q.38** How many right-angled triangles are there in the given image?

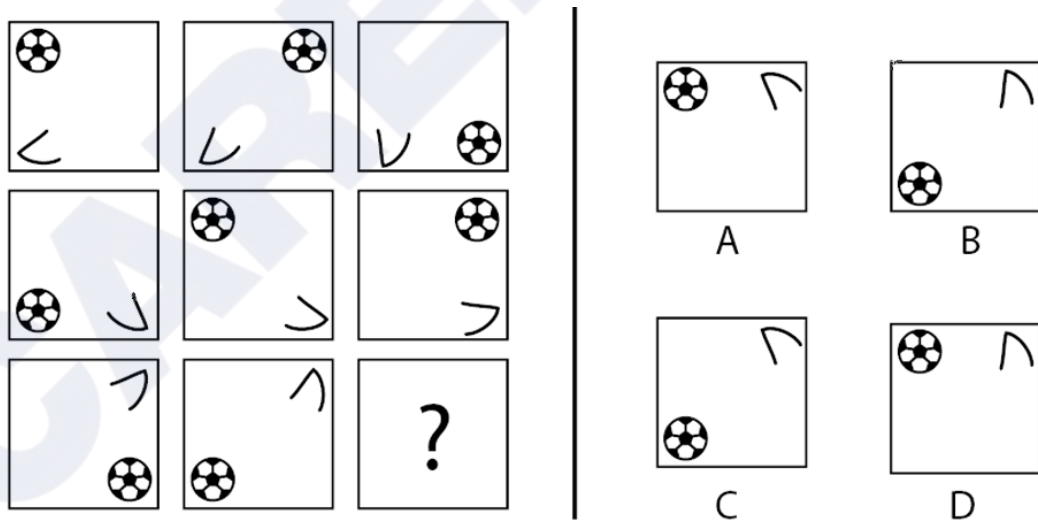


- A. 20
- B. 24
- C. 28
- D. 32

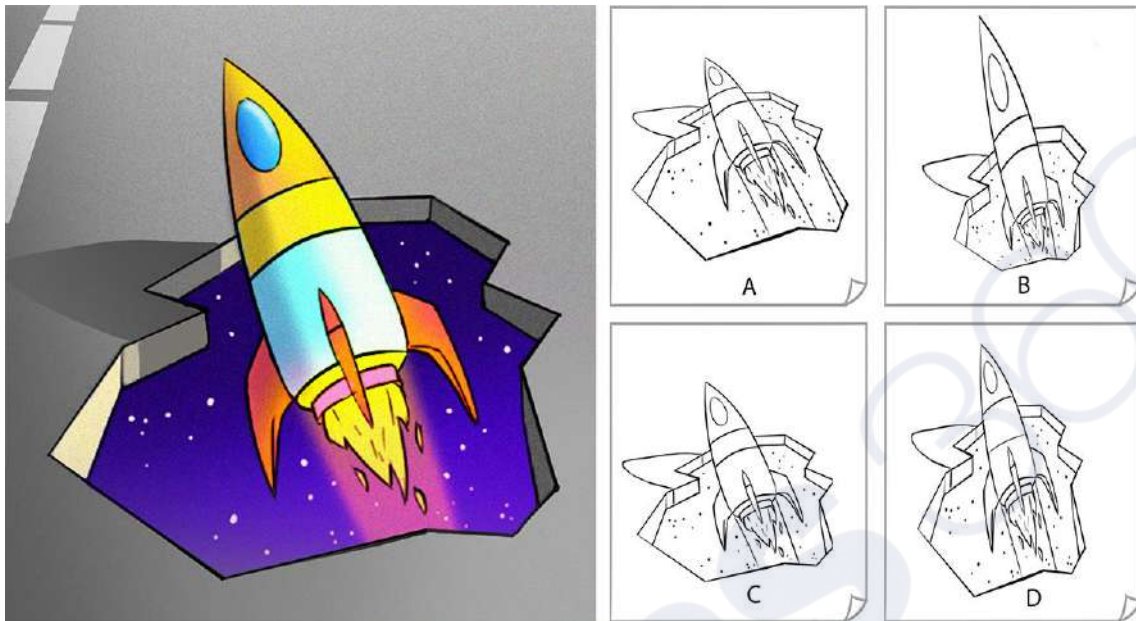
**Q.39** A solid created by rotating a planar-shape about an axis is called a “Surface of Revolution”. The figure below shows a shape and the axis of revolution which is used to create such a solid. Which of the options would be the correct top view of this solid?



