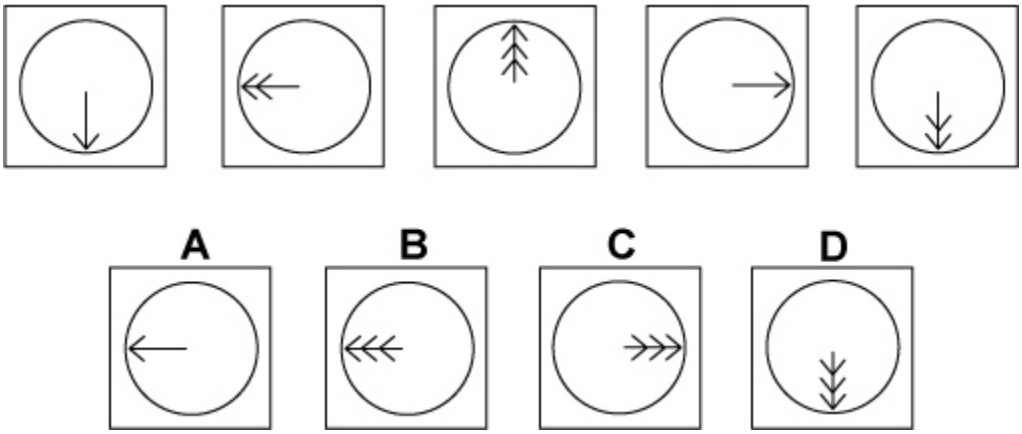
Inductive Reasoning
Practice Test 1

Solution Booklet

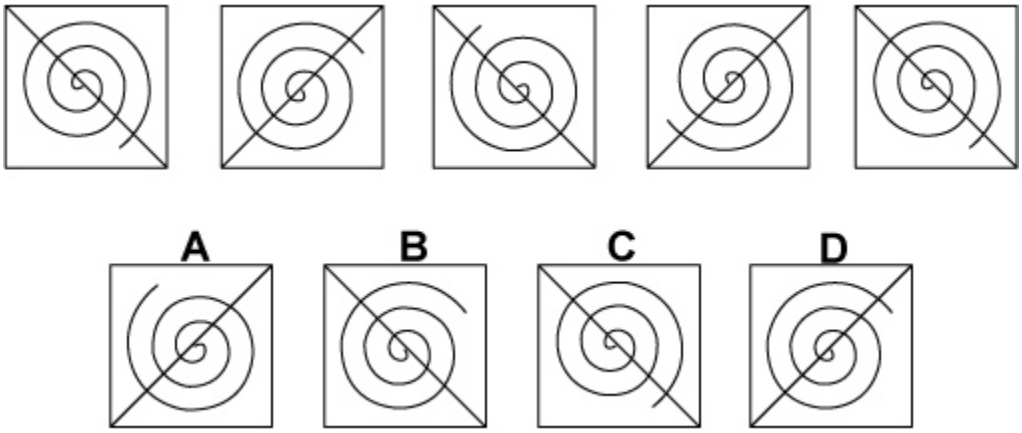
Question 1



Solution: B

Explanation:
In this question, there are two rules to follow.
The first rule is that the arrow rotates by 90° clockwise each time. Following this rule, the next diagram of the sequence should have the arrow pointing towards 9 o'clock. Therefore, the correct answer could be A or B.
The other rule is that the number of arrowheads changes from 1 to 2 to 3, then back to 1 again etc. Following this rule, the number of arrowheads in the next diagram should be three.
Therefore, the correct answer is B.

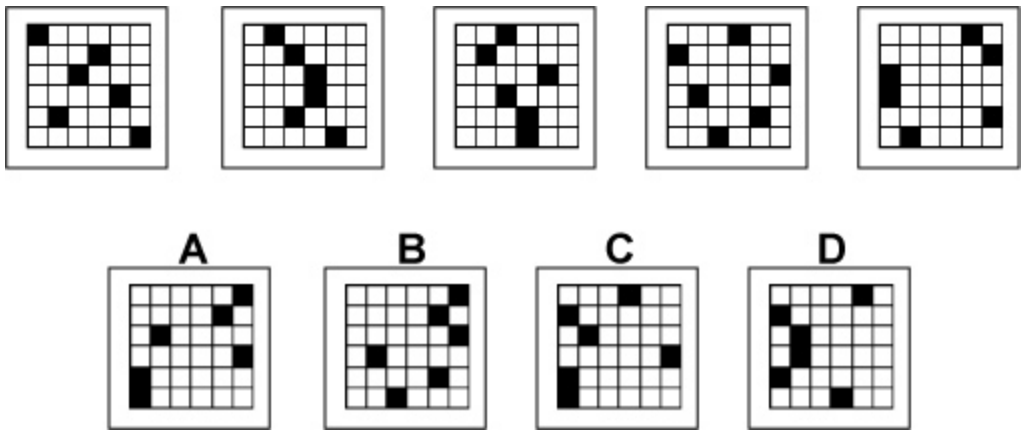
Question 2



Solution: D

Explanation:
In this question, there are two rules to follow.
The first rule is that the spiral rotates by 90° anticlockwise each time. Following this rule, the next diagram of the sequence should have the tail of the spiral at about 2 o'clock. Therefore, the correct answer could be B or D.
The other rule is that the diagonal alternates from to right-bottom left to top right-bottom left. Following this rule, the diagonal in the next diagram should be top right-bottom left. Therefore, the correct answer is D.

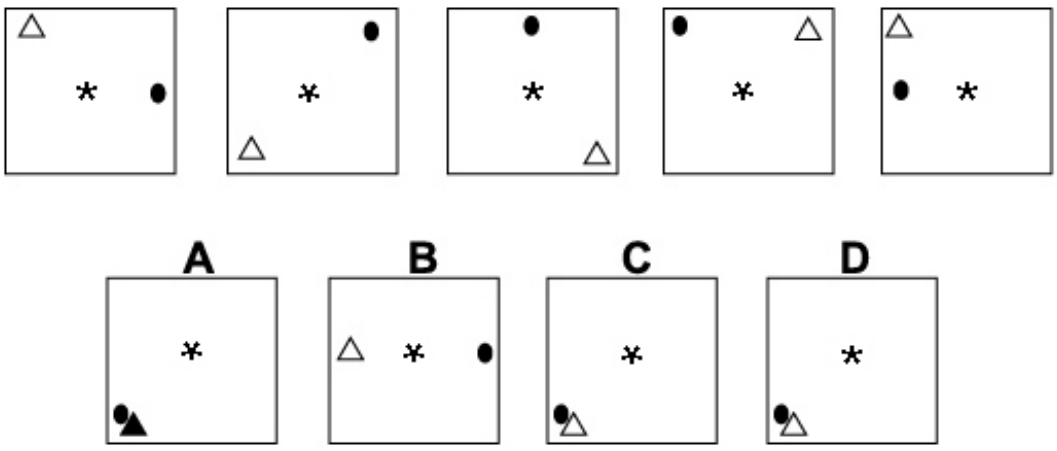
Question 3



Solution: A

Explanation:
In this question, there is one black square in each row of the grid. The black squares in the first, third and fifth rows move one place to the right each time; and when they reach the right edge of the grid, they move to the first column of the left edge. The black squares in the second, fourth and sixth rows move one place to the left each time; and when they reach the left edge of the grid, they move to the first column of the right edge.
Therefore, the correct answer is A.

