



Preparation Book for the

TestAS

Engineering Module

Visualising Solids

SECOND EDITION

2017

- ✓ Improve your performance with more than 125 practice questions
- ✓ Master the test with feedback from experts and successful test takers
- ✓ Practice with dozens of tough questions

BAUSCHMID

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FOREWORD

I am as passionate about education as I am about learning. Holding BA/BS degrees from the Wharton School in the United States and an MBA from Insead in France and Singapore, I have found that, over the course of my career, my education has opened many doors for me. I wrote these test preparation books to support students with similar passions.

Over the years, with our company [edulink](#), I have been privileged to help young men and women navigate what can be a complicated university application process. It is a first step toward the realization of their educational dreams, and a critical one. I find it very rewarding to be a part of this very important decision, helping students secure placement at German universities that will meet their long-term goals.

Due to the highly competitive nature of admission to these schools, applicants must always be looking for ways to differentiate their application. One of the most effective ways that they can do this is by performing well on the TestAS exam, an aptitude test for applicants from non-European countries who intend to pursue their studies at a German university. More than ever before, German universities are using the results of this exam to determine a student's qualification for university-level courses.

We created this preparation book based on our own first-hand experience taking the exam and detailed interviews with dozens of students who have taken the exam in Indonesia, Vietnam, China, Turkey, Russia, and Ukraine. This ebook gives a comprehensive overview of each of the tested topics, complete with test-taking tips and many practice questions, each designed to help you take the TestAS with confidence.

I wish you the best of success on the exam and in your applications.

Ozveri Bauschmid

Ozveri Bauschmid, Peter Bauschmid

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Once you have gone through all of the questions, go back to the ones that you skipped before. This two-round strategy may also boost your self-confidence, as you will see that – despite the skipped questions – you can solve many questions correctly.

Use the process of elimination to rule out the answers that you know or believe are wrong. Please mark these ruled-out choices clearly in the question booklet.

Next, guess from the remaining questions. (There is no penalty for guessing. A blank answer and a wrong answer have the same impact on your score.)

STEP 3: Determine which letter you have picked the least and use this as your letter of the day.

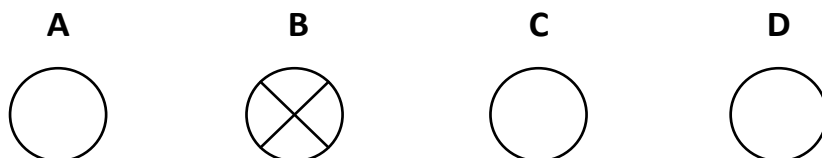
Look at which of the answer choices A to D you crossed out the least on the answer sheet for that subtest. This will then be your letter of the day. (In past years each of the four answer letters were selected roughly equally.) Select the same answer choice each time you guess. This will increase your likelihood of answering more questions correctly.

If you are running out of time, skip step 2 so you can at least mark all the answers.

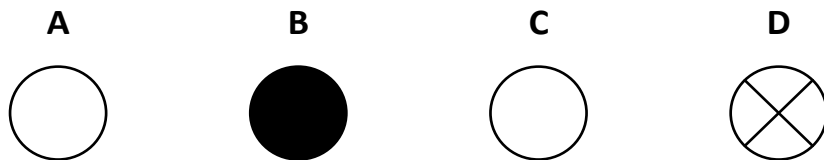
1.4 HOW SHOULD I FILL OUT THE ANSWER SHEET?

For the core test and the subject specific modules, you will be given a question booklet along with a separate one-page answer sheet. All answers need to be marked on the **separate answer sheet** using a ball-point pen.

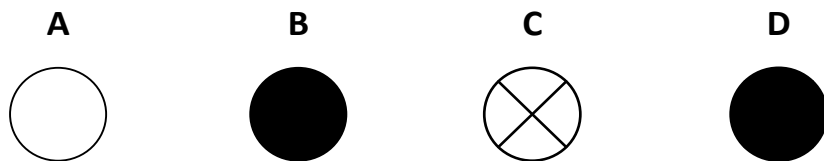
You need to use a blue or black pen to fill in the answers. Please do not use a pencil. Your answer choice must be marked with an X. In the example below, B is marked.



