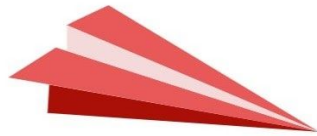


UCEED 2020 Sample Paper 2

Prepared by



enJEEneering

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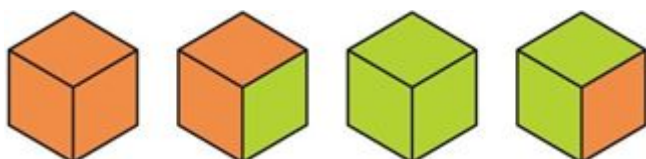
PART A

Time: 2hr. 30 min.

Section A: Numerical Answer Type Questions

Section A (72 Marks) contains a total of 18 Numerical Answer Type (NAT) questions. For each question, the answer is a real number that needs to be entered using the virtual keyboard on the monitor. No choices will be shown for these questions. There is NO NEGATIVE marking for this section. Each correct answer will be awarded 4 marks. Questions not attempted or answered incorrectly will be given zero marks. Questions from 1 to 18 belong to this section.

Q1. A 12cm x 12cm x 12cm wooden cube is painted and its four views are shown below. This cube is sliced into 64 smaller equal sized cubes of 3cm x 3cm x 3cm. How many of these small cubes will have exactly one green face and exactly one orange face in the same cube?



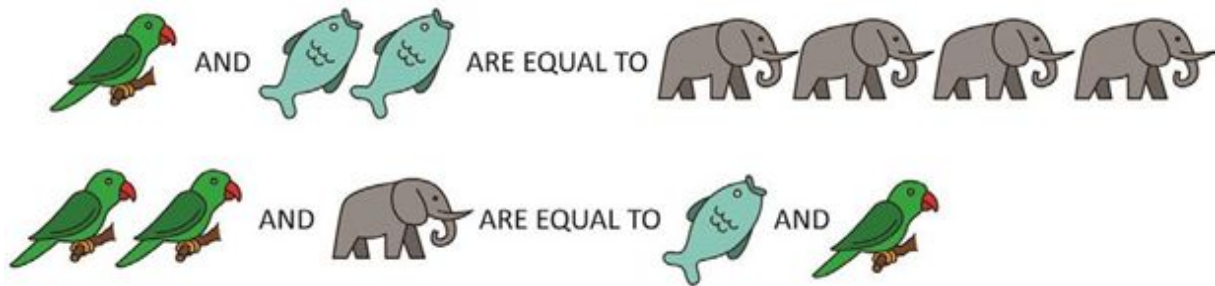
Q2. Shown below are pieces of a regular polygon. How many sides does the polygon have?



Q3. How many fonts are used in the given set of words?

मुनिः सर्वदा सर्वेषां विषये उत्तमम् एव
चिन्तयन् अभयप्रदानं कुर्वन् सञ्चरति।
तस्य अन्यस्मात् कस्मात् अपि भयं न
भवति। यत् भावयति तत् भवति।

Q4. Given the following equation, how many parrots are equal to one elephant?



Q5. Shown below in figure 1 is a layout of a chess board with one knight and several pawns. Given that the knight cannot land on any square that has a pawn, but can jump over it, the pawns cannot move, and the knight moves on a chess board as shown in figure 2, what is the least number of steps required for the knight to reach square x?

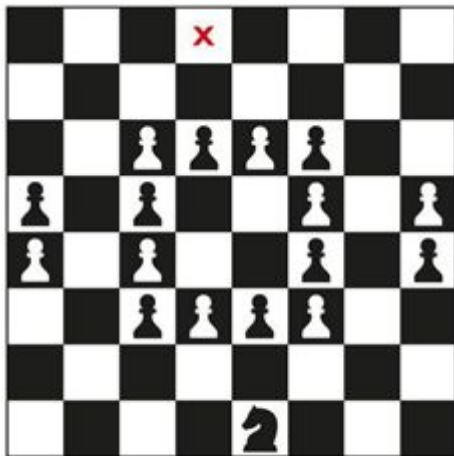


Figure 1

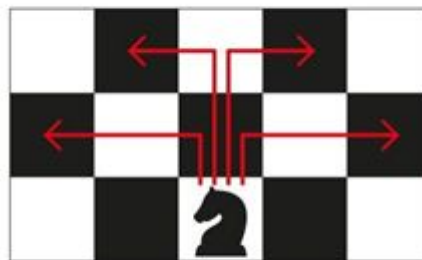


Figure 2

Q6. Figure 1 has been constructed by overlapping some alphabets. Assuming the alphabets may be rotated, how many alphabets from figure 2 cannot be overlapped to fit within figure 1?



Figure 1



Figure 2

Q7. Figure 1 is an image composed of partial circles. Some cuts in the circles form the corners of triangles as shown in Figure 2. What is the total number of triangles whose three corners are formed by three circles?



Figure 1

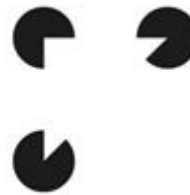


Figure 2

Q8. Shown below is a quadrant of a disc with cut-outs. Find the total number of cut-outs in the complete disc.



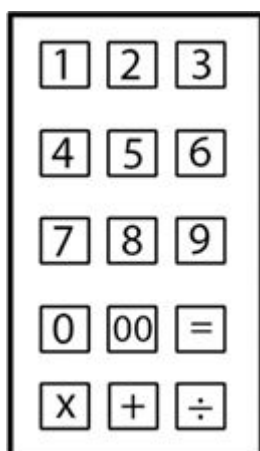
Q9. Two friends, one on a bike and the other in a car, arrive together at a parking lot. The chance that the one in the car will find a parking space is 0.1, and the one on the bike not finding a parking space is 0.1. What is the probability that only one of them finds a parking space?

Q10. There are a host of HTTP codes which communicate different server messages: 404 for “not found”, 403 for “forbidden” and so on. Recently there has been a proposal to assign a code for “censored/censorship” in honour of the author Ray Bradbury. What is the proposed code?

Q11. Count the number of people in this picture who are wearing spectacles.



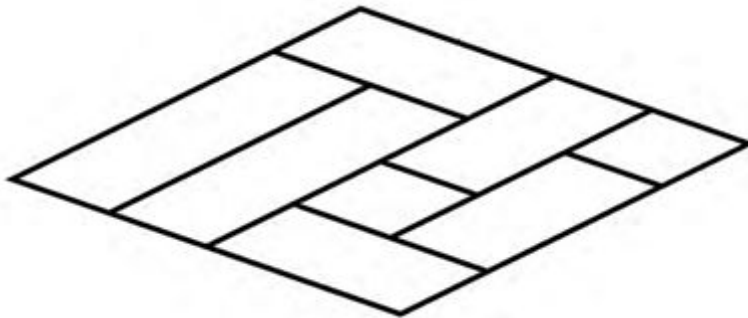
Q12. You have been given a calculator that looks as in the image below. Given that you are allowed a total of only 6 key entries of which you MUST use at least one key entry for an operator and another key entry for the 'equals to' symbol, what is the largest number you can calculate?



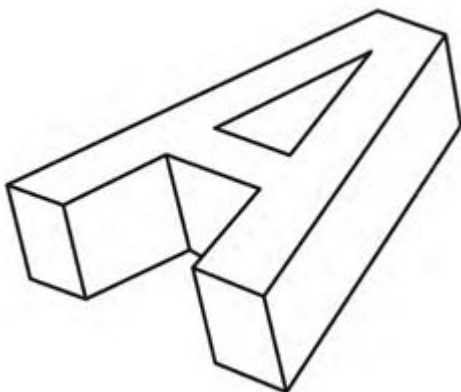
Q13. Count the number of fonts used in the given set of words.

amazing discussion worried sampled entrance
happily demarcate **deployed** canine metal
relinquish estate **wavelength** cautiously
temporary lavender sandalwood workable
transfer patient karmic safety fantastic
encourage delightful greetings achievement.

