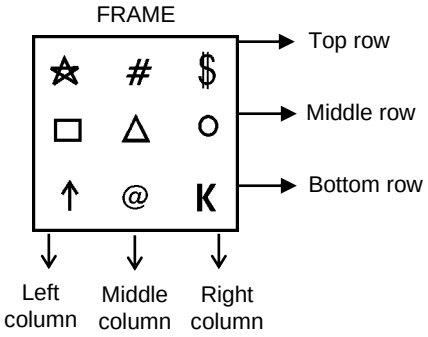
CHAPTER – 13
NON-VERBAL REASONING

Introduction:

The non-verbal questions test the ability of the candidate to develop logic from certain abstract figures given in the question. To understand the pattern in the given figures, one should develop a systematic method of studying the figures given. These questions consist of figures given in square boxes. These boxes are referred to as frames. The figures in each frame are called elements, which are generally identified by their position in the frame.



In the above frame each element is referred to by its row and column. The element ' ☆ ' is referred to as op-left element. i.e., top row-left column. The element 'Δ' is referred to as the central element. The behaviour of these elements, with reference to their position is studied. In certain questions each frame contains only one big element, with certain smaller elements attached to it.

The question may be based on any one of the above patterns or a combination of two or more patterns.

Types of questions:

The questions can be classified into the following basic groups.
(a) Series
(b) Analogies
(c) Odd man out

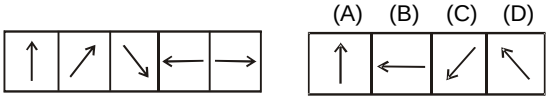
(A) Series:

These questions are further classified as follows.
(1) Five figure series (to find the next figure).
(2) Five figure series (to find the missing figure).

(1) Five figure series (to find the next figure): In these questions five problem figures followed by answer figures are given. By observing the pattern followed by the problem figures, one of the answer figures which continues the same pattern is to be chosen as the answer.

Pattern of the question

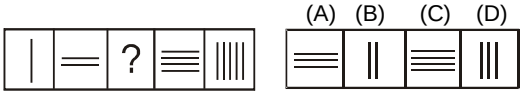
Problem figures Answer figures (A) (B) (C) (D)



(2) Five figure series (to find the missing figure): These questions are similar to the previous type, but in these questions one of the five problem figures is not given. One of the answer figures, which along with the other problem figures can form a logical series, is to be chosen as the answer.

Pattern of the question

Problem figures Answer figures (A) (B) (C) (D)



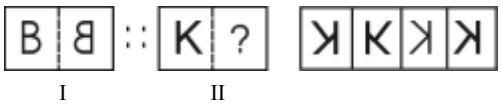
(B) Analogies:

Questions based on analogies are classified as,
(1) Four figure analogy
(2) Similar pair

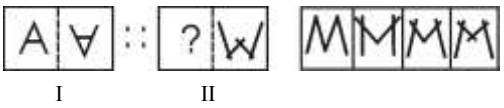
(1) Four figure analogy: These questions contain two pairs of problem figures followed by four answer figures. Among the two figures in the second pair of problem figures one is not given. An answer figure should be chosen in such a way that a relation between the two figures of the second problem pair is established, which is similar to the relationship existing between the two figures of the first pair of the problem figures.

Pattern of the question

Problem figures Answer figures (A) (B) (C) (D)



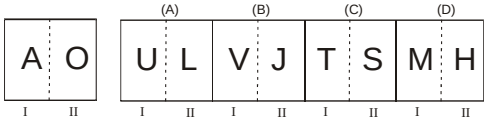
Or



(2) Similar pair: These questions contain a pair of problem figures, followed by four pairs of answer figures. The answer pair which has a relationship between its two figures, which is similar to the relationship existing between the two figures of the problem pair, should be chosen as the answer.

Pattern of the question

Problem figure Answer figures



(C) Odd man out:

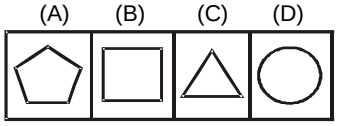
These type of questions are given in the following ways.