**Q.40** Identify the option that will replace the question mark.



**Q.41** A 3D illusion painting is created on a road. Shown on the left is how it appears to a viewer in perspective. If this illusion has to be sketched on paper, before it is painted, which one of the options on the right would be correct?



**Q.42** Fill in the blanks to keep the sentence grammatically correct as well as meaningful.

..... the facts, she proceeded with her decision, finally ending up with a ..... situation.

- A. Nevertheless, happy
- B. Apparently, initially
- C. However, noteworthy
- D. Notwithstanding, sad

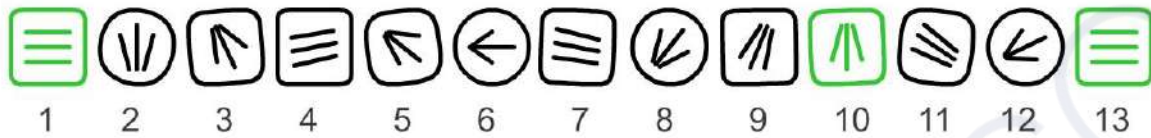
**Q.43** Match the following.

1.				
2.				
3.				
4.				

P. Complementary  
 Q. Spectrum  
 R. Cool  
 S. Harmony

1Q, 2S, 3R, 4P      1Q, 2R, 3S, 4P      1R, 2P, 3Q, 4S      1P, 2R, 3S, 4Q  
 A                      B                      C                      D

**Q.44** A micro-interaction has been designed for a 'menu' icon. On clicking this icon, it changes into a different icon representing 'back', depicted by an arrow. On another click it changes back to the menu icon. Shown below are 13 key-frames of this animation. Their order is incorrect, but the ones in green are in the correct position. Identify the correct order of this animation.



- A. 1, 7, 11, 2, 12, 8, 6, 3, 5, 10, 9, 4, 13
- B. 1, 4, 9, 3, 5, 6, 12, 8, 2, 10, 11, 7, 13
- C. 1, 7, 11, 2, 8, 12, 6, 5, 3, 10, 9, 4, 13
- D. 1, 4, 9, 3, 5, 6, 8, 12, 2, 10, 11, 7, 13

**Q.45** Imagine a possibility of an emergency evacuation scenario in a domestic household in India. The height at which the inside latch of the exit-door should be installed is to be finalised. It is required to disallow opening of the door accidentally by children. Which option will determine the height at which the latch should be fixed? Assume the height of the tallest child is lower than that of the shortest adult.

- A. The height of the tallest adult in the family.
- B. The height of the shortest adult in the family.
- C. The average height of the child in the family.
- D. The average height of the tallest adult male and tallest adult female.

## Part B

Answer **ANY ONE** question out of the question numbers 1, 2, 3, 4, and 5. (40 marks)

### **Q.1 Industrial Design**

During the monsoon season, drying of washed clothes at home takes a long time. The interior of the house is usually very damp. It is observed that people tend to spread the wet clothes on a chair or other furniture below a ceiling fan, to dry them. Such temporary arrangements help them cope with the problem.

A leading fan manufacturing company sees a business opportunity. The company approaches you to design a product for drying clothes. The manufacturer proposes to sell this product (which is to be used during monsoons) along with a fan.

The manufacturer wants the following objectives to be met in the design:

- a) The product uses a fan for drying clothes.
- b) The fan must be integrated with the product during its use in rainy season and must be usable as a “normal fan” during other seasons.
- c) The product should be foldable and compact for storage.

Design the product as per the objectives listed above.