Q14. Count the total number of parallelograms in the given figure.

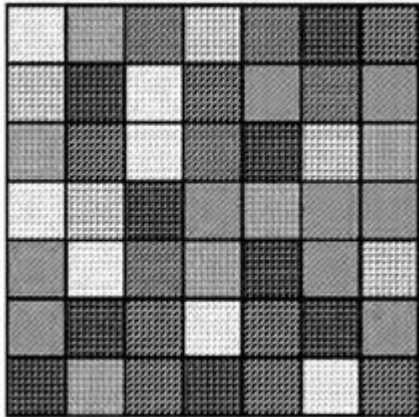


Q15. Imagine letters are extruded into three dimensional objects, as shown in the figure on the left (the letter A). If the word LOVE (shown on the right) were to be extruded, how many surfaces would it have?



LOVE

Q16. Count the number of unique patterns in the given grid.



Q17. In photography, f-numbers represent lens aperture. Write the missing f-number in the sequence below.

f/2.8, f/3.2, f/3.5, f/_, f/4.5, f/5.0, f/5.6

Q18. Given below are eight pieces of a puzzle. Arranged correctly they form a four digit number. What is the number formed after the correct arrangement?



Section B: Multiple Select Questions

Section B (72 Marks) contains a total of 18 Multiple Select Questions (MSQ). Each question may have one or more than one correct choice(s) out of the four given. A candidate gets 4 marks only if ALL the correct choices and NO wrong choices are selected for each question. There is NO PARTIAL marking and -0.19 Negative marking for this section. Questions not attempted or with incorrect or incomplete answers will be given zero marks. Questions from 19 to 36 belong to this section

Q19. Select the artwork(s) which is/are attributed to Leonardo Da Vinci:



A



B



C

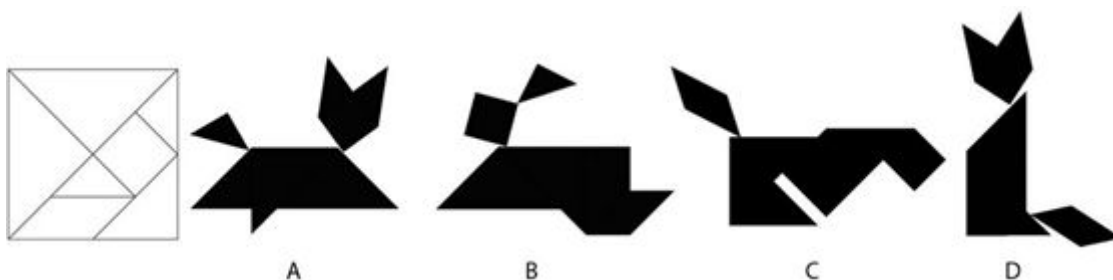


D

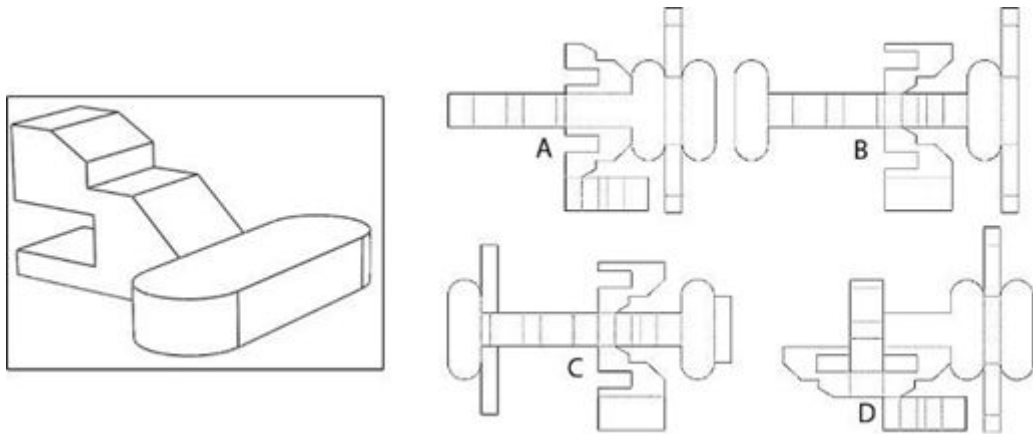
Q20. Which of the following is/are river(s):

- A. Alakhnanda
- B. Parvati
- C. Vaigai
- D. Baralacha La

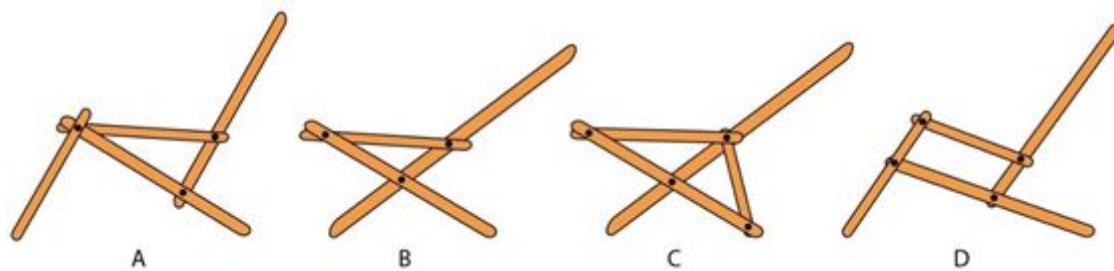
Q21. A square is cut into 7 pieces, as shown on the extreme left of the image. Identify which of the options can be made using all 7 pieces.



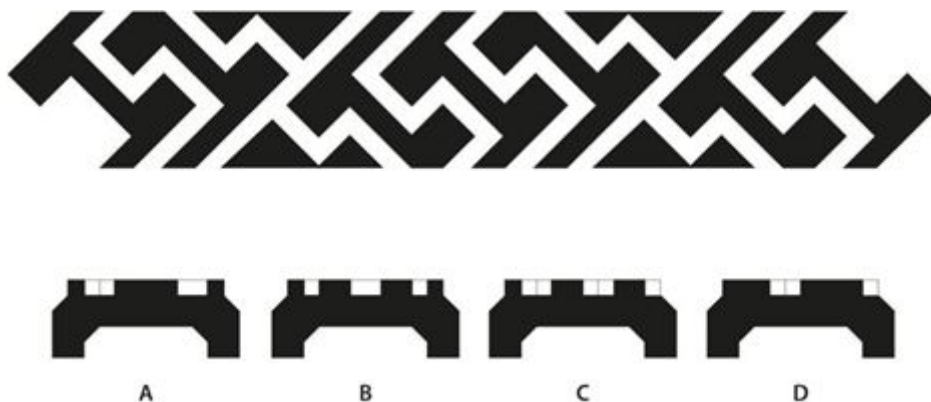
Q22. Identify which of the options given below can be folded to make the 3D object in the picture shown on the left.



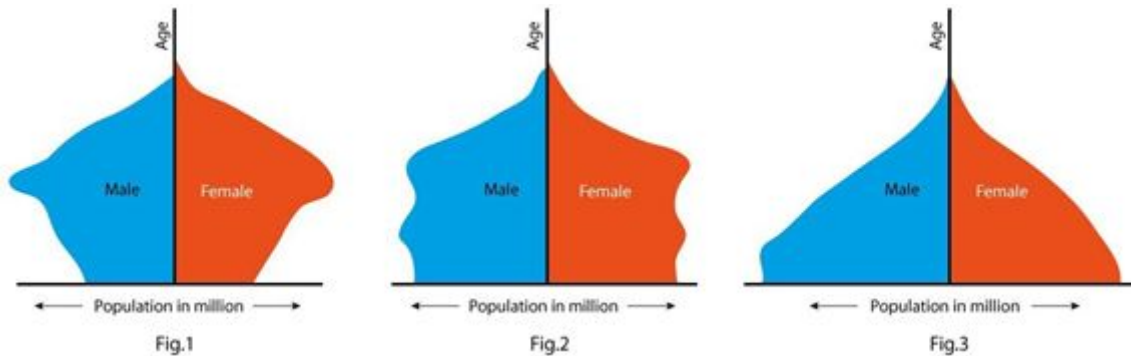
Q23. Shown in the image are schematic diagrams of folding chair structures. If the black dots indicate a hinged joint, identify the structure(s) that will work as a folding chair.