(1) Odd man out (individual figures)
(2) Odd pair

(1) Odd man out: These questions contain four independent figures. The pattern of arrangement of the elements within a frame will be similar in three out of the four figures and it would be different in one of them. The number of that figure should be marked as the answer.

Pattern of the question

(A) (B) (C) (D)



(2) Odd pair: These questions contain four pairs of answer figures. The relationship between the two figures of three out of the four pairs will be similar, but it would be different for one of the pair. The number of that pair should be given as the answer.

Pattern of the question

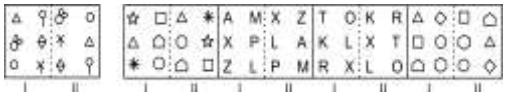
(A) (B) (C) (D)

These questions may also contain problem figures along with four answer figures. The relationship existing between the two figures of the pair of problem figures can be observed in three out of the four pairs of answer figures. The pair of answer figures, which does not have such relationship between its two figures is to be chosen as the answer.

Pattern of the question

Problem figures Answer figures

(A) (B) (C) (D)



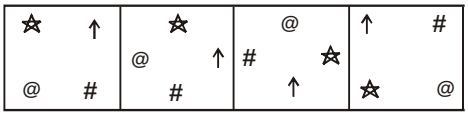
These smaller elements behave following a uniform pattern.

Pattern of behaviour of the elements:

The behaviour of elements means the changes that take place in them. These changes are classified as follows.

(i) Shift
(ii) Rotation
(iii) Image formation
(iv) Change in the number of elements
(v) Substitution

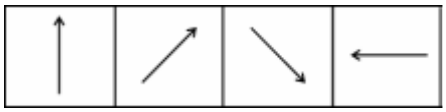
Shift: Shift means change in position. That is movement from one position to another. The shift is measured by the distance moved by the element with respect to its position in the immediate previous frame. The unit of measurement of distance is one side, which is equal to the distance between one corner of the frame and its adjacent corner. The following example gives a clear idea of studying the shift.



(A) (B) (C) (D)

When the positions of the elements in frame A are compared to those of the elements in frame B, it is clear that each element is shifted by half-a-side in the clockwise direction. From frame B to C the shift is one side, from frame C to D the shift is one and half side, from frame D to E the shift is two sides. Thus the shift is measured in multiples of half-a-side. The shift may take place in clockwise or counter clockwise direction.

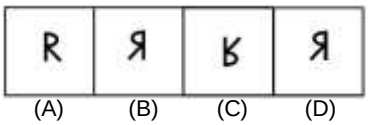
Rotation: When an element changes the direction towards which it was pointing, the element is said to be rotated. Let us study the pattern of rotation in the following illustration.



(A) (B) (C) (D)

In frame A, the element is pointing towards north and in frame 2 it is pointing towards north-east. i.e., the element is rotated by 45° in clockwise direction. From frame 2 to 3, the rotation is by 90°, from frame 3 to 4 the rotation is by 135°. Thus the rotation is given in multiples of 45°. The rotation may be in clockwise or counter clockwise direction.

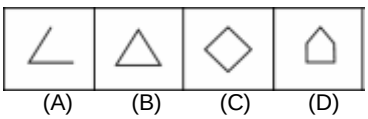
Image formation: In this case an element in a frame is represented in the form of its image in the next frame. This image could be mirror image or water image as illustrated below.



(A) (B) (C) (D)

In the above diagram, frame (B) and (D) are the mirror image of frame (A) (i.e; lateral inversion) and frame (C) is the water image of frame (A) (i.e; vertical inversion).

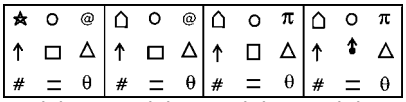
Change in the number of elements: In certain questions the number of elements either increase or decrease from one frame to the next one.