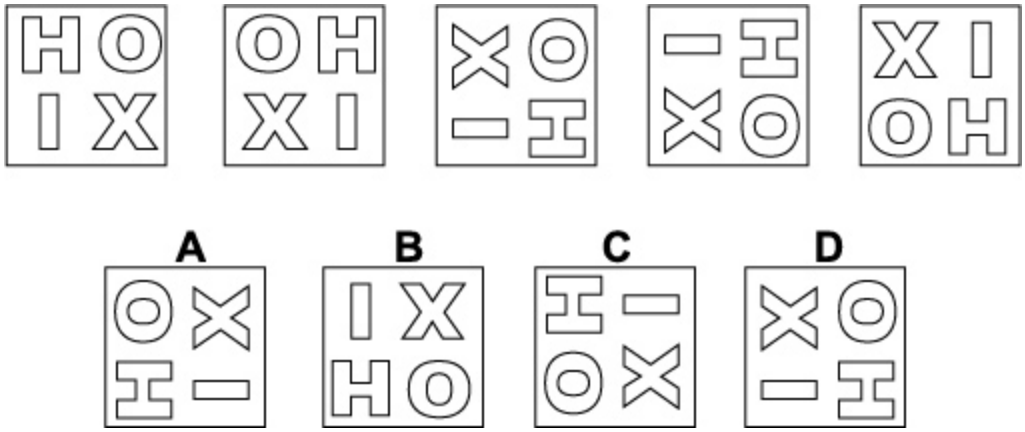
Question 4



Solution: C

Explanation:
In this question, there are three rules to follow.
The first rule is that the asterisk flips vertically each time. Following this rule, in the next diagram of the sequence, the asterisk will be upside down. Therefore, the correct answer could be A, B or C.
The second rule concerns the white triangle which rotates each time through 90° anticlockwise around the outside of the square. Following this rule, in the next diagram of the sequence, the white triangle should be in the bottom left corner of the square. Therefore, the correct answer could be C or D
The third rule concerns the black dot which rotates each time through 45° anticlockwise around the outside of the square. Following this rule, in the next diagram of the sequence, the black dot should be in the bottom left corner of the square. Therefore, the correct answer could be A, C or D
Taking all the rules into consideration, the only possible answer is C.

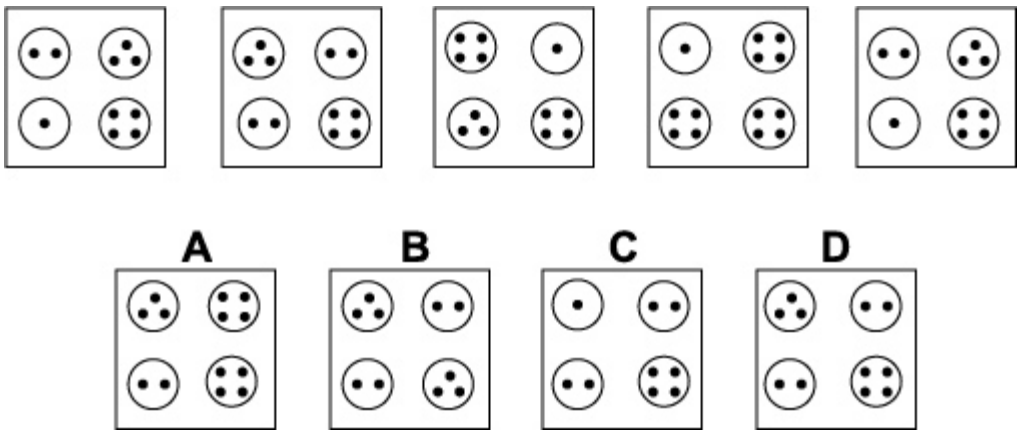
Question 5



Solution: B

Explanation:
In this question, there is a sequence of transformations: ‘reflection in the vertical axis’, ‘rotation of 90° clockwise’, ‘reflection in the horizontal axis’, ‘rotation of 90° clockwise’, ‘reflection in the vertical axis’ etc
Following this sequence, the next transformation should be ‘reflection in the vertical axis’, which means the next diagram in the sequence will be B.

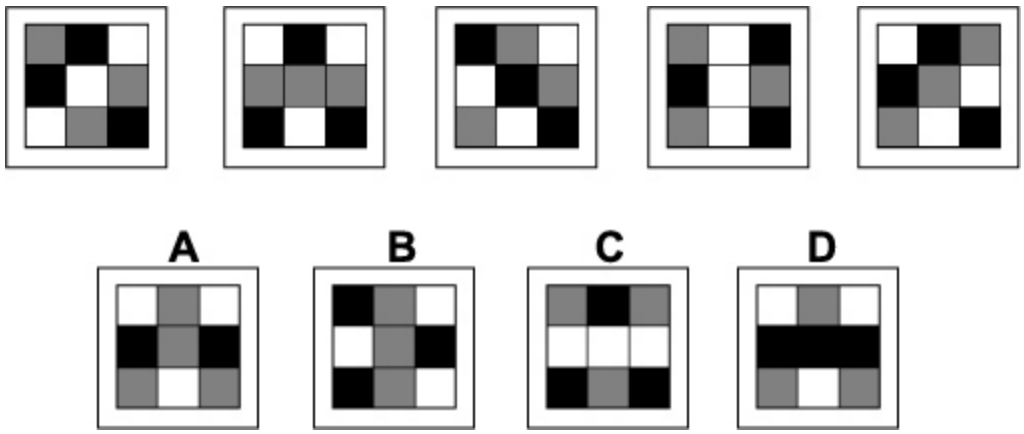
Question 6



Solution: D

Explanation:
In this question, the number of dots in each of the four circles follows a rule:
For the circle in the top left corner, the number of dots increases by 1 each time, with 4 becoming 1.
For the circle in the top right corner, the number of dots decreases by 1 each time, with 1 becoming 4.
For the circle in the bottom left corner, the number of dots increases by 1 each time, with 4 becoming 1.
For the circle in the bottom right, the number of dots is always 4.
Following these rules, for the next diagram in the sequence there should be 3 dots in the top left circle, 2 dots in the top right circle, 2 dots in the bottom left circle and 4 dots in the bottom right circle. Therefore, the correct answer is D.