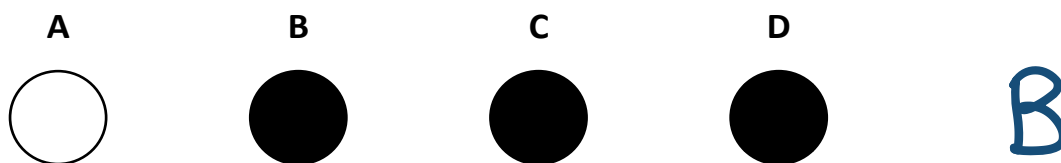
In case you need to change an answer that you already marked, fill out the entire wrong circle and put an X in your new answer choice. In the example below, D is marked.



In the unlikely event that you would like to make a further change, please fill out the wrong circles and put an X in the correct answer. In the example below, C is marked.



If you change your mind again and you would like to re-enter an answer which you have already crossed out, you need to fill out the wrong circles and manually write the correct letter (A, B, C, D) at the end of the answer row. In the example below, B is marked.



Since a computer might do the grading, we urge you not to make too many corrections on the answer sheet.

Please make sure that all of your answers are in the answer sheet before the time is up.

1.5 PRACTICAL TIPS FOR THE TEST DAY

The test can last over 4 hours. Make sure to bring **drinks and a snack** to maintain your energy during the test.

Also, make sure that you get enough sleep during the night before. This might sound like a matter of course, but it must be understood by all that it is of great importance because you need to concentrate for more than 4 hours!

2 VISUALISING SOLIDS - QUESTION TYPE 1: 2D VIEW OF A SOLID

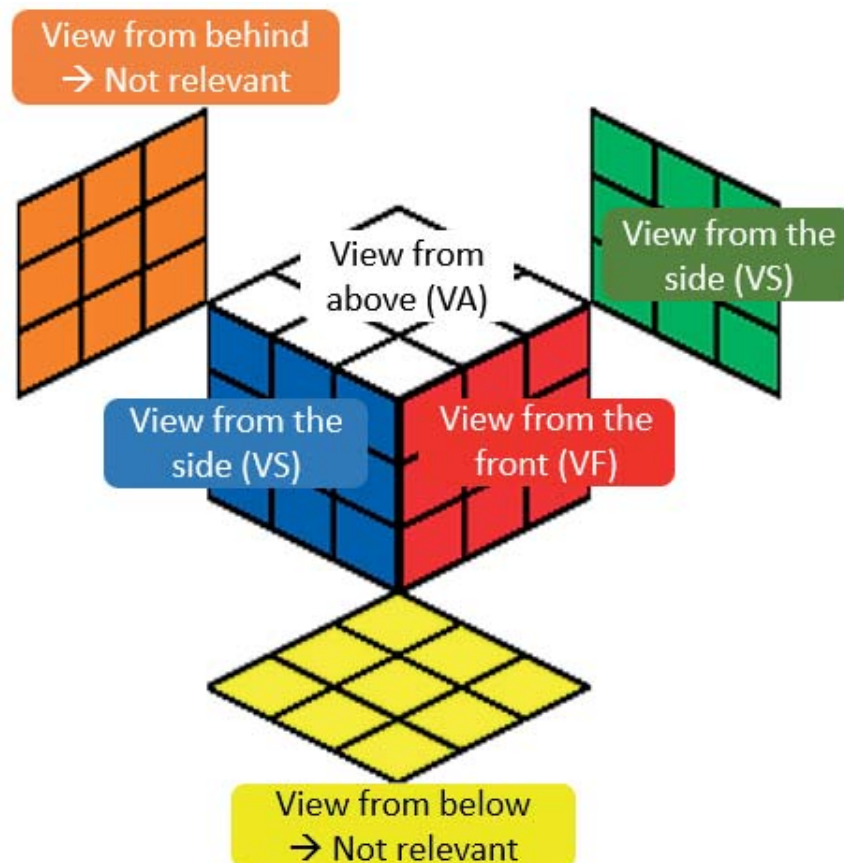
2.1 STRUCTURE

The questions within this section test your ability to envision the sides of a three-dimensional object based on two-dimensional images.