(A) (B) (C) (D)

In the above series from one frame to another the number of sides increased by one.

Substitution: In some cases one of the elements in the previous frame is substituted by a new element in the next frame.



(A) (B) (C) (D)

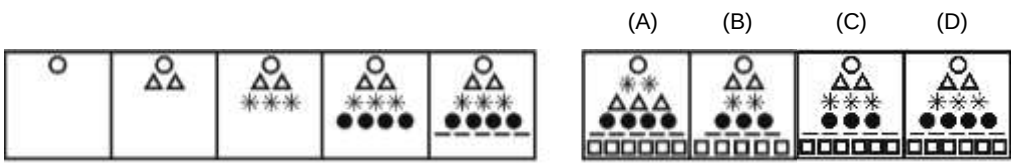
In frame B, the top-left element of frame A is substituted by a new element. In frame C, the top – right element of frame B, is substituted by a new element. In frame D, the central element of frame C is substituted by a new element. i.e., every alternate element starting from the top-left element is substituted in the subsequent frame.

Exercise – 13

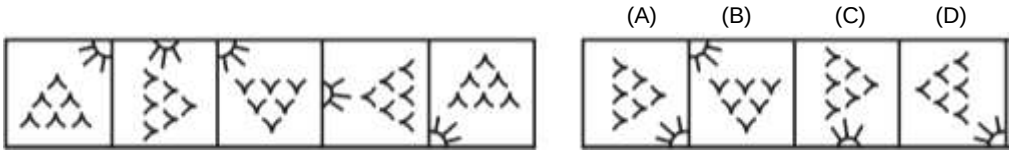
Directions for questions 1 to 15: In each of the following questions there are two sets of figures. One on the left side (problem figures) and the other on the right side numbered (A), (B), (C), and (D) (answer figures). Select one figure from the answer set which will continue the same series as given in the problem set of figures.

PROBLEM FIGURES **ANSWER FIGURES**

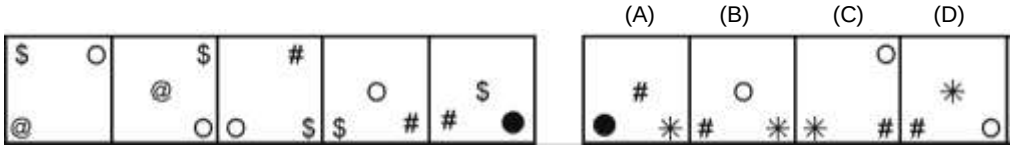
1.



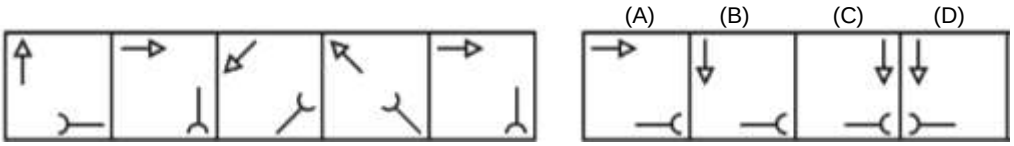
2.



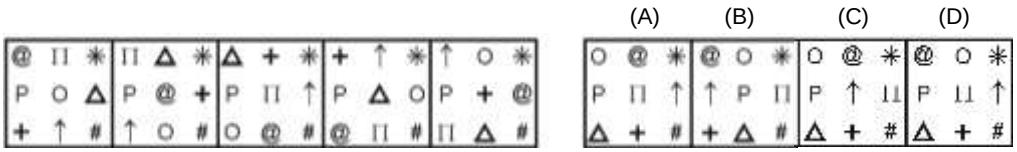
3.