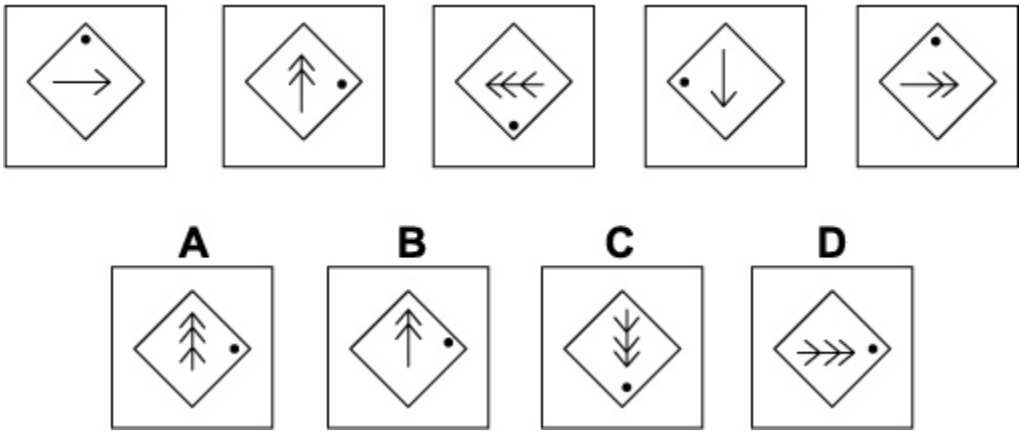
Question 7



Solution: D

Explanation:
In this question, there are two rules to follow.
The first rule is that the colours of the squares follow a pattern: black squares change to white, grey change to black and white change to grey.
The second rule is that the eight squares around the perimeter move one place clockwise each time.
Both these rules have to be applied simultaneously.
Following these rules, the next diagram in the sequence must be D.

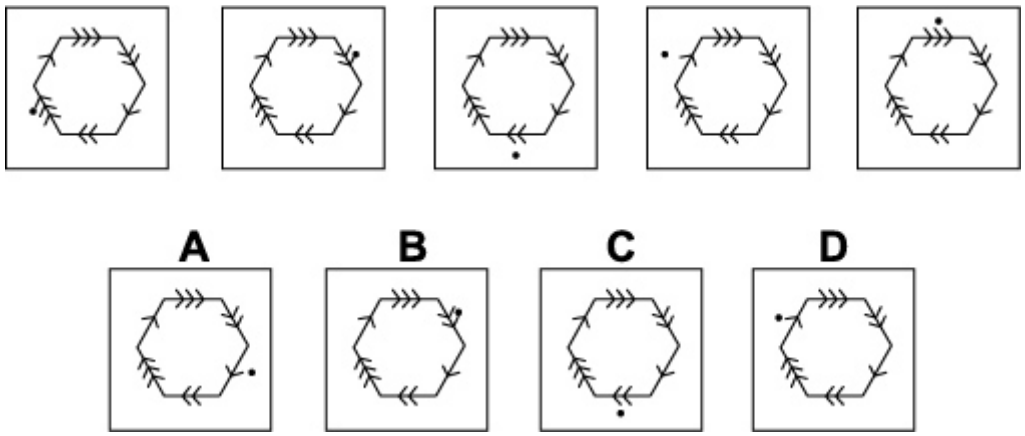
Question 8



Solution: A

Explanation:
In this question, there are three rules to follow.
The first rule is that the dot moves through 90° clockwise each time. Following this rule, in the next diagram of the sequence, the dot should be at 3 o'clock. Therefore, the correct answer could be A, B or D.
The second rule is that the line with arrows rotates through 90° anticlockwise each time. Following this rule, in the next diagram of the sequence, the arrowheads should point to 12 o'clock. Therefore, the correct answer could be A or B.
The third rule is that the number of arrowheads increases by 1 each time, with three arrowheads becoming 1. Following this rule, in the next diagram of the sequence, there should be three arrowheads. Therefore, the correct answer is A.

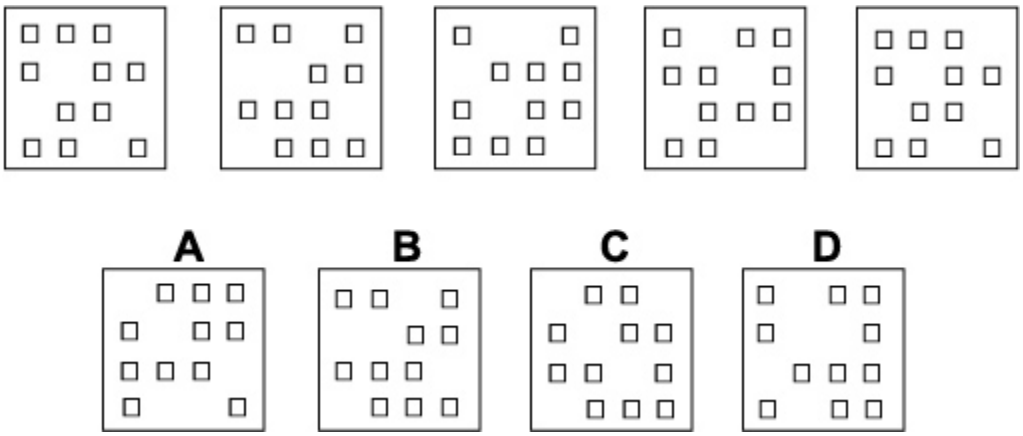
Question 9



Solution: C

Explanation:
In this question, there is a hexagon with arrowheads on each of its sides. There is also a dot. The dot rotates clockwise around the perimeter of the hexagon according to the number of arrowheads it is adjacent to.
Following this rule, to find the next diagram of the sequence, the dot will have to rotate three places around the perimeter of the hexagon. Therefore, the correct answer is C.

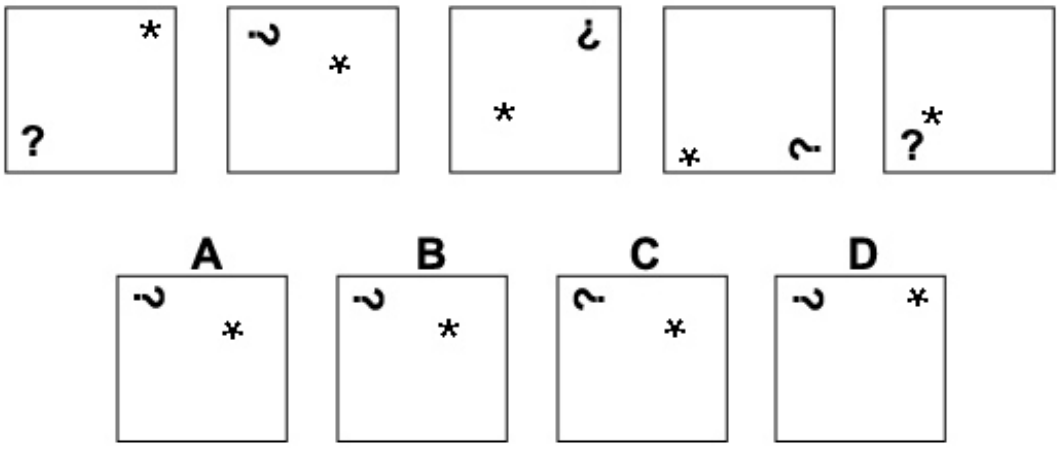
Question 10



Solution: B

Explanation:
In this question, there is a grid of squares. There are two rules that must be followed, one after the other.
The first rule is: the columns of the grid are moved one place to the right with the fourth column moving to the first column.
The second rule is: the rows of the grid are moved one place up with the top row moving to the bottom row.
Following these rules, to get the next diagram in the sequence will be B.