For every question, two views are presented. The third view for this object is wanted. The presented and the wanted view are as follows:

- the view from the front (VF),
- the view from the side (VS) from right to left and
- the view from above (VA).

This means that in every question, two of the above-mentioned views are presented and the third is the answer. The view from behind or from below is not relevant for these questions.



In the example above, the left view is expressed in blue and the right view in green. Within the test, it is not explicitly necessary to differentiate between the left and the right view.

To answer the questions, you have to **determine, using specific features**, what the 3D object looks like and which of the four answer choices is the correct one.

Just like within the rest of the TestAS, the difficulty level for the question type increases with each question. If you are not able to answer a question, mark it and move on to the next question. If you have time later, then go back to the skipped questions.

During your engineering studies (e.g. mechanical engineering), you will often use your ability to envision three-dimensional objects. Initially, some questions may seem difficult to answer, but with this type of question, practice makes perfect. This question type can be learned.

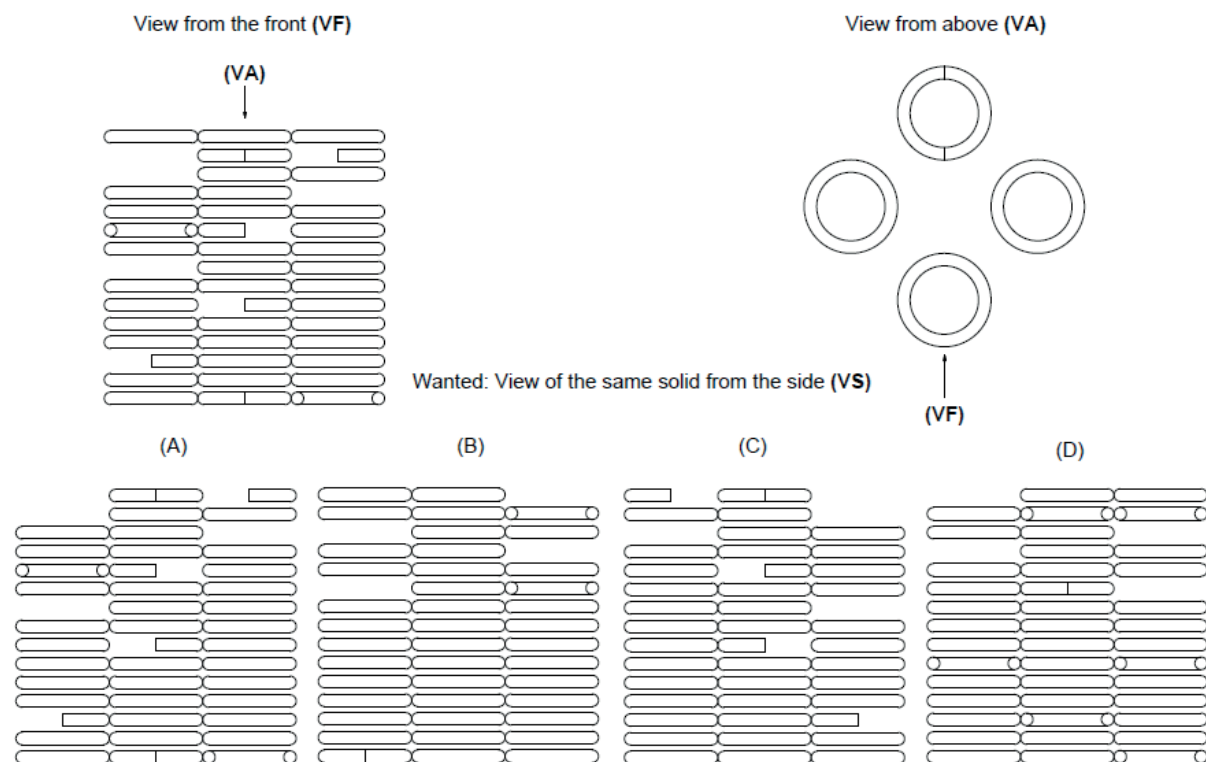
Below, we will present you with an approach for answering such questions. We have also added an image of the three-dimensional object along with colour-coded arrows for easy orientation. We hope this helps you to quickly master this question type.