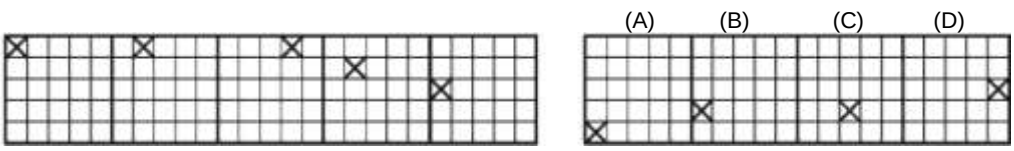
4.



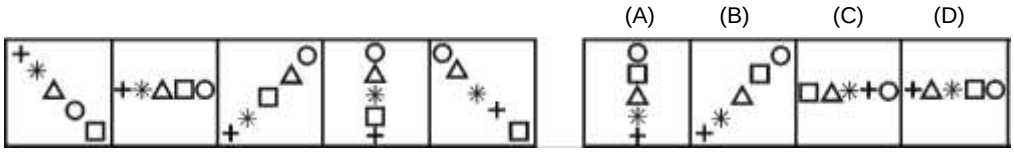
5.



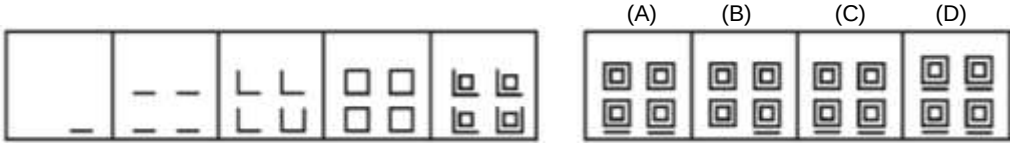
6.



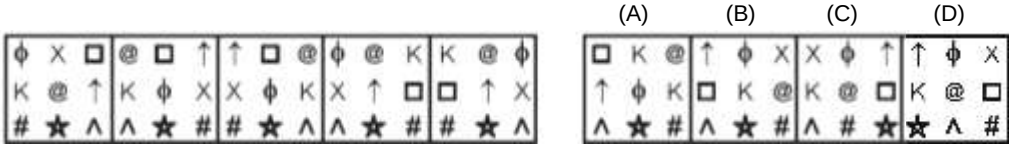
7.



8.



9.

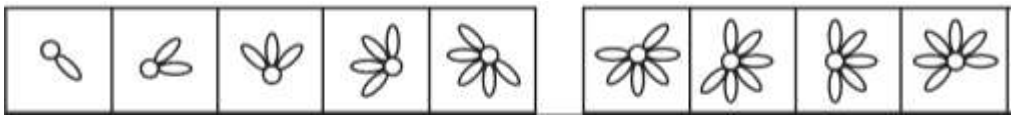


PROBLEM FIGURES **ANSWER FIGURES**

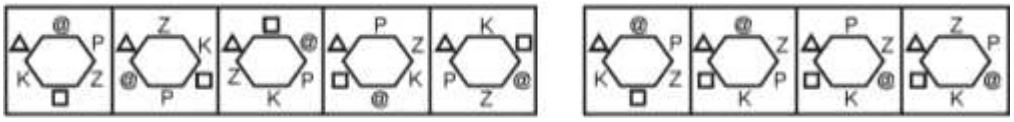
10.

11.

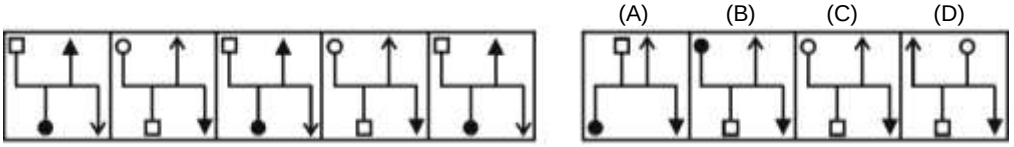
12.



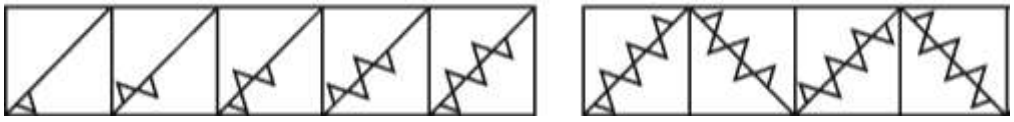
13.