1. Present three ideas of design alternatives through rough sketches. (10 marks)  
**Evaluation Criteria:** Quality of creative ideas and neatness of sketches.
2. List ten critical factors (key words only) you will consider for designing. (10 marks)  
**Evaluation Criteria:** Understanding of the situation and product use.
3. Select one of your ideas and develop it into a final product. Make a neat sketch of the same. Indicate all the parts, material and features on this sketch. (20 marks)  
**Evaluation Criteria:** Sketching quality, details, product features and usability issues.

Answer **ANY ONE** question out of the question numbers 1, 2, 3, 4, and 5. (40 marks)

### **Q.2 Communication Design**

Cricket is a popular sport in India. The 12th Cricket World Cup tournament is to be held in England and Wales in 2019. India has already been a champion twice. To win the tournament for a third time, the team needs the support and wishes of a billion Indians.

Design a visual campaign for the Indian cricket team to gather support and encouragement from Indians. As part of the campaign, design a 30 feet x 20 feet hoarding to be placed at prominent locations in various cities and towns.

#### **Task:**

1. Through sketches present three completely different concepts/ideas. (10 marks)  
**Evaluation criteria:** Originality and diversity of ideas, creativity, understanding of scale and proportion.
2. Design three slogans for the campaign in English or in any Indian language (with a mention of the language used). (10 marks)  
**Evaluation criteria:** Clarity of message and literary creativity.
3. Make a detailed design of one hoarding with slogan. (20 marks)  
**Evaluation criteria:** Visualisation, quality of lines, composition, colour combinations and detailing.

Answer **ANY ONE** question out of the question numbers 1, 2, 3, 4, and 5. (40 marks)

### Q.3 Animation Design

An animation film for children is in the pre-production stage. The film is based on the relationship that develops between a baby and a dog as the baby grows up and the dog gets old. Given below is one scene from the film.

The scene begins with a shot of a dog observing a baby. The baby is hungry and crying.

Suddenly the baby sees something and stops.

On a table, is the baby's milk bottle (and other stuff).

Baby crawls towards the table followed by the curious dog.

The baby reaches out and manages to grab a corner of the table cloth and starts pulling.

The dog's expression changes to one of alarm, as he sees the stuff on the table moving towards the edge.

He leaps forward and grabs the end of the baby's diaper.

Just as the bottle and the other items start toppling over the edge, he pulls the baby away from danger.

The baby is safe, but everything falls on the poor dog.

The mother's scream is heard, "Tommy!! BAD DOG!!" and the dog is seen sheepishly peeping out from under the table cloth, with all the mess around him.

#### Part 1 (30 marks)

Illustrate (create storyboard of) the above shots as a series of picture frames (at least 10 frames).

You may use more than one frame per shot if you want to. Approximate shape of the frame is shown below.

**Note:** *The image of the frame did not appear on screen during the examination. Therefore, frames of any proportion will be considered for evaluation.*

**Evaluation Criteria:** Communication of the narrative through the sequential pictures, shot composition (long shot, close up, top angle, low angle, etc.) and perspective.

#### Part 2 (10 marks)

Design an image for the poster of the film showing the two characters – the baby and the dog. Your drawings should depict the character and the essence of the film so that it is a good reference for animation and an inspiring image for the animation team.

**Evaluation criteria:** Illustration skills, the attitude and the expressions, and design of the details in the characters (keeping in mind that this will be used for animation). Your style can be realistic or stylised.

Answer **ANY ONE** question out of the question numbers 1, 2, 3, 4, and 5. (40 marks)

#### Q.4 Interaction Design

A bicycle manufacturing company has developed a device that will help cyclists find routes and navigate. The device has a colour-display screen (not a touch screen), 7 physical buttons, a speaker, a microphone, a global positioning system (GPS), and a wireless internet connection. The device is water-proof and the display is bright enough to be readable in bright sunlight. The battery of the device gets charged as the cyclist rides the bicycle.

