CH 5 NONVERBAL REASONING 1

ANSWERS AND EXPLANATIONS

1. (b) In alternate steps one and two line segments rotate by 90° ACW while one dash is added in each step.

2. (c) In each step one element remains static while other three shift closer or away from the axis.

3. (e) In each step a new arrow is added while the elements rotate by 90° CW. The pre-existing elements shift in a cyclic order.

4. (d) Two ACW-end elements move two and one side CW in alternate steps while the CW-end element is lost and a new element appears on ACW end. The middle. element remains shaded.

5. (e) Beginning from the middle-right element in CW order, one element is replaced by a new one in each step. Four elements shift one step CW and the other four in ACW order in each step. The movement itself rotates by 90° CW in each step.

6. (c) In alternate steps the lower and the upper elements get inverted while the heads of other three elements move one step in CW order.

7. (a) Two of the elements interchange positions while the other three shift one step CW in cyclic order.

8. (a) In alternate steps the figure shifts one and one-and-a half-sides ACW while it gets inverted vertically and laterally.

9. (b) Three elements shift one step ACW in cyclic order while the oval-shaped element shifts one side CW and a new element appears in its place.

10. (b) One inner and one outer line segment get curved in alternate steps while previous ones get inverted in each step.

11. (e) In the first step the ACW-end element is lost. The CW-end element shifts to second from ACW end and all the elements shift half-a-side ACW. A new element appears at ACW end. In the next step the CW-end element is lost. A new element appears at ACW-end. The ACW end element and the middle one shift half-a-side ACW. The second from ACW end shifts half-a-side CW while the second from CW end moves one-and-a-half sides ACW.

12. (c) The elements move one side CW and two of the adjacent elements interchange places alternately. The half-shaded circle rotates 90° CW, 180°, 180°, 90°... and so on. The quarter shaded circle rotates by 180° and 90° ACW.

13. (b) In the first step two of the elements change directions. In the next step all the elements except one on the CW side of previously changed element change directions.

14. (e) In each step one of the dashes converts into arc which gets inverted and again changes to dash in subsequent steps.

15. (a) Shading of the squares changes in alternate steps. Shadings of triangle and circle move one step ACW. From fig a to b the CW end element moves one side CW. The central element moves to the vacant corner while the other two interchange places.

16. (c) The CW element moves $2, 1\frac{1}{2}, 1, \frac{1}{2}, 0$ sides CW and order of the remaining elements is reversed. A new element appears at the CW end.

17. (e) In each step five line segments are added to form squares in ACW direction. A new line is added from left, then lower, then right.

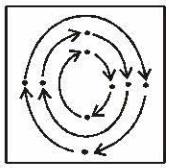
18. (a) The half-shaded squares move one step ACW and rotate by 90° ACW. A new square on the ACW side gets shaded and its shading is 90° ACW to its counterpart on the CW side.

19. (b) In each step the upper two interchange places

with lower two elements. The upper left element is replaced by a new one in the first two steps while the lower right is replaced by a new one in the next two steps.

20. (d) The whole figure rotates by 45° ACW in each step. One and two arcs forming petals are added in alternate steps. One arc is added on the ACW side.

21. (3) From figure 1 to 2, 3 to 4 and 5 to 6 elements rotate in the following way :

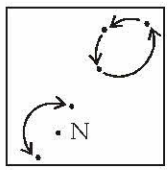


22. (4) From figure 1 to 2, 3 to 4 and 5 to 6 the semi circles at central line interchange places in pairs from top to bottom and the last semi circle remains unchanged. The two corner elements interchange places and one of them is replaced by a new element.

23. (2) The element at centre rotates by 45°, 90°, 135°, 180°, 225° in CW direction in each step and the four corner elements interchange places in pairs in each step.

24. (5) The star moves $\frac{1}{2}$, 1, $1\frac{1}{2}$, 2, $2\frac{1}{2}$ places respectively in CW direction in each step. The (c) moves one place in CW direction in each step. The third element moves half-a-side vertically and changed into new element after three steps.

25. (4) From figure 1 to 2, 3 to 4 and 5 to 6 elements move in the following way where N is a new element.