14.



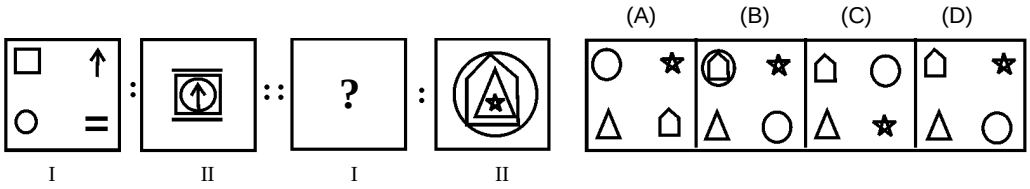
15.



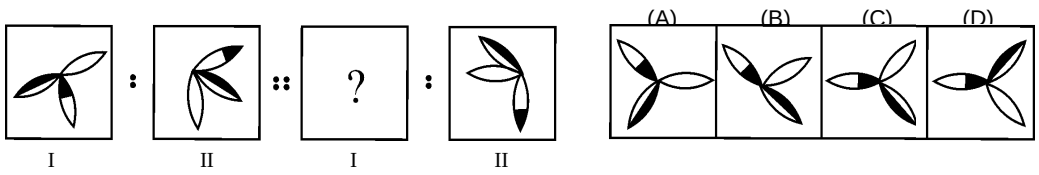
Directions for questions 16 to 20: In each of the following questions first two figures are related to each other in a certain way. Find out which figure from the answer figures (A), (B), (C), and (D), should be placed at the '?' mark so that the second pair so formed will have a similar relationship and can be placed at "question mark".

PROBLEM FIGURES **ANSWER FIGURES**

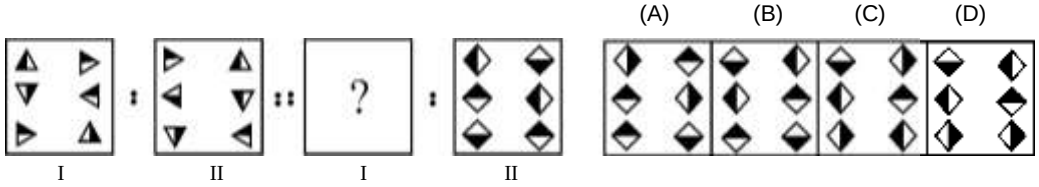
16.



17.

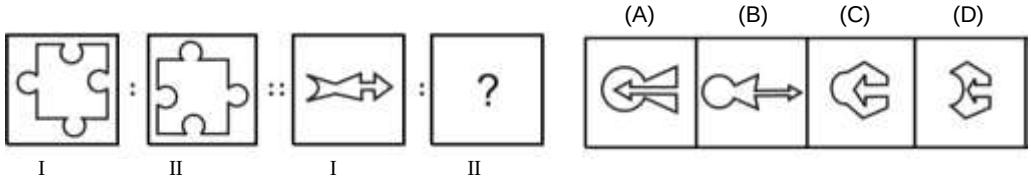


18.

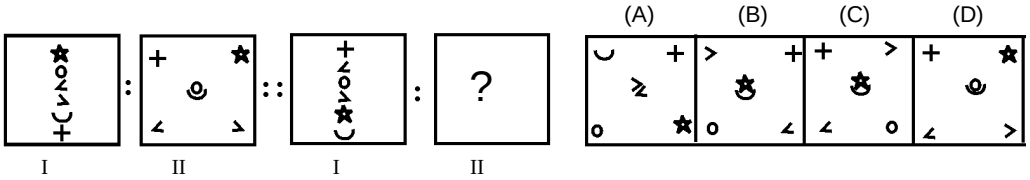


PROBLEM FIGURES **ANSWER FIGURES**

19.