Q24. Shown below is a tyre tread mark. Choose the correct cross-section(s) that correspond(s) to the same tread mark. All cross sections are perpendicular to the tyre.



Q25. Shown below are three thematic population age-sex pyramids of three countries. The horizontal axis represents population in millions and the vertical axis represents age cohorts for both male and female population.



Which of the following statements is/are correct?

- A. Figure 2 depicts a low population growth, whereas it is high in figure 3.
- B. Figure 1 and figure 2 are from developed nations.
- C. Figure 1 depicts an aging society.
- D. Figure 3 depicts low life expectancy.

Q26. Read the poem given below and identify the *Rasa* in it.

Ashadha's ending on the mountain found

Him weakened, gold ring slipping
 from his wrist, And mixed his
 pleasure when a cloud came down
 So playfully to hug the summit mist,
 As elephants in heat will butt the ground.

In tears withheld he took that
 fall from grace, From wealth
 attending on the King of Kings.
 The otherworld that brimmed in
 cloudy air Was still discomfort
 when far longing brings A
 breath to hold him to that neck's
 embrace.

With now the rainy month stood
 close at hand, To fresh Kutaja
 blooms he adds his plea
 And asks most courteously the
 cloud bring news Of welfare to his

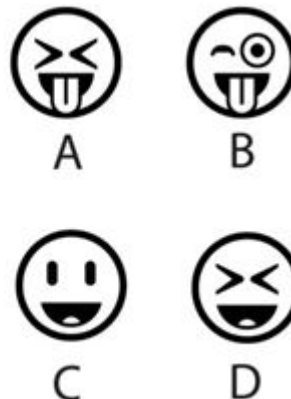
loved-one—words that she,
Revived to hear of him, will
understand.

- A. Veera often translated as Valour
- B. Hasya often translated as Comic
- C. Adbhuta often translated as Wonder
- D. Shringara often translated as Love

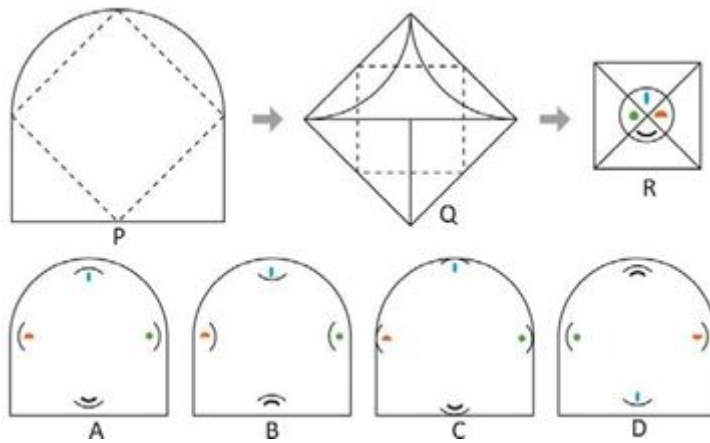
Q27. An *oxymoron* is a figure of speech in which contradictory images or words are juxtaposed in order to intensify a statement or to produce a heightened poetic effect. Which of the statements given below is NOT an oxymoron?

- A. We eat in order to live, not live in order to eat.
- B. Still-waking sleep, that is not what it is!
- C. No light, but rather darkness visible.
- D. To that bad eminence; and from despair.

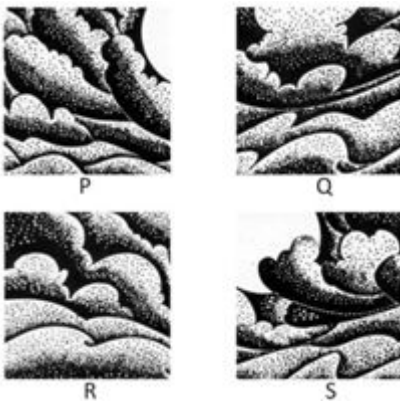
Q28. Identify the option that will replace the question mark.



Q29. Shape P is folded along the dotted lines to form shape Q and then folded again to form shape R. Identify the pattern on the backside of P.

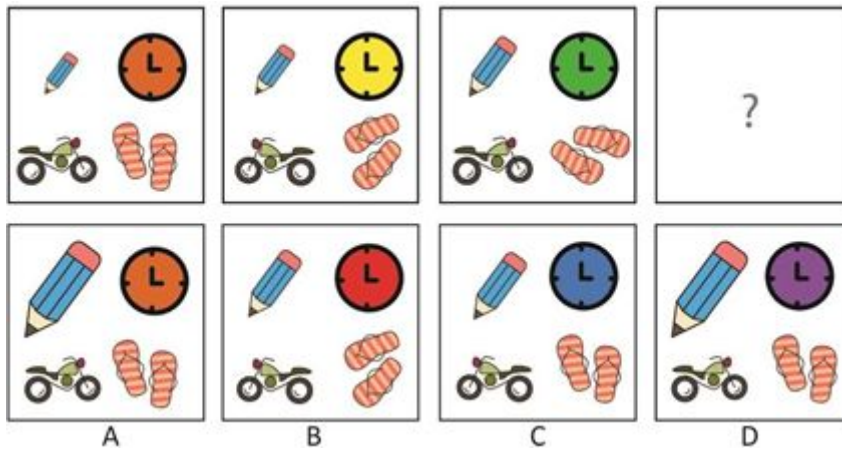


Q30. An image strip is cut into four pieces. Identify the correct sequence that will complete the image correctly.



- A. Q, R, P, S
- B. Q, P, S, R
- C. P, S, Q, R
- D. R, P, S, Q

Q31. Identify the option that will replace the question mark.

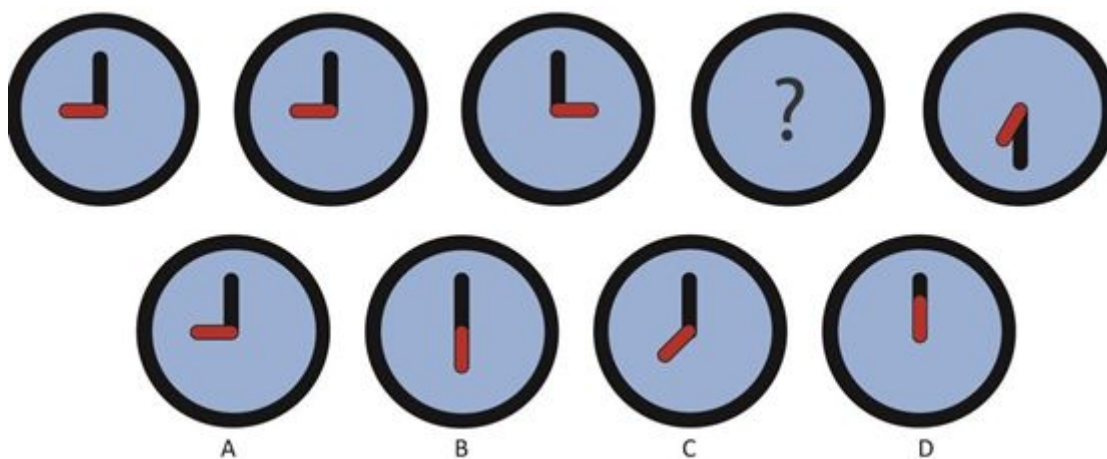


Q32. Each of the shapes is associated with one or more alphabets. Identify the alphabet(s) for the last shape.