Design a version of this device to be mounted on bicycles for 12 year old children. Your task is to do the following:

- Create a storyboard in 5 steps showing the user interface that enables the user to specify a new destination that he/she has not been to previously. (10 marks)  
**Evaluation criteria:** Appropriateness of the user interface, integration of the hardware and the software and appropriate use of media.
- Present a detailed screenshot showing the information design that helps the user to navigate while riding the bicycle. (10 marks)  
**Evaluation criteria:** Originality, appropriateness of the information design and appropriate use of media.
- Illustrate the shape, size, and position of the screen, the 7 buttons, the speaker, the microphone, and the place where the device will be mounted on the bicycle. (10 marks)  
**Evaluation criteria:** Form, originality and rendering quality.
- Illustrate a scenario in which the device is used for purposes other than the one mentioned above. (10 marks)  
**Evaluation criteria:** Originality, ability to understand the needs and constraints of the users.

Answer **ANY ONE** question out of the question numbers 1, 2, 3, 4, and 5. (40 marks)

### Q.5 Mobility and Vehicle Design

There are many local innovative transportation solutions that mostly operate in rural India. These vehicles are flexible to carry large number of people, smaller machine equipments, agro-machinery and even livestock like cattle, goat, etc. These transport systems are neither safe nor comfortable but are indispensable in rural scenarios. At times, these are the only modes of transportation available.

You are expected to think about the context, the target users (needs and expectations), and the purpose of the vehicle, along with aesthetic and safety considerations. Your observations and insights should lead to the development of original solutions. You are free to choose one concept over others, develop the final rendering and detail the key features of the final concept.

#### Task:

Design a **context sensitive, safe, workable and pleasing 4-wheeler vehicle** for hilly regions that fulfils the following criteria:

- a) Carrying capacity of at least 6 passengers, including the driver.
- b) Has a convertible space that can be used to carry at least 1 cattle/small machine/milk cans/fuel drums and a tool kit. If no goods are transported, the space can also be used to take passengers.
- c) Provides protection with respect to weather conditions (such as sunshades).
- d) Has provisions for easy maintenance.

Present your design proposal as follows:

- Create concept explorations through four good quality design sketches that represent unique design insights. (10 Marks)  
**Evaluation criteria:** Context-sensitivity, identification of problems and challenges, ability to showcase unique design insights, ability to sketch and creation of exploratory concepts.
- Draw a neat freehand perspective sketch of the proposed vehicle concept showing the overall form and its features. (10 marks)  
**Evaluation criteria:** Ability to sketch an automobile in perspective and detail out the final concept.
- Draw a neat rendering of the side elevation of the final concept. (10 marks)  
**Evaluation criteria:** Scale, proportion, neatness of the sketch and ability to make a rendering
- Draw an interior sketch highlighting design details and material finishes. (10 marks)  
**Evaluation criteria:** Ability to communicate details through sketch and rendering of material finishes.

Mandatory question (Question 6. in the Answer Booklet)

**Q.6 Sketching** (20 marks)

Draw a perspective view of a kitchen interior with a stove, kitchen utensils (such as pressure cooker, cooking pans, sauce pans etc.), dining utensils (such as ceramic plates, cups, glasses etc.), a wash basin, storage racks with stored cooking ingredients (such as spices in small plastic bottles), fresh cut vegetables kept beside the stove and at least two kitchen gadgets.

Make a **freehand perspective drawing** of this setup, showing all the elements listed above, as seen from the point of view of a 5 ½ feet tall person.

**Evaluation criteria:**

- a) Quality of composition.
- b) Observation and drawing skills.
- c) Sense of perspective.
- d) Scale and relative proportions.
- e) Use of light, shade and surface finish.

**Note:**

- Use only pencils.
- Do not use any drawing instrument such as a ruler, compass, set-square etc.
- Do not use any kind of colour.