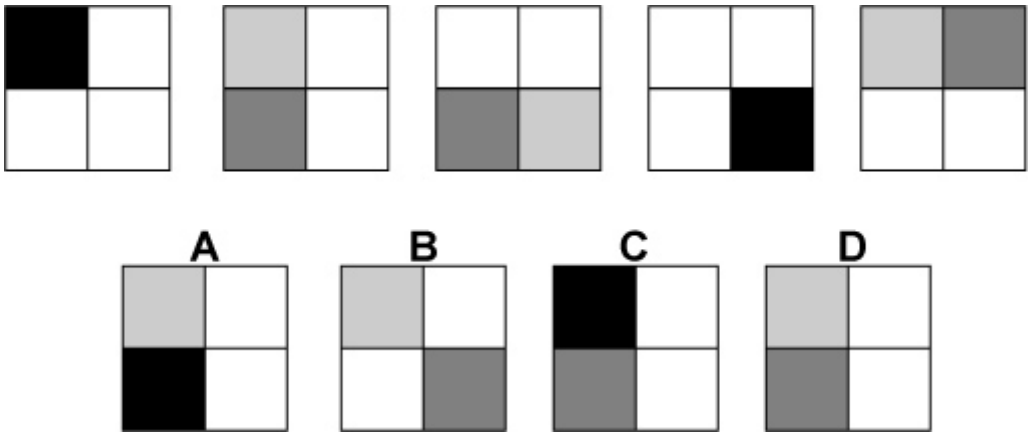
Question 11



Solution: A

Explanation:
In this question there are two rules.
The first rule concerns the question mark which rotates by 90° clockwise around the perimeter of the square each time, while also rotating itself by 90°clockwise. Following this rule, the next diagram of the sequence could be A, B or D.
The second rule concerns the asterisk which moves along a diagonal of the square to four equally spaced positions on the diagonal and at the same time flips vertically each time.
Following this rule, in the next diagram of the sequence, the asterisk should be upside down and one place from the top right corner of the diagonal. The correct answer, therefore, is A.

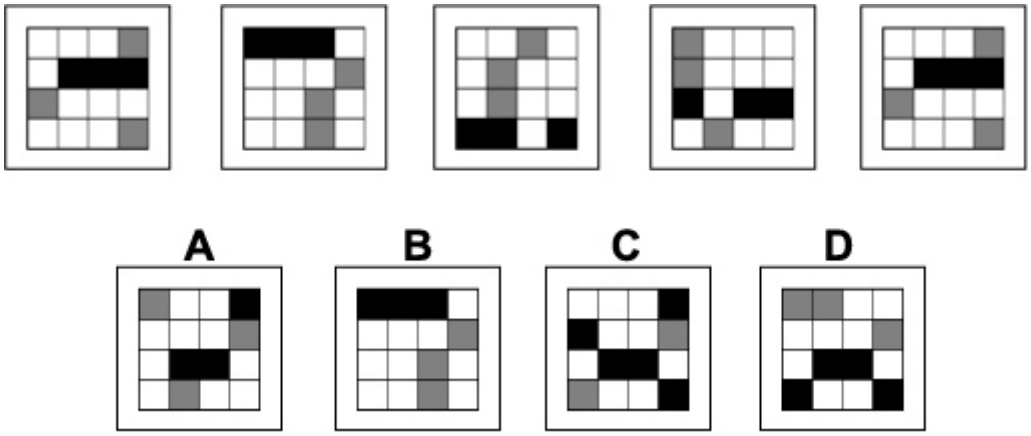
Question 12



Solution: D

Explanation:
In this question there are three rules to follow.
The first rule is that the four squares rotate by 90° anticlockwise each time and that two of the squares are always coloured white. Thus the bottom two squares are coloured white in the first diagram, as is also the case in the fifth diagram. Following this rule, in the next diagram of the sequence the two squares on the right will be coloured white. Thus the correct answer could be A, C or D.
The second rule concerns the colour of the square that starts off as black in the top left corner of the first diagram. As it rotates, the colour of this square changes successively from black to dark grey to light grey to white, then back to light grey etc. Following this rule, the square in the bottom left position in the next diagram of the sequence will be coloured dark grey. The correct answer, therefore, could be C or D.
The third rule concerns the colour of the square that starts off as white in the top right corner of the first diagram. As it rotates, the colour of this square changes successively from white to light grey to dark grey to black, then back to dark grey etc. Following this rule, the square in the top left position in the next diagram of the sequence will be coloured light grey. The correct answer, therefore, is D.

Question 13

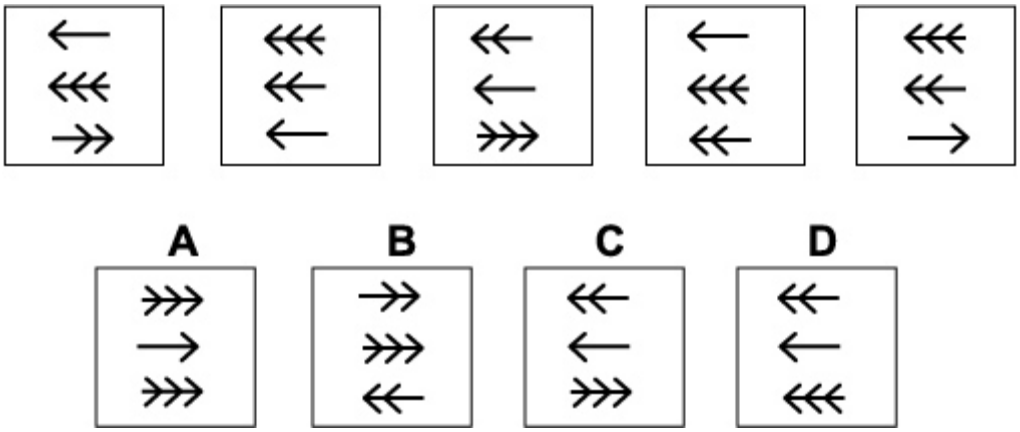


Solution: B

Explanation:
In this question there is a grid of white, grey and black squares. The squares move from one diagram to the next by one place diagonally up and towards the left. When a square gets to the edge of the square bounds, it reappears on the opposite side of the square bound.

Following this rule, the next diagram of the sequence will be B.

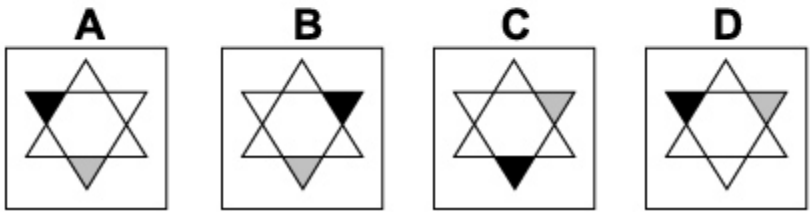
Question 14



Solution: D

Explanation:
In this question there are two rules to follow. The first rule is that an arrow with three arrowheads is changed to an arrow with two arrowheads, an arrow with two arrowheads is changed to an arrow with one arrowhead and an arrow with one arrowhead is changed to an arrow with three arrowheads. Following this rule, the next diagram in the sequence could be C or D.
The second rule is that the arrow in the bottom position changes direction. Following this rule, the arrow with one arrowhead pointing towards the right at the bottom of the fifth diagram becomes an arrow with three arrowheads pointing towards the left in the next diagram. The correct answer, therefore, is D.