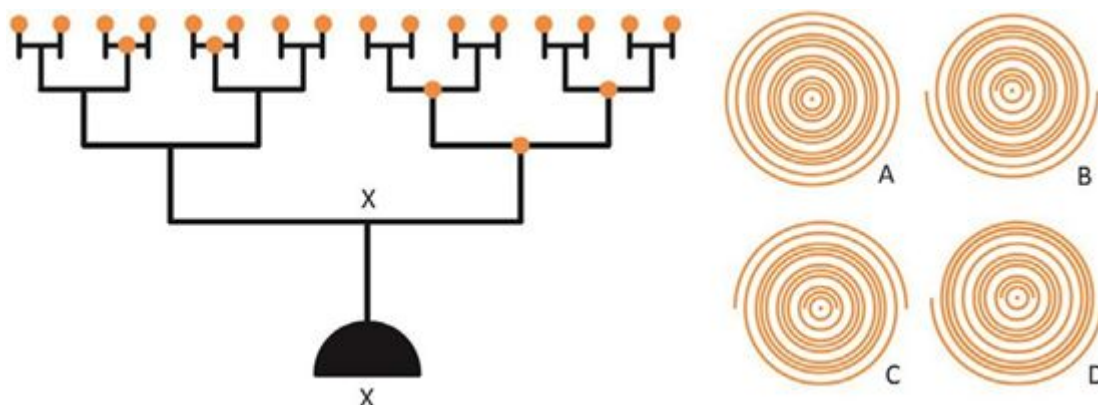


- A. H
- B. HF
- C. G
- D. J

Q33. Identify the option that will replace the question mark.



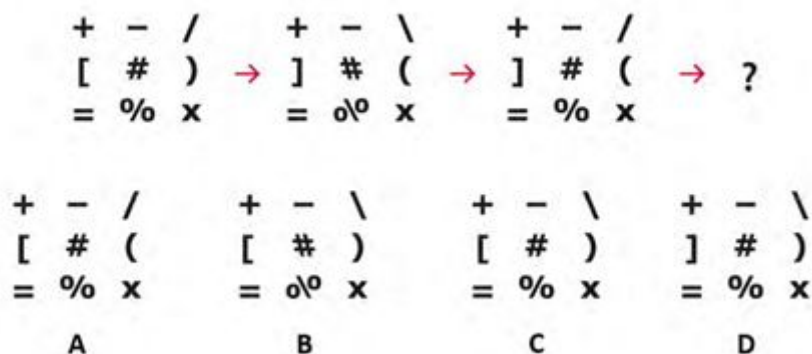
Q34. The object shown below is rotated by 180 degrees about the X axis in the anticlockwise direction as seen from the top. Identify the trail left by the orange blobs when seen from the top.



Q35. Identify the stamp used for printing the sample (in blue) from the options given below.



Q36. Choose the pattern that completes the sequence shown below.

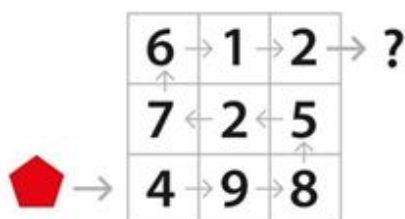


Section C: Multiple Choice Questions

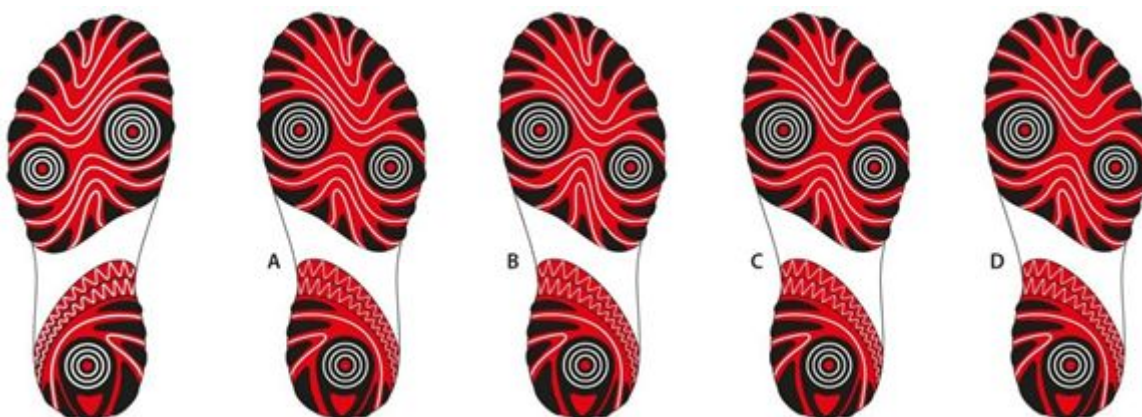
Section C (96 Marks) contains a total of 32 Multiple Choice Questions (MCQ). Each question has four choices out of which ONLY ONE is the correct answer. There is NEGATIVE marking for this section. Each correct answer will be awarded 3 marks and each wrong answer will receive -0.71 mark. Questions not attempted will be given zero marks. Questions from 37 to 68 belong to this section

Q37. A polygonal shape moves through a series of numbered tiles as shown in the figure. The shape transforms itself at every tile according to rules given below. There can be one or more transformations on any given tile. Choose the resultant polygon from the options below.

- At even numbers one side gets added to the shape.
- At odd numbers two sides get removed from the shape.
- If the number is divisible by 2, one side gets added to the shape.
- If the number is divisible by 3, one side is removed from the shape.
- On reaching the first prime number the colour of the shape changes to yellow.
- On reaching a second prime number the colour of the shape changes to orange.



Q38. From the given options, choose the correct shoe sole that pairs with the sole shown on the left.



Q39. Figure 1 shows the top view of a lawn sprinkler. The Swastika-shaped arms rotate freely around a central pivot which supplies water to the arms. Water is sprinkled through the nozzles located at the end of the arms, which causes the sprinkler head to rotate. Now, imagine the whole sprinkler submerged under water and imagine the water being aspirated (suctioned) instead of being expelled. Which direction will the sprinkler head rotate?

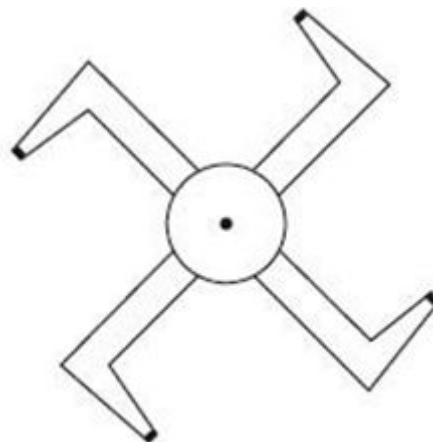


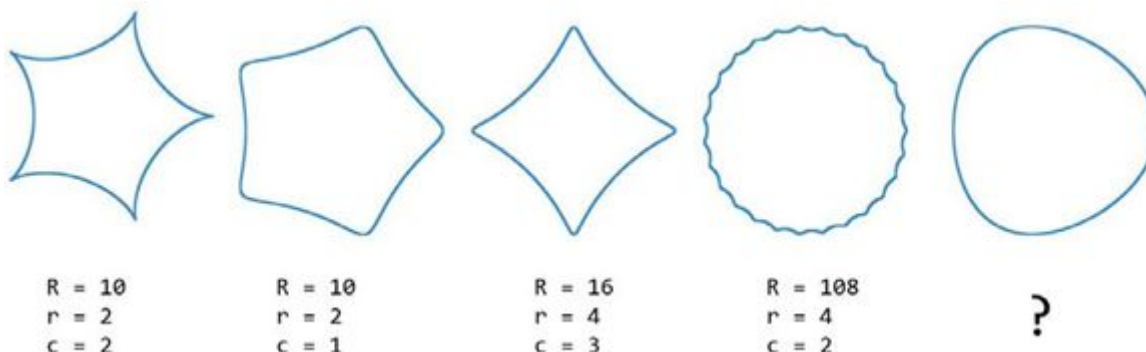
Fig. 1

- A. It will rotate anti-clockwise.
- B. It will rotate clockwise.
- C. It will not rotate at all.
- D. It will shuffle between clockwise & anticlockwise rotations.