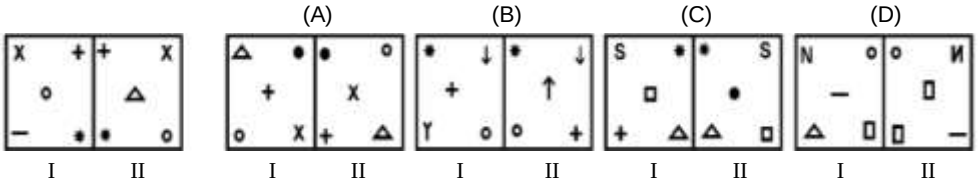
20.



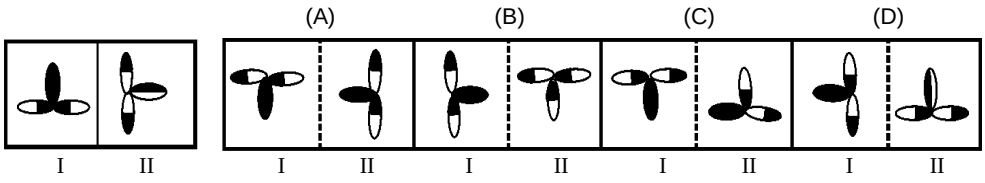
Directions for questions 21 to 25 In each of the following questions a pair of problem figures is given at the left extreme followed by four pairs of answer figures. The left figure in the problem figures bears a certain relationship with the right figure. Out of the four pairs given in the answer figures one is similar to that pair given in the problem figures. Find that pair out.

PROBLEM FIGURE **ANSWER FIGURES**

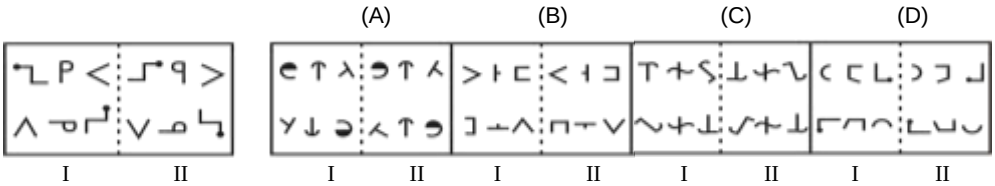
21.



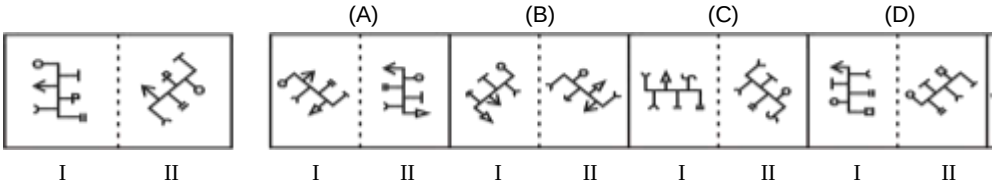
22.



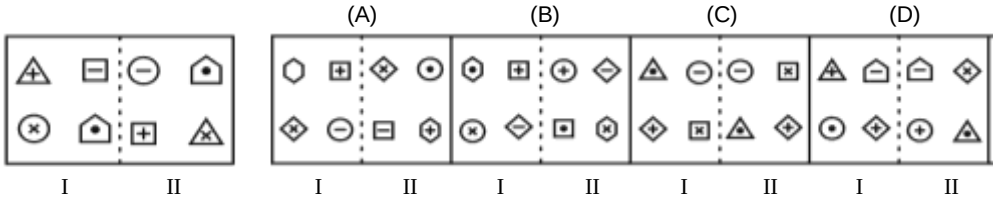
23.



24.



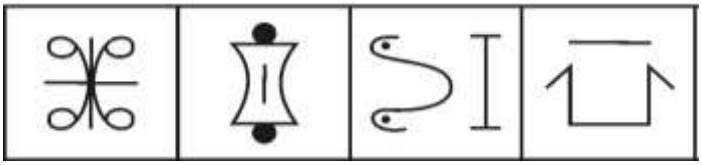
25.