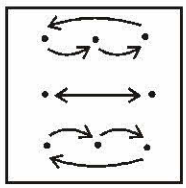


26. (5) Each element rotates by 90° in CW direction after three steps and the corner elements move half-a-side in CW direction in each step.

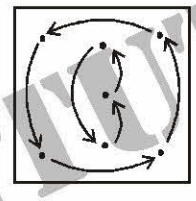
27. (1) Movement of element is repeated after three steps.

28. (2) From step 1 to 2, 3 to 4 and 5 to 6 the third and the fourth letters become the first and second letters respectively while the first and the second letters become third and fourth letters respectively and the fifth letter is replaced by a new letter.

29. (1) From step 1 to 2, 3 to 4 and 5 to 6 elements move in the following way :



30. (3) From step 1 to 2, 3 to 4 and 5 to 6 elements move in the following way :



31. (4) In alternate steps one element from up and one element from down are changed into a new element while other elements remain the same.

32. (2) The lowermost element rotates 45°, 90°, 45°, 90° in ACW direction in each step while the oval-shaped figure gets doubled in alternate step. The two central elements get inverted at their place and then interchange places.

33. (3) Figure 'A' and 'T' rotate by 45° in ACW direction in each step, while A moves $\frac{1}{2}$ and 1 places alternately, T moves $\frac{1}{2}$ place in each step in CW direction. In the centre a new element appears in each step.

34. (1) Figure 'A' moves diagonally in each step while figure 'K' moves $\frac{1}{2}$ and 1 places in CW direction in alternate steps. The circle gets doubled in alternate step.

35. (5) Each figure moves half-a-place in ACW direction in each step while the element at centre rotates

by 45° in ACW direction in each step.

36. (b) In each step the elements at positions 1, 6 and 7 move one step CW in cyclic order; so do the elements at positions 3, 4 and 9. The elements at upper left and lower right are replaced by a new one alternately.

37. (e) The element at centre moves to upper right and gets inverted vertically. The upper right also gets inverted vertically and moves to lower right. The lower right and lower left elements move one side CW while a new element appears at centre,

38. (b) In each step the whole figure rotates by 45° ACW. Two petals disappear in alternate steps.

39. (c) 4, 1, 2, 1 lines respectively are lost in subsequent steps while the spokes move one side CW in each step.

40. (e) In the first step the LHS elements rotate by 90° ACW while the RHS elements rotate by 90° CW. In the next step all the elements rotate by 180°.

41. (c) The shaded portion increases by half-a-part in one step and is doubled in the next.

42. (c) The arrows except top-left rotate by 90° ACW while top-left rotates by 90° CW and 180° alternately. In alternate steps, an arrow is added on the lower-right position.

43. (a) In alternate steps an arrow and a pin is added. The pre-existing elements reverse their direction in each step and arrowhead is added to the pin.

44. (d) The inner figure gets enlarged and rotated by 90° ACW and becomes outer in the next figure. A new element comes within.

45. (e) The corner element moves one side CW and assumes a new shape. Two elements from the extreme-left move one step towards right. The rightmost becomes left and a new element appears at rightmost.

46. (c) The outermost element rotates by 90° CW in each step. The bracket rotates by 90° and 180° CW alternately while the triangle rotates by 45° CW in each step.

47. (a) Follow if 1 = 4 then 2 = 5 rule.

48. (b) The figure rotates by 45° and 90° CW alternately. An arc is added alternately on CW and ACW side.

49. (e) Beginning from lower right in ACW direction 5, 6, 7,8 ... line segments respectively are lost in subsequent steps.

50. (d) The first element from the top moves to third position. The second from the top goes to top and gets inverted laterally. The third one goes to the lowermost position and lowermost becomes the second.

51. (d) In each step one of the elements changes its shape.

52. (e) In alternate steps the half shaded circle rotates 90° ACW and 90° CW. The lower-left, the lower-right and upper-right are repeated alternately. The-upper-left rotates by 90° CW and changes shape.

53. (d) In each step the middle and the inner elements get enlarged and become outer and middle elements respectively while a new element appears in place of inner one.