Q40. Identify which of the musical instruments mentioned below use(s) the technique of hammering on strings to produce sounds: Santoor, Piano, Harmonium and Keyboard.


- A. Piano and Santoor.
- B. Only Santoor.
- C. Harmonium and Santoor.
- D. Keyboard and Piano.








Q41. Given below are images drawn with the same set of equations but with different parameters. The parameters used to generate a figure are given below the figure. Identify the correct set of parameters which would generate the figure shown on the right.



- A. $R = 24, r = 8, c = 0.9$
- B. $R = 24, r = 6, c = 0.9$
- C. $R = 24, r = 12, c = 1$
- D. $R = 24, r = 3, c = 3$

Q42. Given below is a sequence of shapes arranged from left to right. There are eight rules which, when applied to the sequence, will transform it to one of the four options shown below. Identify the correct option.

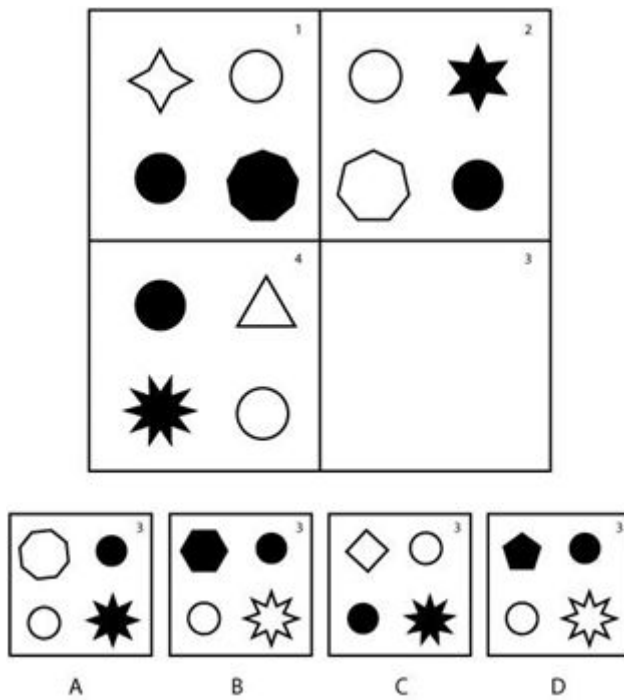


	Switch the 5th and 2nd shapes.
	Change shapes with a cross inside a square with shapes with a cross inside a circle.
	Replace all square shapes with their preceding circular shape.
	Reverse the whole sequence.
	Switch the 4th and 7th shapes.
	Switch the 3rd and 6th shapes.
	If 2 identical shapes occur consecutively, switch the 1st occurrence of the shape with the 1st shape in the whole sequence.

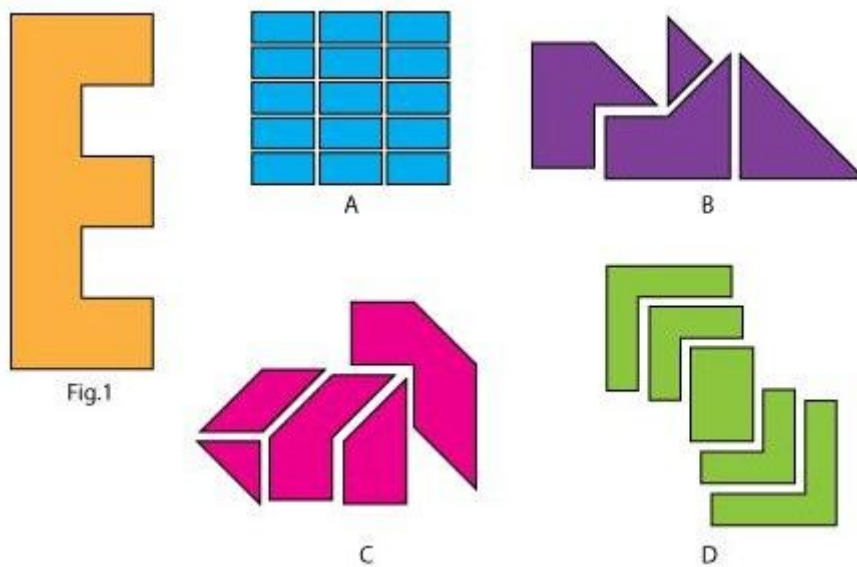
- A. 
- B. 
- C. 
- D. 



Q43. Which of the options given below will correctly complete the series?



Q44. Identify the option that can be assembled to form Figure 1.



Q45. Read the following statements related to the economy.

- I. Devaluation of a currency means fixing the value of currency in multilateral consultation with the IMF, the World Bank, and major trading partners.
- II. The Law of Diminishing Marginal Utility states that as you keep on consuming a commodity continuously, the satisfaction derived from each subsequent unit will keep falling.
- III. Since human wants are unlimited and available resources are limited, a rational consumer will try to satisfy the least urgent needs which can be met within his/her income levels.
- IV. Budget deficit means the difference between all receipts and all expenditure.

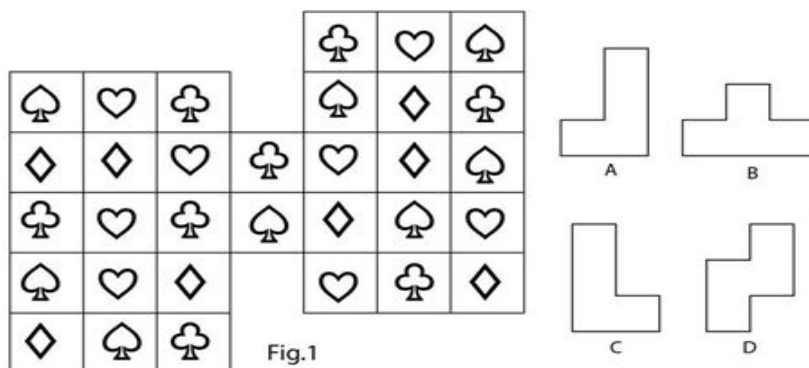
Which of the above statements are TRUE?

- A. I & II
- B. II & III
- C. III & IV
- D. II & IV

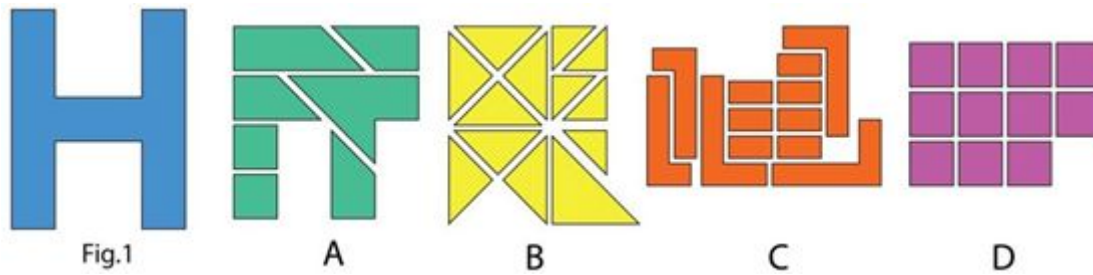
Q46. A pilot has to fly direct from Mumbai to Singapore. The departure of the flight from Mumbai airport is at dusk. Which colour goggles should the pilot be wearing at Mumbai airport for quickly adapting to darkness after take-off?