Let us start with an example. The three-dimensional image of an object helps create a better understanding of the questions. But, first try to answer the questions without looking at the answer. For the first questions, you may feel as if you are making little headway. But, with practice and the help of the three-dimensional images, you will quickly get used to this type of question.

2.3.1 TIP 3 (CONTINUED): TEST BOTH SIDES IF THE WANTED SIDE IS NOT PRESENTED

In the following example, the view from the side is wanted. However, there are no arrows to identify the view from the side. Thus, we have to check which of the possible answers corresponds with the right or the left view. This means you have to check your answers twice which makes such questions quite time consuming.

EXAMPLE 2



In this example, we see that the two-dimensional views express the edges of the object as lines. How are roundings expressed in a two-dimensional view? Since there are no edges, they look more like rectangles.

In order to find an answer, let us start by testing the view from the right side.

3 VISUALISING SOLIDS – QUESTION TYPE 2: 3D VIEW OF A CUBE

3.1 STRUCTURE

The section "Visualising Solids" from the TestAS is made up of two question types each with 13 questions. In this part of our eBook, we will take a look at the second question type: 3D views of a transparent cube and its contents.

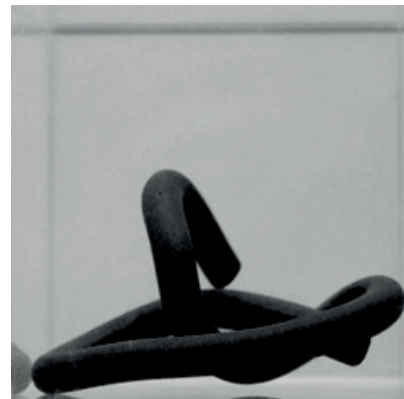
These cube questions test our spacial imagination. For every question, two images of a transparent box are presented which display, for example, cords, cables or ropes. The left image is always the view from the front. The right image displays some other side of the cube. The right image can thus be a view from the **right** (r) or **left** (l) or from **above** (a), **below** (w) or **behind** (d). The task is to determine from which view the right image is presented.

EXAMPLE 1



Here you see the cube from the front!

- (A) : r
- (B) : l
- (C) : w
- (D) : a
- (E) : d



Here you see the cube from _____?

Answer C

(The steps listed below are explained in more detail on the following pages.)

Step 1: Distinctive features: End of the cable

Step 2: Movement of the features: Vertical

Step 3: Mirror-inverted: No

Step 4: Rotation: No

Step 5: Tilting: Yes, to the bottom

3.3 COMMON MISTAKES – RIGHT OR LEFT?

Some students confuse the right and left sides even though they realized the correct rotation direction.

Please remember: If you turn the cube to the left, you will see the right side (and vice versa). Always enter the side of the cube as your answer (in relationship to the view from the front) and not the direction of the envisioned rotation.

If you want to have the view from the **left**, then you must envision turning the cube to the **right**.

If you want to have the view from the **right**, then you must envision turning the cube to the **left**.

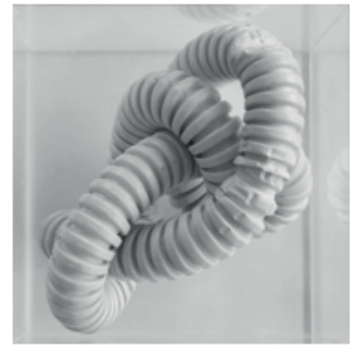
EXAMPLE 3



View
from left



View from
the front



View from
right

3.4 THESE 5 STEPS WILL HELP YOU TO SOLVE THE CUBE QUESTIONS

For these questions, it is important to analyse the cube systematically (meaning every side step by step). Below, we describe what such a systematic analysis could look like. You should be able to answer most of the questions using this strategy.

3.6.1 MIRROR-INVERTED IMAGE

Two images are mirror-inverted when the elements are at approximately the same height, but are on opposite sides.

This means that the elements found in the top half of the cube will still be in the top half of the cube and that the elements found in the bottom half of the cube will still be in the bottom half of the cube.

However, the elements found in the right half of the cube switch to the left half of the cube, and the elements found in the left half of the cube switch to the right half of the cube.

EXAMPLE 8 AND 9