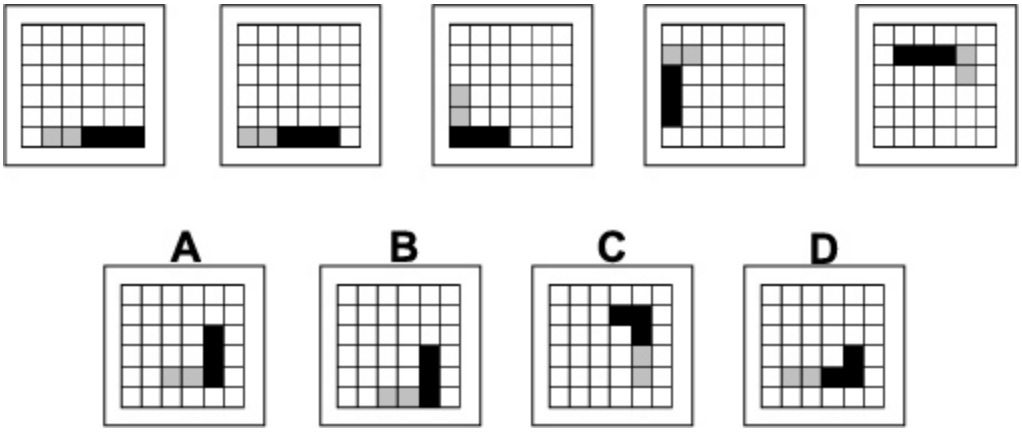
Question 15



Solution: A

Explanation:
In this question there are two rules that are applied one after the other.
The first rule is that the six-pointed star rotates by 60° anticlockwise. This rule is applied first.
The second rule is that the star is reflected in the vertical axis.
Following these rules, to obtain the next diagram in the sequence, the star should be rotated by 60° anticlockwise.
The correct answer, therefore, is A.

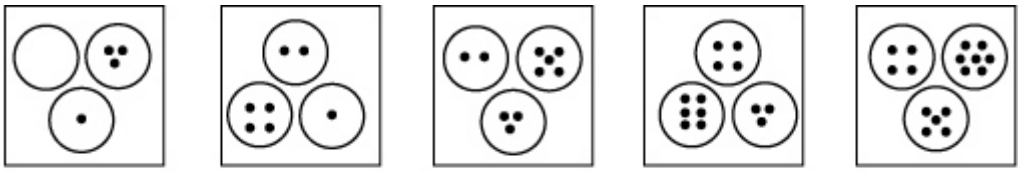
Question 16



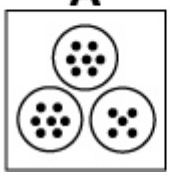
Solution: D

Explanation:
In this question, there is a 'train' of five squares (two grey and three black).
There are two rules to follow.
The first rule is that the 'train' moves around the squares of the grid, spiralling its way towards the centre.
The second rule is that the number of squares by which the 'train' advances each time increases by one.
Following these two rules, the train should spiral forwards five squares and the correct answer is D.

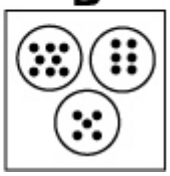
Question 17



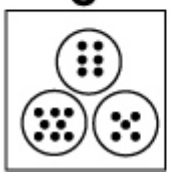
A



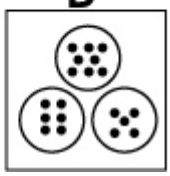
B



C



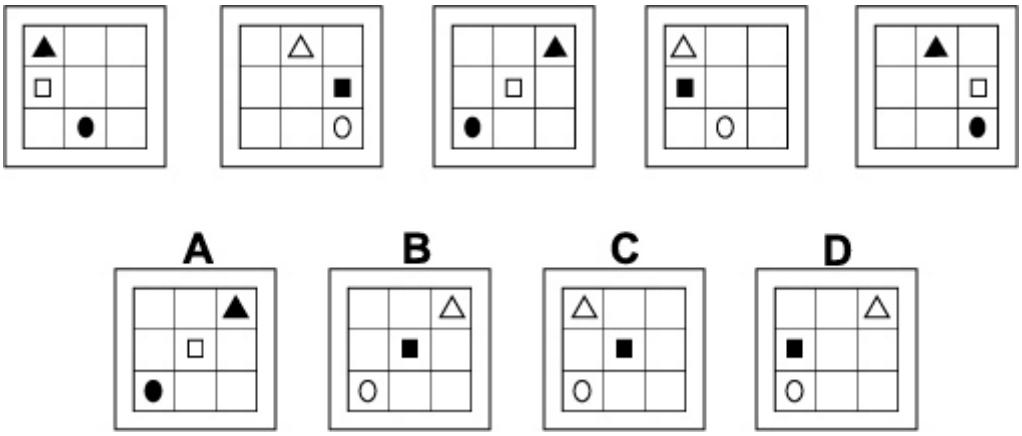
D



Solution: C

Explanation:
In this question, there are two rules to follow.
The first rule is that the number of dots in the three circles increases by 1 each time. Following this rule, in the next diagram of the sequence the three circles should contain five, six and eight dots respectively. The correct answer, therefore, could be B, C or D.
The second rule is that the three circles rotate by 120° clockwise each time. Following this rule, the correct answer must be C.

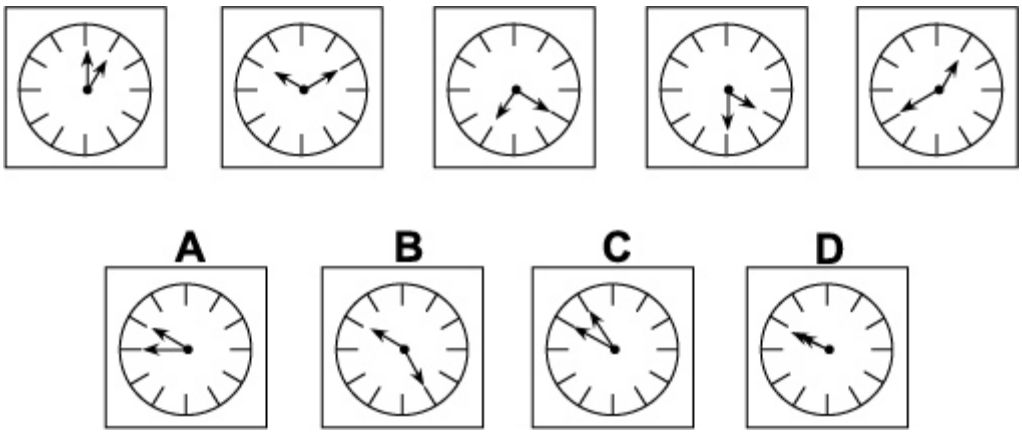
Question 18



Solution: B

Explanation:
In this question there are two rules to follow.
The first rule is that the colour of each of the three shapes changes each time. Following this rule, in the next diagram of the sequence the triangle should be white, the square black and the oval white. The correct answer, therefore, could be B, C or D.
The second rule is that the triangle and oval both move one place to the right each time and the square moves one place to the left each time. (When a shape reaches the end of a row it moves to the other end.) Following this rule, the correct answer is B.