- A. Blue
- B. Black
- C. Red
- D. Brown

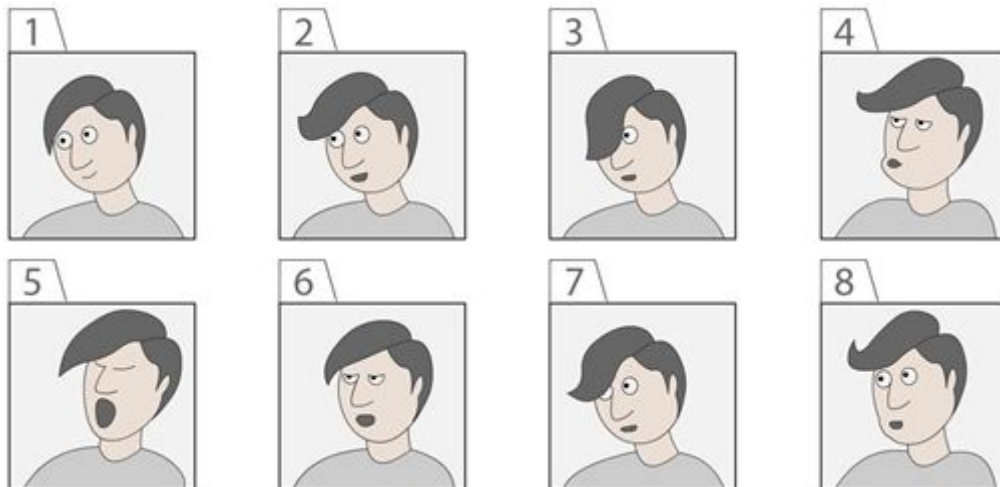
Q47. The shapes given in the options can be used to cut figure 1 into a number of identical pieces. Which shape will cut figure 1 such that, all four symbols are included in each of the pieces, and no symbols are left over?



Q48. The given figure 1 is cut into pieces. Identify the option whose pieces can be correctly assembled to form the figure 1.

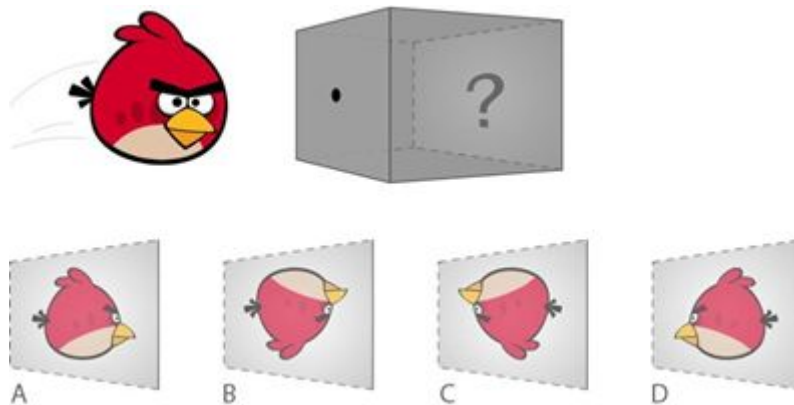


Q49. Below is an animation sequence of Raju playing with his hair. However except Frame no.1 all others seem to be mixed up. Choose the correct order.



- A. 1, 6, 7, 2, 4, 5, 2, 3
- B. 1, 7, 2, 8, 4, 5, 3, 6
- C. 1, 6, 5, 4, 8, 2, 7, 3
- D. 1, 7, 2, 8, 4, 5, 3, 6

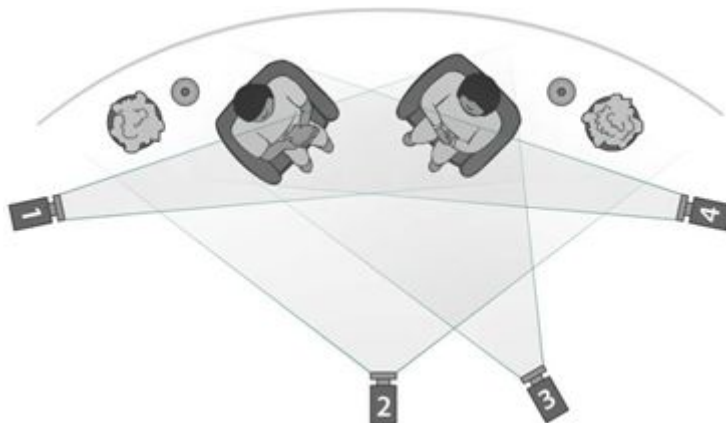
Q50. An angry bird is flying in front of a pin-hole camera as seen in the picture below. If it flies back in the opposite direction, what would be the image cast on the inner wall of the camera?



Q51. A short interview is being planned for live TV as described below:

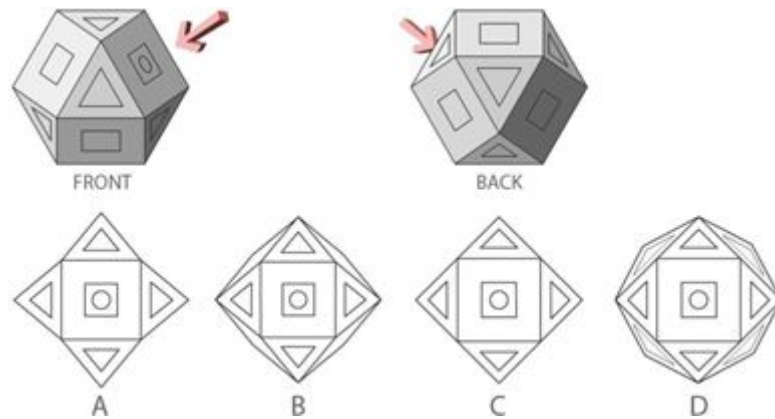
“We start with establishing the interview space, then close-up of the interviewer who introduces the interviewee. As the interview continues we shift between both of them as the questions are answered. After three questions, we end the interview showing both of them in the frame and then close with showing the interview space.”

For filming it, four cameras 1, 2, 3 and 4 have been placed as seen in the image below. From the options given, choose the sequence that was most closely followed.

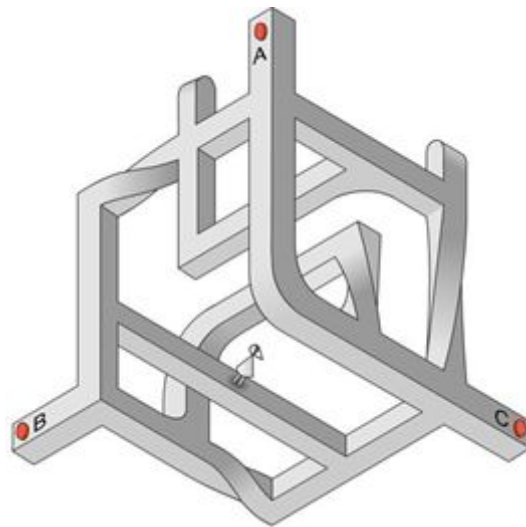


- A. 2, 4, 1, 4, 1, 4, 1, 4, 1, 2, 3
- B. 3, 4, 1, 4, 1, 4, 1, 4, 1, 3, 2
- C. 2, 4, 1, 3, 1, 4, 1, 4, 1, 4, 2
- D. 2, 4, 1, 4, 1, 4, 1, 4, 1, 3, 2

Q52. Two different views of a solid object are shown below. If viewed from a different direction as the arrows suggest, what would the view be?



Q53. Ida is standing on the structure as shown below. She wants to reach points A, B or C, but she can only travel on a continuous surface. Which of the following statements is true?