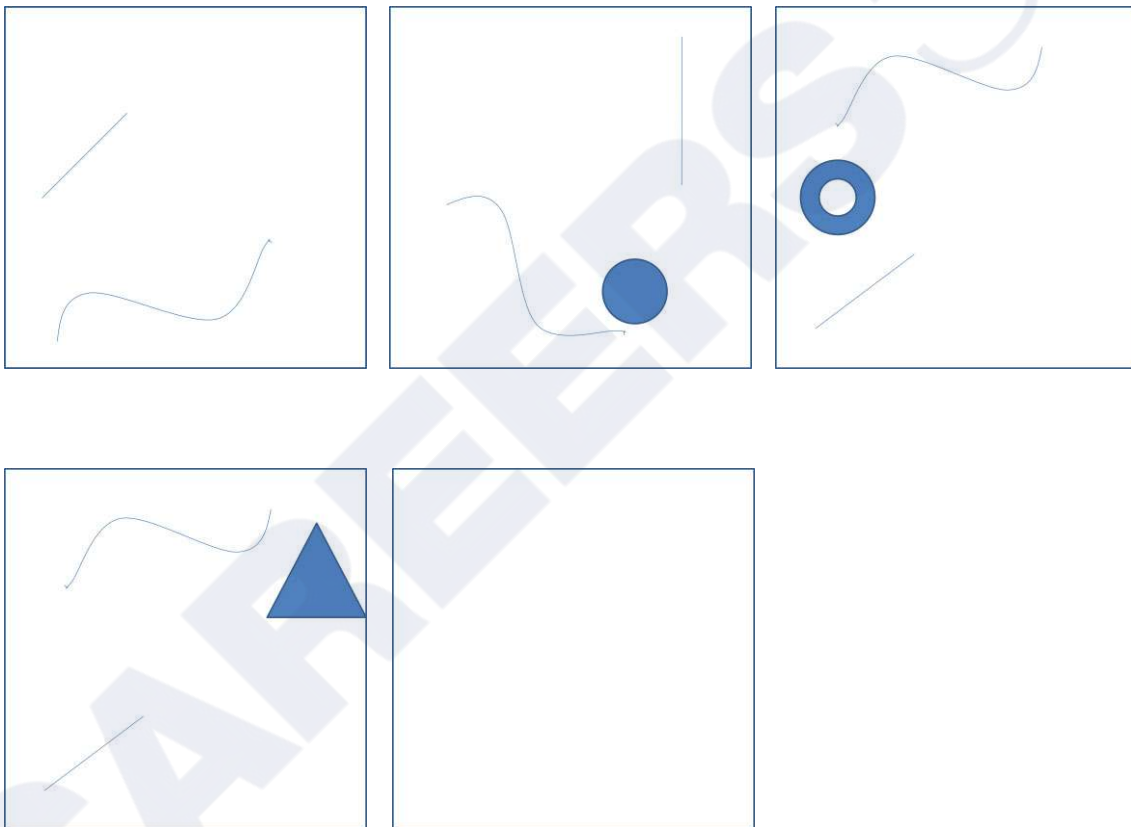
Mandatory question (Question 7. in the Answer Booklet)

**Q.7 Creativity** (20 marks)

Imagination is the power of the mind. Some visual elements can come together to create a bigger picture. Observe the visual elements that you see in the boxes provided in your answer booklet.

Complete the visual elements based on your imagination. It may be a character, a product, a landscape, etc. Using the given elements complete the first four frames to reflect what you imagined. Choose ANY THREE ELEMENTS given in the first four frames, and complete the fifth frame. Sketch only within the boundaries of the boxes.

**Evaluation criteria:** Originality and diversity of your ideas, clarity and neatness of your sketches.  
(4 marks for each frame)



Mandatory question (Question 8. in the Answer Booklet)

**Q.8 Visualization** (20 marks)

Shown below is a part of a “S shaped motif”. Dotted lines indicate the incomplete part of the motif. Visualize the remaining motif and draw the complete motif with a height of 15 cm. DO NOT draw the dotted lines.

**Evaluation criteria:**

- Faithful reproduction of the given part of the motif in the required size. (5 Marks)
- Consistency with the existing visual language, harmony, and balance in the imagined part of the motif. (10 Marks)
- Rendering quality of the final form. (5 Marks)