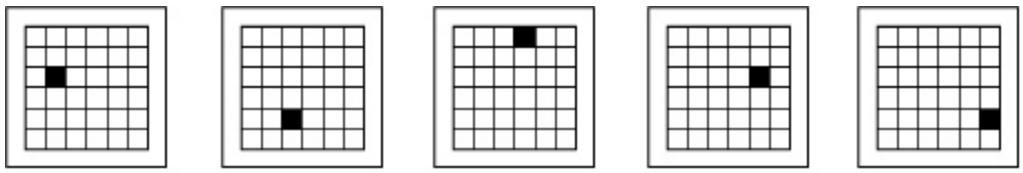
Question 19

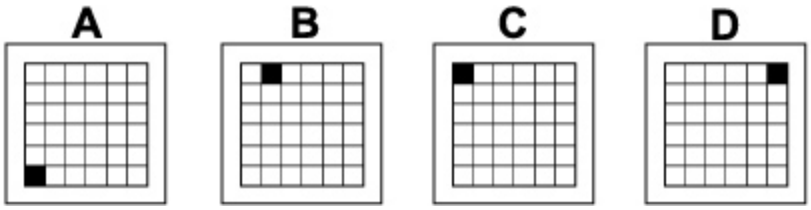


Solution: D

Explanation:
In this question there is a clock face with a short and a long hand. Each time the long hand rotates by 60° clockwise and the short hand rotates by 90° anticlockwise.
Following these rules, in the next diagram of the sequence the long hand should rotate by 60° clockwise from the 8 to the 10, and the short hand should rotate by 90° anticlockwise from the 1 to the 10.

Question 20

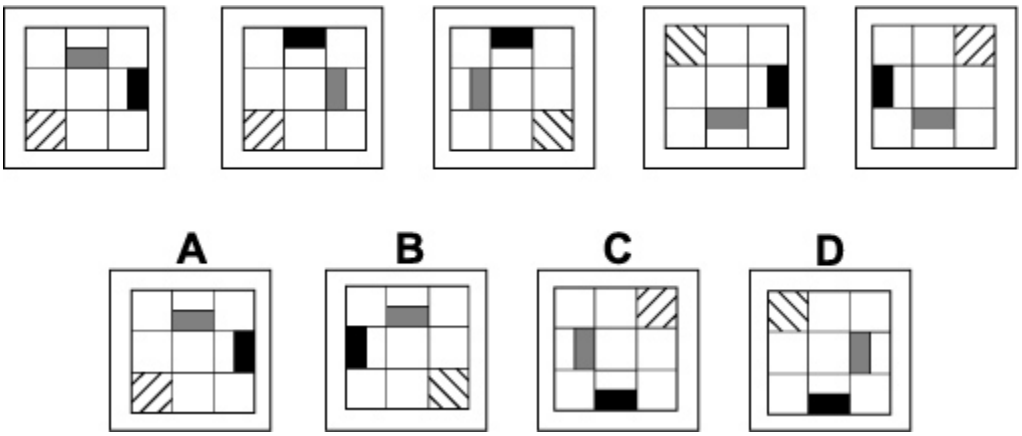




Solution: C

Explanation:
In this question there is a single black square which moves as a knight moves in chess - two squares down and one square to the right. When it reaches an edge it continues following the same pattern at the opposite edge.
Following this rule, for the next diagram in the sequence, the black square will move two squares 'down' to the top row and one square to the 'right' to the leftmost column. The correct answer, therefore, is C.

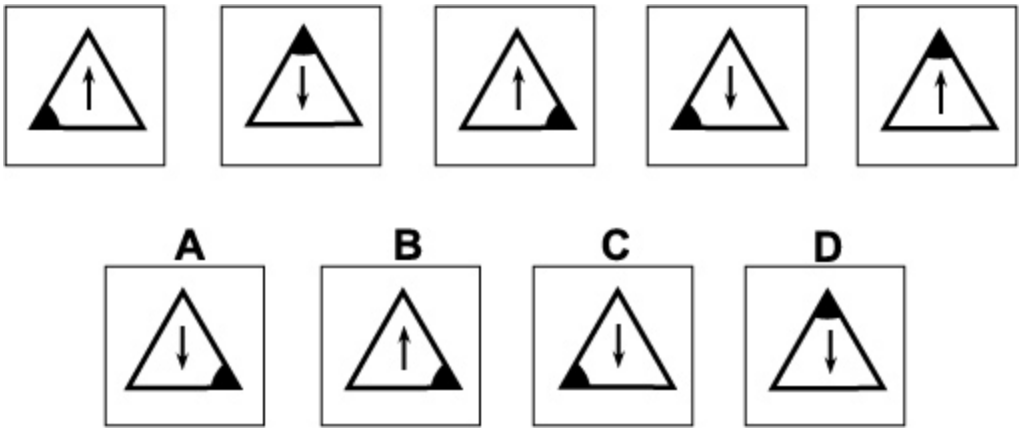
Question 21



Solution: C

Explanation:
In this question there are two rules to follow that are applied one after the other. The first rule is a reflection in the diagonal going from the bottom left corner of the square to the top right corner. The second rule is a reflection in the vertical axis.
Following these rules in turn, the first rule must be applied next, and the correct answer is C.

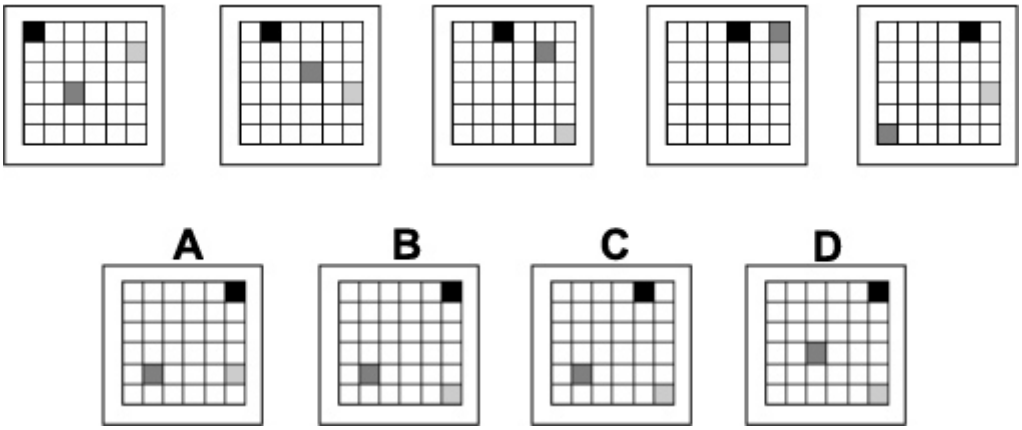
Question 22



Solution: A

Explanation:
In this question, there are two rules to follow.
The first rule is that the direction of the arrow is reversed each time. Following this rule, in the next diagram of the sequence the arrow should point vertically downwards. The correct answer, therefore, could be A, C or D.
The second rule is that the triangle rotates by 120° clockwise each time. Following this rule, in the next diagram of the sequence the shaded angle will be in the bottom right corner of the triangle. The correct answer, therefore, is A.