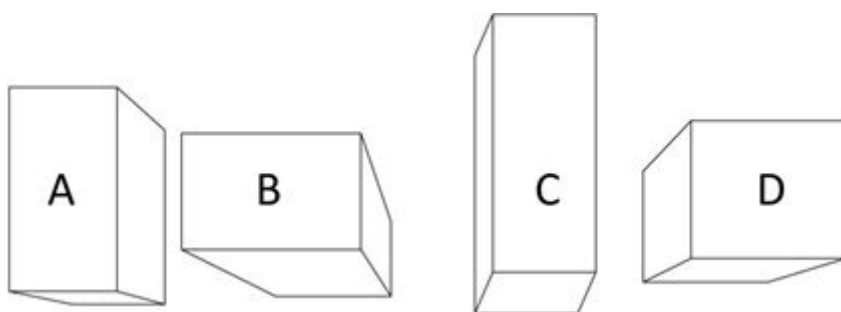


- A. Ida will be able to reach only A and B
- B. Ida will be able to reach only C
- C. Ida will be able to reach only A and C
- D. Ida will be able to reach only A

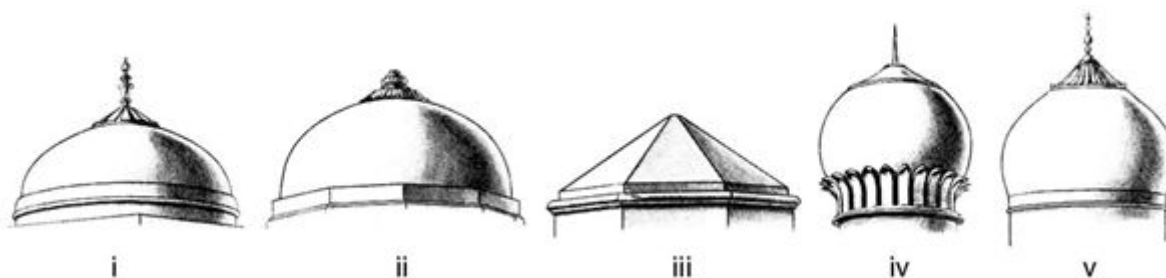
Q54. Water is kept in four identical beakers but made of four different materials—shiny tin, matt black tin, shiny stainless steel and blue colour plastic. When kept under the sun, with the same amounts of water and for the same amount of time, water in which of the beakers will be the hottest?

- A. Shiny tin beaker
- B. Shiny stainless steel beaker
- C. Blue colour plastic beaker
- D. Matt black tin beaker

Q54. Shown below is a one point perspective drawing where all the blocks except one share the same converging point. Identify the block.



Q55. Below is a set of pictures that show the variety of domes used in Islamic architecture in India. Select the order in which the design of the domes were developed, from the 13th to the 18th centuries CE.



- A. ii, iii, iv, i, v
- B. iii, i, ii, iv, v
- C. iii, ii, i, iv, v
- D. ii, iii, v, i, iv

Q56. Read the following paragraph and answer the question that follows.

A language reveals the attitudes of the people who use and shape it. And a whole declension of _____(i)_____ terminology can be found in the language in which inter-racial relations have been described inside Britain. At first, we were told, the goal was 'integration'. Now this word rapidly came to mean '_____(ii)_____': a black man could only become integrated when he started behaving like a white one. After 'integration' came the _____(iii)_____ of 'racial harmony'. Now once again, this sounded virtuous and desirable, but what it meant in practice was that blacks should be persuaded to live peaceably with whites, in spite of all the injustices done to them every day. The call for 'racial harmony' was simply an invitation to shut up and smile while nothing was done about our grievances. And now there's a new catchword: 'multiculturalism'. In our schools, this means little more than teaching the kids a few bongo rhythms, how to tie a sari and so forth. In the police training programme, it means telling cadets that black people are so 'culturally different' that they can't help making trouble. Multiculturalism is the latest token gesture towards Britain's blacks; and it ought to be exposed, like 'integration' and 'racial harmony', for the _____(iv)_____ it is.

In the above passage identify the missing words. The table below contains possible words for each blank. Choose one word from each column for the 4 blanks.

(i)	(ii)	(iii)	(iv)
astounding	organization	time	sham
worrisome	consolidation	place	joy
patronizing	assimilation	opportunity	truth
critical	association	concept	law

The correct answer is:

- A) astounding, consolidation, time, law
- B) patronizing, assimilation, concept, sham
- C) critical, association, opportunity, truth
- D) worrisome, organization, place, joy

Q57. Read the following paragraph and answer the question that follows.

The most ____ (i) ____ respect in which ideas have helped mankind is numbers. There must have been a time when homo sapiens was a very rare species, subsisting precariously in jungles and caves, terrified of wild beasts, having difficulty in securing nourishment. At this period the biological advantage of his greater intelligence, which was cumulative because it could be handed on from generation to generation, had scarcely begun to outweigh the disadvantages of his long infancy, his lessened ____ (ii) ____ as compared with monkeys, and his lack of ____ (iii) ____ protection against cold. In those days, the number of men must certainly have been very small. The main use to which, throughout the ages, men have put their technical skill has been ____ (iv) ____ the total population. I do not mean that this was the intention, but that it was, in fact, the effect. If this is something to rejoice in, then we have occasion to rejoice.

In the above passage identify the missing words. The table below contains possible words for each blank. Choose one word from each column for the 4 blanks.

(i)	(ii)	(iii)	(iv)
equivocal	freedom	hirsute	increase
inconclusive	agility	stubbled	decrease
indubitable	confidence	feathery	endanger
uncertain	appetite	unshaven	extol

The correct answer is

- A. uncertain, freedom, stubbled, extol
- B. equivocal, confidence, unshaven, endanger
- C. inconclusive, appetite, hirsute, decrease
- D. indubitable, agility, hirsute, increase

Q58. On the left hand side are pieces of a jigsaw puzzle. Identify the image that can be reproduced using all the pieces shown at left.



(A)



(B)

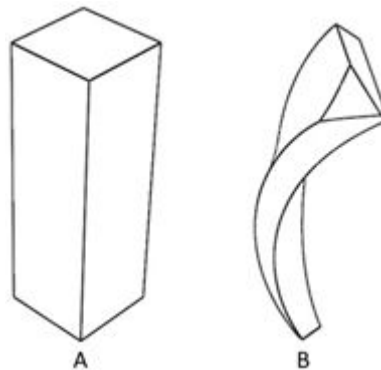


(C)



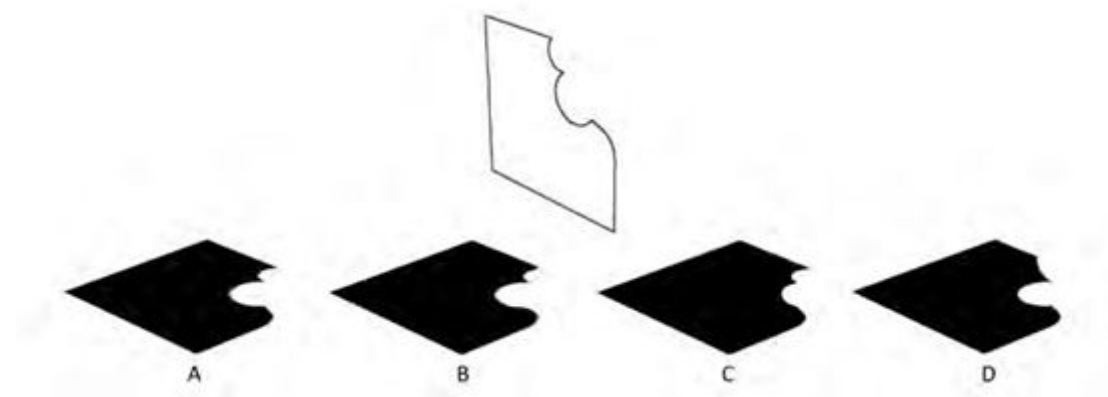
(D)

Q59. Choose the set of operations (not necessarily in order) that can be applied on form A to get form B?