54. (e) In each step the upper-left element rotates by 90° ACW. The upper-right rotates by 90° and 135° CW alternately. In each step the lower two elements interchange places. The half-shaded circle rotates by 180° and 90° CW alternately. The central element rotates by 90° ACW in each step while an additional radius appears in alternate steps at 45° CW of the pre-existing radius. Which is retained in the next step while the earlier one is lost.

55. (d) The arrow rotates by 45°, 90°, 135°, 180° ... in subsequent steps.

56. (e) In each step the circles move from left to right and vice versa. The dash inside the upper circle rotates by 135° ACW, 45° CW, 180° ACW 45° CW, ... while the dash inside the lower circle rotates by 135° ACW, 135° CW, 90° ACW, 90° CW 45° ACW ... in subsequent steps.

57. (a) In each step the whole figure rotates by 45° ACW and half a petal is added on the CW side.

58. (e) From fig 0 to 1, the left element shifts to right and gets enlarged while a new element appears on the left.

59. (c) The pentagon rotates by 90° ACW alternately. The outer cross rotates by 45° and 90° and moves

two and one step CW. While the inner line segment moves one and two steps ACW alternately.

60. (d) Beginning from the upper-left element, one of the triangles gets inverted in each step. The process proceeds in CW order.

61. (a) One element is 90° rotated form of the other while one is 180° rotated form.

62. (a) The no. of open elements is one more or less than the components of composite elements.

63. (b) The no. of sides of the inner- most element is one more than that of the middle elements.

64. (e) The total no. of arcs is a multiple of the no. of sides of the outer element.

65. (d) One of the four unequal parts is shaded.

66. (d) Three similar elements are arranged along one of the diagonals.

67. (a) In all others, of the two smaller semi-circles only one is extended to the biggermost semi-circle.

68. (e) The directions of inner and outer elements are different in all other figures.

69. (c) In all others the smaller line segment directs towards the circles.

70. (b) The bisectors of the square and the circle are parallel in all other figures.

71. (c) **From fig II to I:** The whole figure rotates by 90° ACW and one petal and a half-petal are lost.

72. (c) **From fig II to I:** The elements interchange places, one of them gets inverted and one part of each moves inward.

73. (b) **From fig II to I:** The middle-right shifts to the upper-left. The lower-right shifts to upper-right and gets unshaded. The upper-right shifts to the lower-left and rotates by 90° CW. The lower left shifts to lower-right. The middle-left shifts to middle-right. The upper-left shifts to middleleft and is replaced by a new one.

74. (b) **From fig II to I:** The lower element gets inverted laterally while the upper one is lost.

75. (d) **From fig II to I:** The rectangle shifts one-and-a-half sides CW while the shaded triangle shifts one-and-a-half sides ACW and gets inverted.

76. (b) **From fig. II to fig. I:** The upper left and the lower right elements rotate by 90° ACW while the upper right and the lower left elements rotate by 90° CW.

77. (a) **From fig. II to fig. I:** The middle and the right arcs on the upper bar and the middle arc on the lower bar reverse their directions. While the lower arcs of upper bar and upper arcs of lower bar are lost.

78. (a) **From fig. II to fig. I:** Three line segments are added to the upper left and the lower right elements while three and four line segments respectively are lost from the upper right and the lower left elements.

79. (c) **From fig. II to fig. II:** The CW element in the left column shifts half-a-side ACW while other two shift one-and a-half-sides CW. The central element shifts to the upper left corner. The lower element in the middle column shifts to the centre and changes its shape.

80. (a) **From fig. I to fig. II:** 90° CW rotated form of each arc appears in the left column while 180° rotated form appears in the right column.

81. (b) **From fig. II to I** The right column elements rotate by 90° CW while the left column elements rotate by 90° ACW.

82. (a) **From fig. II to I** The whole figure rotates by 180°.

83. (e) **From fig. II to I** The rectangular element rotates by 90° ACW while its shading moves to end. The bar rotates by 90° CW. The end elements get inverted and one of them changes its side.

84. (d)

85. (c) **From fig. II to I** One of the bars rotates by 135° CW and one of its end elements is replaced by a new one. The end elements on the other bar interchange places.

86. (e) 87. (a) 88. (c)

89. (c) 90. (d)