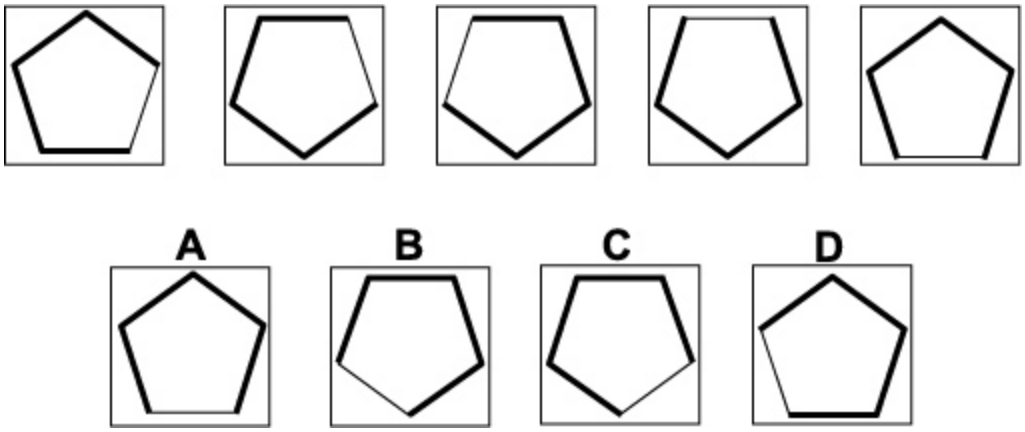
Question 23



Solution: B

Explanation:
In this question there are three coloured squares - black, dark grey and light grey. Each of these moves according to its own rule.
The black square moves one place to the right each time.
The dark grey square moves up a diagonal of the square one place each time. When it reaches the top right corner of the grid, it then moves to the bottom left corner.
The light grey square moves down two places each time. When it reaches the bottom row of the grid, it then moves to the top row.
Following all these rules, the next diagram in the sequence is B.

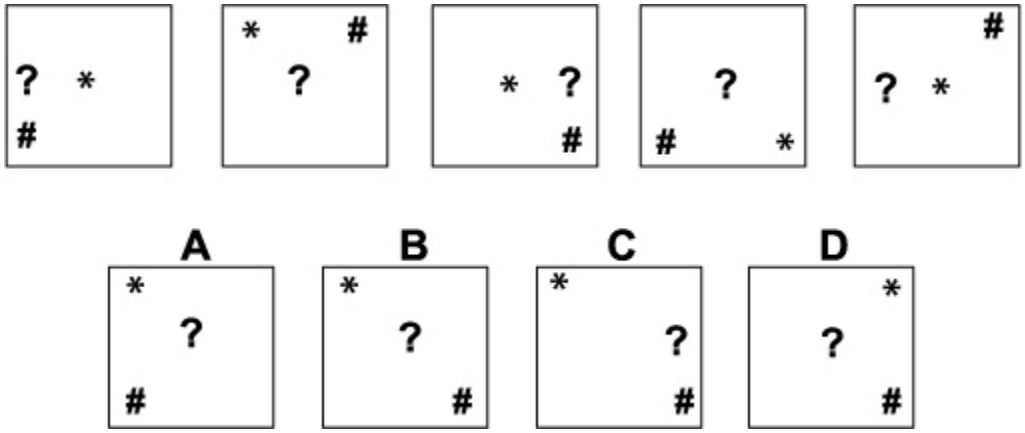
Question 24



Solution: A

Explanation:
In this question there is a regular pentagon with one edge thinner than the others. There are three rules that are applied one after the other:
The first rule is a vertical flip.
The second rule is a horizontal flip.
The third rule is a rotation of 72° about the centre.
The second rule needs to be applied next, therefore, and the correct answer is A.

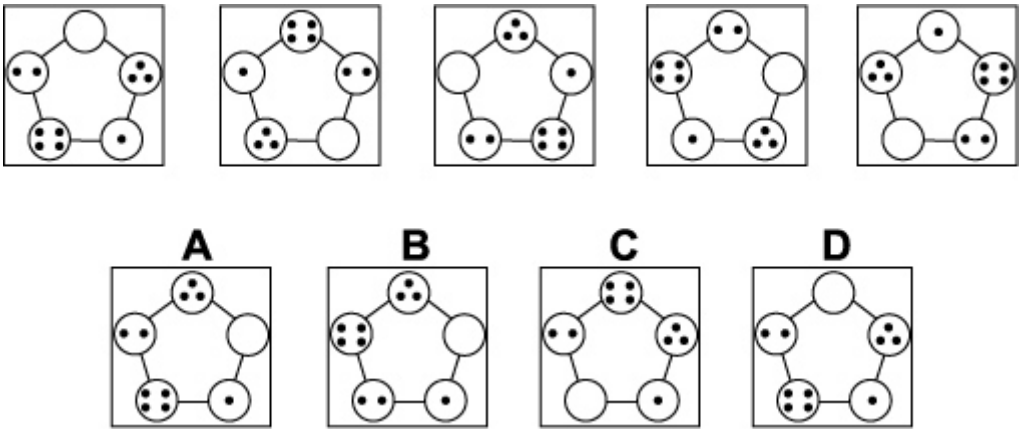
Question 25



Solution: B

Explanation:
In this question the three shapes each have their own rule to follow and move around the square in an imaginary 3 by 3 grid.
The question mark (?) always stays in the middle row of the 3 by 3 grid and moves one place each time, changing direction when it reaches an edge of the square.
The asterisk (*) always stays on the diagonal going from the top left of the square to the bottom right, and moves one place each time, changing direction when it reaches a corner of the square.
The hash symbol (#) moves clockwise around a triangle with vertices at the bottom left, top right and bottom right corners of the square.
Following these rules, the next diagram in the sequence is B.

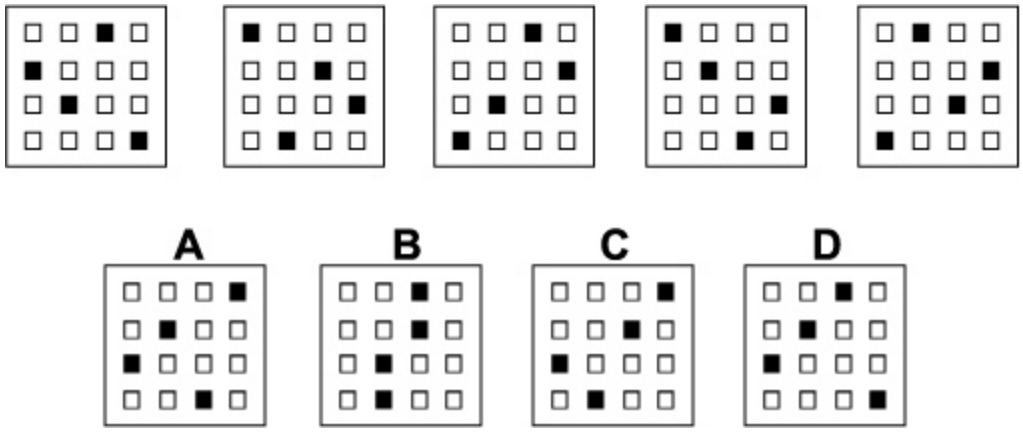
Question 26



Solution: D

Explanation:
In this question there are two rules to follow.
The first rule is that the pentagonal shape rotates through 72° anticlockwise each time.
The second rule is that, at the same time, the number of dots increases by 1, with 4 dots becoming 0 dots.
When both these rules are applied simultaneously, the next diagram in the sequence is D.