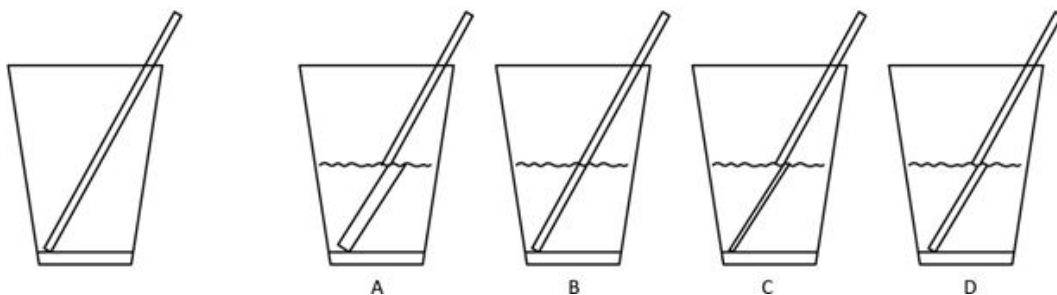


- A. Cut vertically, Taper, Cut at an angle, Bend, Twist
- B. Cut horizontally, Bend, Cut at an angle, Taper, Twist
- C. Cut vertically, Stretch, Twist, Bend, Cut at an angle
- D. Cut vertically, Twist, Stretch, Cut at an angle, Fold

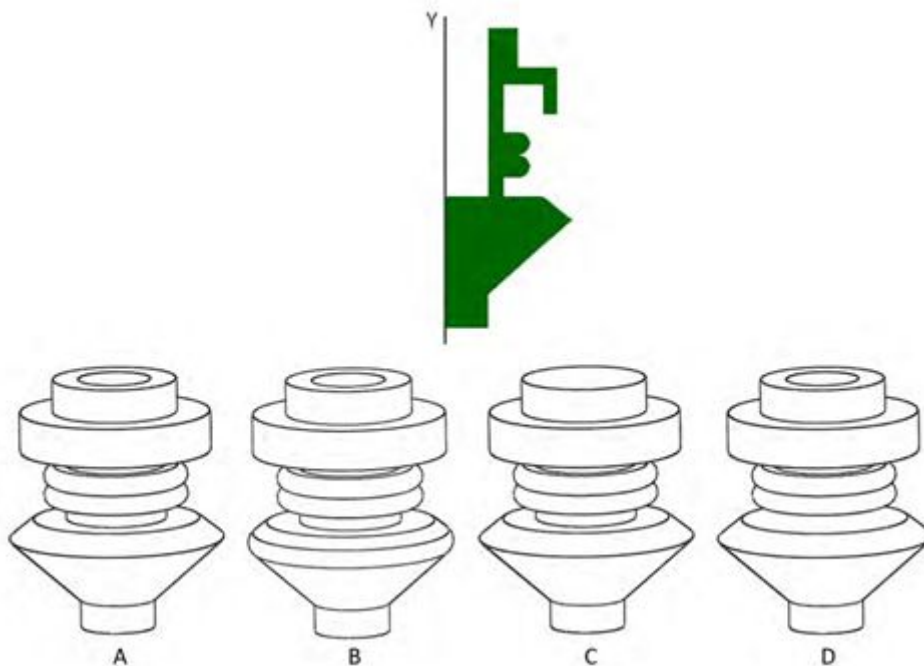
Q60. Identify the most accurate shadow of the object given below. The arrow indicates the direction of light.



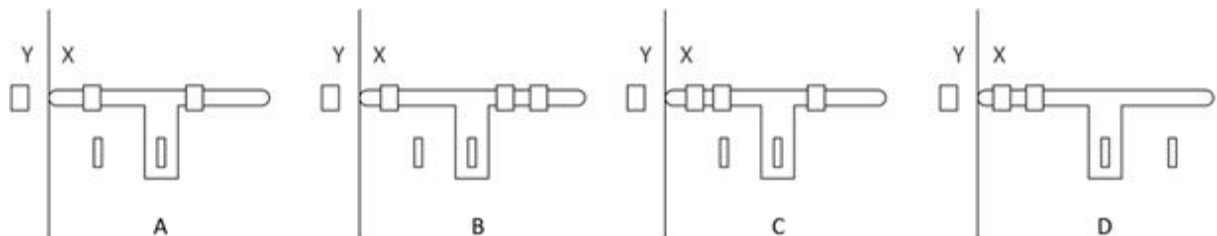
Q61. At left is an empty glass with a straw in it. From the options given, identify the correct representation of the straw when the glass is half-filled with water.



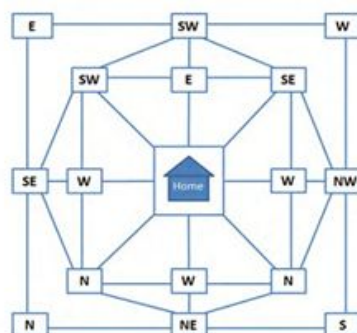
Q62. If the given flat shape is revolved about the Y axis by 360° , identify the solid shape that will be generated.



Q63. Shown below are schematic diagrams of a regular door latch. X represents the door, and Y represents the frame in the wall. Identify which latch can be used for correctly locking the door.

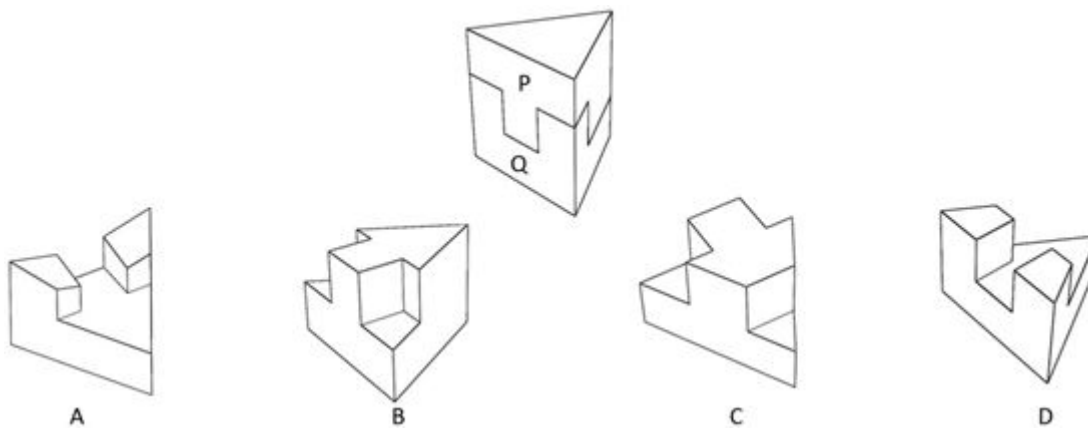


Q64. Pick a point on the outermost ring of the maze shown below, in order to find your way home. Each point indicates the direction of your next move. Which point on the outermost ring should be your starting point in order to reach home in the fewest steps?



- A. W
- B. N
- C. NE
- D. NW

Q65. Shown below is a triangular prism cut into two parts, P and Q. Identify which option represents part P.



Q66. These are modified images by famous artists. Identify the correct sequence of artists of the original images.



- A. Leonardo da Vinci, Vermeer, Van Gogh, Michaelangelo
- B. Michaelangelo, Vermeer, Van Gogh, Leonardo da Vinci
- C. Michaelangelo, Rembrandt, Van Gogh, Leonardo da Vinci
- D. Leonardo da Vinci, Rembrandt, Van Gogh, Michaelangelo

Q67. These images are made using different art techniques. Identify the correct sequence of techniques from options below.



- A. Oil Paint, Crayon, Watercolour, Pastel
- B. Ink, Acrylic, Oil Paint, Tempera
- C. Watercolour, Crayon, Acrylic, Oil Paint
- D. Tempera, Pastel, Oil Paint, Acrylic

Q68. Given below are steps to tie a shoelace, but the steps seem to be mixed up. What is the correct logical sequence of these steps?

1. Pass one end of the shoelace under the other.
2. Pull tight.
3. Hold one end of each shoelace in each hand.
4. Cross them, making an X.
5. Bend it into a flat loop and pull through, making a bow.
6. Fold one shoelace in half while holding laces taut.
7. Grasp it in the middle after pulling it around the folded end.
8. Wrap the other end around the folded end.

The Correct Order is:

- A. 6, 2, 3, 7, 3, 5, 8
- B. 3, 4, 1, 2, 6, 8, 7, 5
- C. 6, 4, 3, 1, 8, 5, 7, 2
- D. 5, 6, 4, 2, 7, 8, 3, 1

PART-B (Drawing skills)

Time: 30 min.

Draw any one of the following scenes in 4 stages. The sketch space provided(*An A3 sheet will be provided in the paper in which the student is supposed to draw*):

- A. Bird taking flight from ground
- B. Rose - bud to flower
- C. T shirt - wet to dry