Directions for questions 26 to 30: In each of the following questions three out of the given four figures are similar in a certain way and hence form a group. Find the one which does not belong to that group.

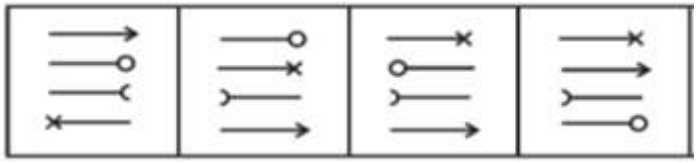
26.

(A) (B) (C) (D)



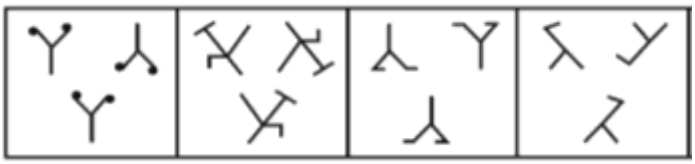
27.

(A) (B) (C) (D)



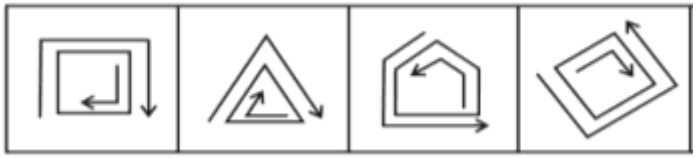
28.

(A) (B) (C) (D)



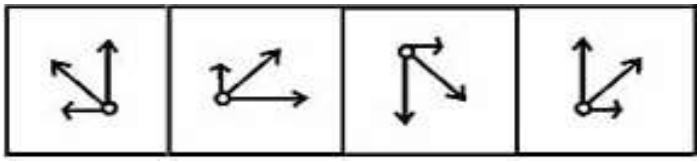
29.

(A) (B) (C) (D)



30.

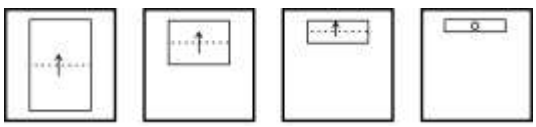
(A) (B) (C) (D)

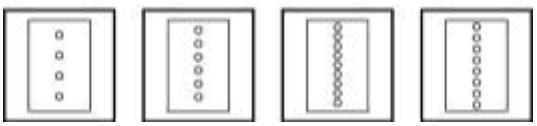


Directions for questions 31 to 34: A piece of paper is folded and cut/punched as shown below in the question figures. From the given answer figures indicate how it will appear when opened.

QUESTION FIGURES **ANSWER FIGURES**

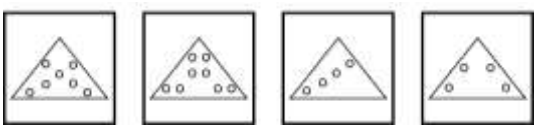
31.





(A) (B) (C) (D)

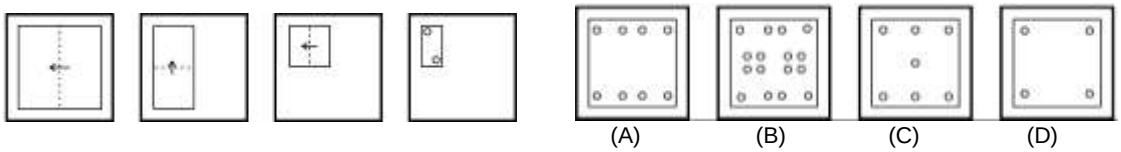
32.



