Answers & Explanations

to Saville's Technical Aptitude Preparation Guide*

In this document you will find detailed explanations to the Verbal and Numerical example questions as shown on Saville Consulting's website and PDF preparation guides.

The explanations are in order of appearance.

JobTestPrep team

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Spatial Reasoning

Q1

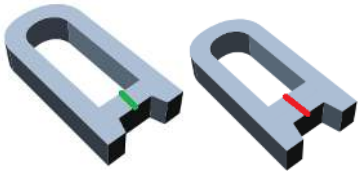
A. The rotation of the shape is misleading. Although we are immediately drawn to rotate all four shapes in the same direction, this specific shape is fairly symmetrical and so there is no need to waste time on mental rotations. The best way to go about this question is to move from feature to feature and see if any differences are apparent between the shapes. Shape "A" has asymmetric "legs" (marked in red) and thus is the correct answer.

Correct: Incorrect:

Q2

C. In this case, the shapes are not rotated so all we need to do is go over each feature and compare it between all the shapes to find out the shape with the odd feature. Some people find it easier to start examining the shapes from the cut-out section and move from there outwards. Shape "C" is slightly wider than the other shapes in the marked red area and thus is the correct answer.

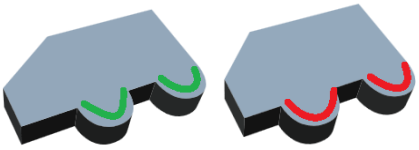
Correct: Incorrect:



Q3

C. In this case, the shapes are not rotated so all we need to do is go over each feature and compare it between all the shapes to find out the shape with the odd feature. Shape "C" is slightly wider than the other shapes in the marked red area and thus is the correct answer.

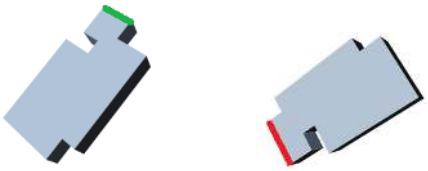
Correct: Incorrect:



Q4

D. Here the shapes are rotated and asymmetrical, therefore it is recommended to first mentally rotate them all in the same direction so as to check whether or not one of the shapes has a different orientation than the rest. Once we have completed this task we find that all shapes have the same orientation so the next step is to go over each feature and compare it between all shapes. Shape D differs from the other shapes in the marked red area and is thus the correct answer.

Correct: Incorrect:



Mechanical Reasoning

Q1

A. The handle and bar are connected to one another, thus when the handle moves so does the bar. Since both the handle and the bar are parallel to one another (meaning, they are aligned in the same way), they will both move in the same direction.

Notice that the two rounded segments which connect between the handle and the bar are part of the sturdy complex and not cog wheels.

Q2

B. In this question, we need to decide in which option we are required to apply less force.

First, let's consider what we need to counter in order to lift the handle; The weight's torque, which is in an opposite direction (downwards).

Let's recall what torque (aka moment) is:

Torque = Force * Distance

Force- the force vector (meaning the vertical component)

Distance- the moment arm, which is the distance between the point where the force is applied and the axis of rotation (pivot).

The force we are required to apply has to counter the weight's torque. Since in both options we apply our force on the end of the handle (meaning, the distance component is identical), the torque depends solely on the amount of force we apply. In order to apply less force, we need to resist a smaller torque. So, in which option is the weight's torque smaller?

In both cases the force is the weight placed on the handle (5 units) and the distance is measured from the connection point (hinge) between that handle and the pole. Since the distance in option B is smaller (between the weight and the hinge), the torque is also smaller. Thus, less force is required in order to lift the handle in option B.

Intuitive solution- imagines a seesaw or scales; the further the weight is located from the center, the more influence it has.

Q3

A. When rotating cogwheels in a single plain, the transmission between the cogwheels works in such a manner that one cogwheel causes the next to rotate in the opposite direction.

We know that the left cogwheel rotates in a clockwise direction and therefore the cogwheel to its right must rotate in a counter-clockwise direction. This option is indicated by answer choice A.

Another way to solve this question is by visualising the motion of the cogwheels. Imagine the point of connection between the cogwheels- the cog belonging to the left cogwheel is pushing down the cog belonging to the right cogwheel, while completing its rotation. If the direction of the right cogwheel is downwards on its left side, then it must go upwards in the right side in order to complete a full rotation.

Solving tip: notice that this means that when provided with a series of cogwheels connected to one another in a single plain, the direction of rotation alternates.

Q4

A. The handle and arm are connected to one another via the metal square in the middle; thus, when the handle moves so does the arm. Since the metal square is attached to a pole, it also served as a pivot point. Consequently, if one end is pressed downwards, the other end is lifted. This motion resembles the movement of a seesaw or the principle behind how you play the classic game "pick-up sticks" (aka "jack straws").

Diagrammatic Reasoning

Set 1

Q1

D. Operator T changes the shadings of all figures (but not their shape or size). Thus, we should expect all figures to be the same shape and size, but in a different colour. Since the final frame shows that all figures are dark green, we should expect the first frame to include the same figures in light green. This is the case in option D.

Q2

B. The only change observed between the first and last frame is a change in the shape of the first figure. Thus, we need to locate an operator that

does exactly that. From examining the panel we can see that this is the function of operator V.

Q3

A. We are presented with a frame that consists of a small, light circle, a dark triangle and a big, light circle. The first operator, U, Swaps the 1st and 3rd figures, so the small circle is now the third figure and the big circle is now the first figure. Next, the T operator changes the shading of all figures, so what we get is (left to right): A big dark circle, a light triangle and, finally, a small dark circle. This frame corresponds with answer option A.

Q4

B. In this type of questions it is recommended first to identify the evident changes between the first and last frame, and only then to assess the functionality of the operators. The only visible change between the frames is that the first figure has changed from a circle shape to a triangle shape. The operator that is responsible for this specific change is operator V. No other changes have occurred and therefore no other operators were involved. Thus the answer is B, as T was not activated.

Set 2

Q1

A. Since we know from the panel that the "plus" operator changes the size of circles, all we need to do is locate the circles on the last frame and change their size to reflect the initial frame, prior to operating the "plus". Thus the correct answer is A.

Q2

C. Two changes are observed between the first and last frame: (a) the circles have changed their size and (b) the triangle has changed its colour. The corresponding operators responsible for these changes are the "plus" operator (changes size of circles) and the "lightning" operator (changes shading of triangles). Thus, the correct answer is C.

Q3

D. We are told the "arrow" operator ''changes light figures'', however we are not told in what way. From examining the 2 relevant examples (third and fourth) we can infer that the change is evident in the size of the shapes. There is only one light figure in the frame (the small left circle) and only one answer option which turns that circle into a big circle without changing any of the remaining figures of the frame. This is answer option D.

Q4

D. In this type of questions it is recommended first to identify the evident changes between the first and last frame, and only then to assess the functionality of the operators. There are two visible changes between the frames: the two light triangles have changed their shape and their colour. The light circle does not appear to have changed. Let's try and activate the operators one by one. First, the "arrow" operator" changes the size of the light figures, so ALL figures should have changed their size. While the triangles in the final frame are indeed smaller, the circle's size hasn't changed. The reason for this is the next operator-the "plus"- as its function is to change the size of circles. This explains why the circle in the last frame is identical to the circle in the first frame. The last operator-the "lightning"- indeed changes the color of the triangles. Thus, all operators have worked, and the correct answer is D.