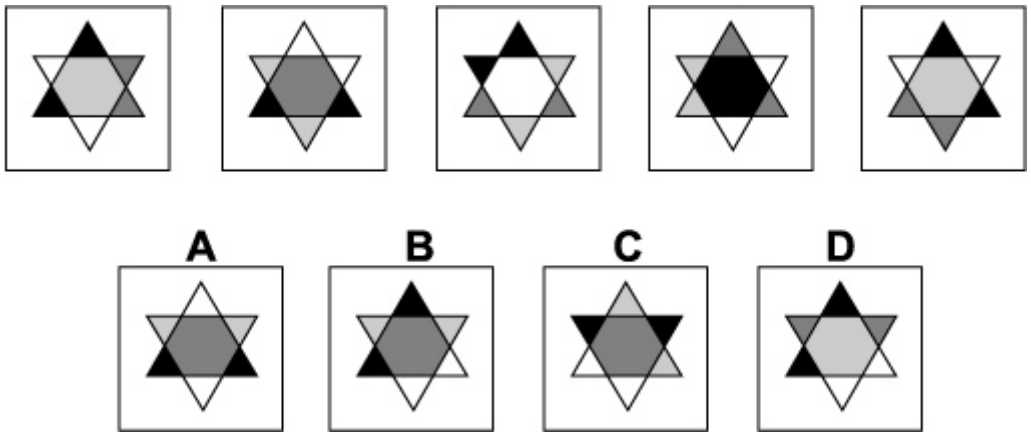
Question 27



Solution: A

Explanation:
In this question there are two rules that are applied alternately.
The first rule is that the first and third columns interchange and the second and fourth columns interchange.
The second rule is that the rows move up one place, with the top row going to the bottom row.
To find the next diagram in the sequence, the first rule must be applied next. The correct answer, therefore, is A.

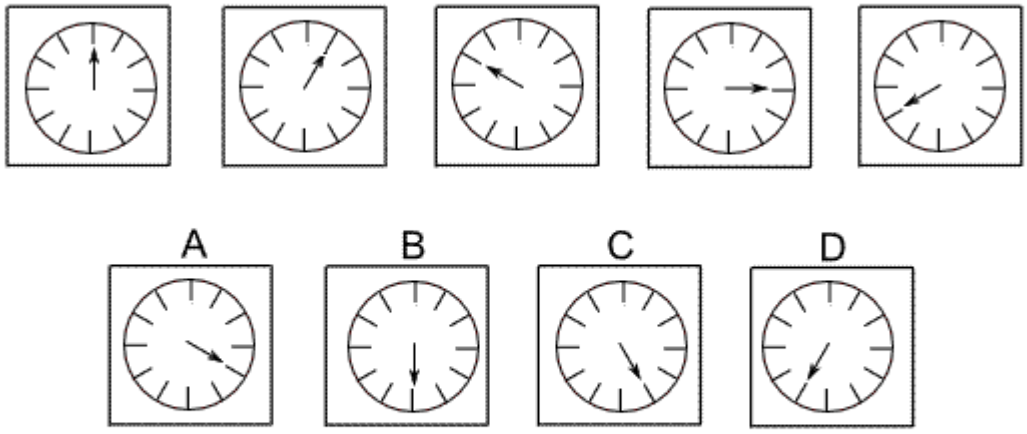
Question 28



Solution: B

Explanation:
In this question there are regions with four colours - black, light grey, dark grey and white.
There are two rules to follow at the same time.
The first rule is that the star shape rotates by 60° anticlockwise about its centre each time.
The second rule is that the colours of the regions change according to the pattern - black changes to light grey, light grey changes to dark grey, dark grey changes to white, and white changes to black.
Following both these rules simultaneously, the next diagram in the sequence is B

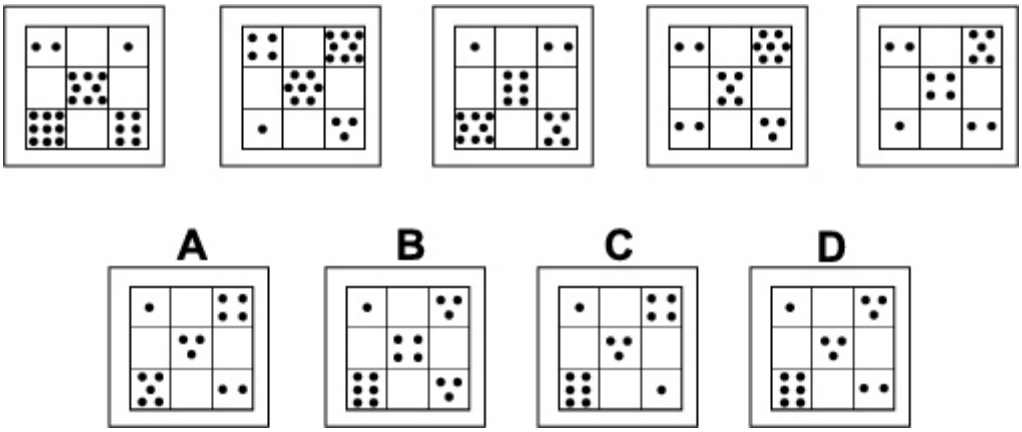
Question 29



Solution: C

Explanation:
In this question the arrow rotates around the clock face alternately clockwise and anticlockwise and the angle of rotation is always an odd multiple of 30°.
Thus the first rotation is 30° (1 × 30°) clockwise; the next is 90° (3 × 30°) anticlockwise, the next 150° (5 × 30°) clockwise, and the next 210° (7 × 30°) anticlockwise. The final rotation to get the next diagram in the sequence will therefore be 270° (9 × 30°) clockwise, and the correct answer is C.

Question 30



Solution: D

Explanation:
In this question there are three rules to follow.
The first rule is that the number of dots in the centre square of the grid decreases by 1 each time. In the next diagram of the sequence, therefore, the centre square should have three dots and the correct answer could be A, C or D.
The second rule is that the number of dots in the centre square is equal to the sum of the numbers of dots in the top left square and the bottom right square. The correct answer, therefore, could be A, B or D.
The third rule is that the number of dots in the centre square is equal to the difference between the numbers of dots in the top right square and the bottom left square. The correct answer, therefore, can only be D.

- End of Test 1 -