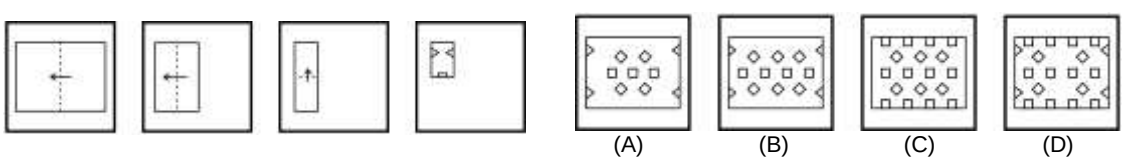
(A) (B) (C) (D)

QUESTION FIGURES **ANSWER FIGURES**

33.



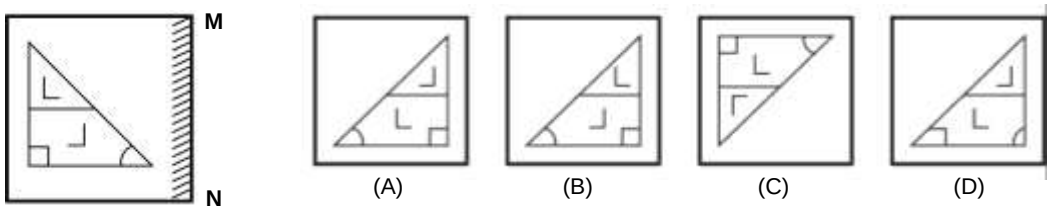
34.



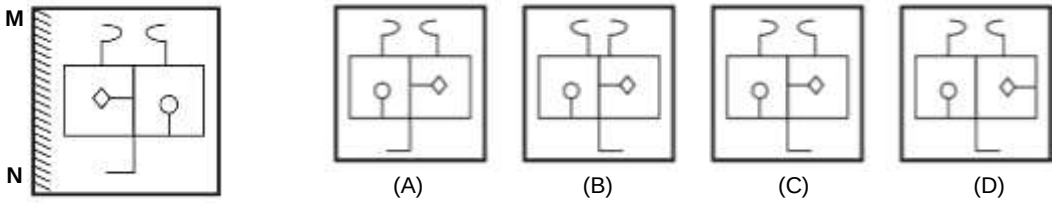
Directions for questions 35 to 37: If a mirror is placed on the line MN, in the question figure, then which of the answer figures is the right image of the given figure.

QUESTION FIGURE **ANSWER FIGURES**

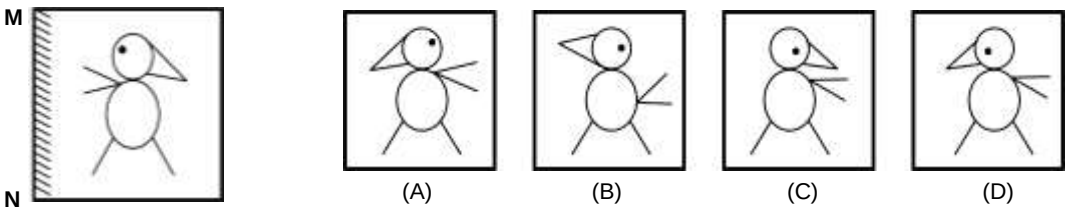
35.



36.



37.



Directions for questions 38 to 40: In each of the following questions, there is a problem figure, with one or more dots placed in it. This diagram is followed by four answer figures, marked (A), (B), (C), and (D) only one of which is such as to make possible the placement of the dot(s) satisfying the same conditions as in the problem figure. Find such answer figure.

38. Problem Figure **Answer Figures**

39. Problem Figure **Answer Figures**

(A) (B) (C) (D)

40. Problem Figure **Answer Figures**

(A) (B) (C) (D)

Key

Exercise – 13

1. D	6. B	11. C	16. D	21. C	26. D	31. D	36. C
2. C	7. C	12. A	17. D	22. D	27. C	32. B	37. A
3. A	8. D	13. A	18. D	23. D	28. A	33. B	38. A
4. B	9. B	14. C	19. C	24. A	29. D	34. B	39. B
5. C	10. D	15. C	20. D	25. B	30. D	35. A	40. A