

## BASIC SURFACES FOR ENGINEERING



*Figure 00. Main stairs of Engineering School of Bilbao II. Picture made by the authors, 2018.*

### 1. Test of surfaces representation

## Instructions

The questions presented are multiple choice questions, with only one correct answer.

The solutions are at the end of the document.

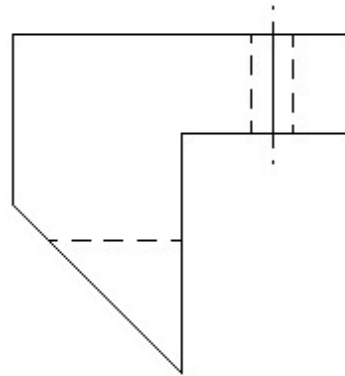
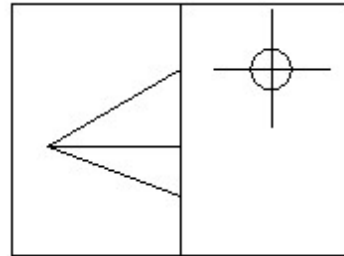
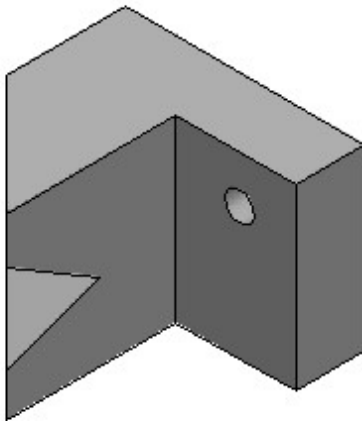
## Surfaces. Basic concepts test

Which of the following statements is correct:

1. Surfaces are represented by:
  - a. Projections of external edges.
  - b. Projections of contour with the highest elevation.
  - c. Projections of apparent contour and edges.
  - d. Only view parts are represented.
  
2. In surfaces representation, to determine the apparent contour:
  - a. In each projection, contact points of projection beams perpendicular to the surface must be connected.
  - b. In each projection, contact points of projection beams tangent to the surface must be connected.
  - c. In each projection, contact points of projection beams parallel to the surface must be connected.
  - d. In the space, contact points of projection beams obliques to the surface must be connected.
  
3. Concerning the visualization in each view, and considering the distances to the projection planes:
  - a. Visible: in the horizontal plane, those elements with the highest elevation, and in the vertical plane, those with the lowest deviation.
  - b. Visible: in the horizontal plane, those elements with the lowest elevation, and in the vertical plane, those with the lowest deviation.
  - c. Visible: in the horizontal plane, those elements with the lowest elevation, and in the vertical plane, those with the highest deviation.
  - d. Visible: in the horizontal plane, those elements with the highest elevation, and in the vertical plane, those with the highest deviation.

4. Concerning the visualization in each view, and considering the observer position:
  - a. Visible: in the horizontal plane, higher elements, and in the vertical plane, those closer to the observer.
  - b. Visible: in the horizontal plane, lower elements, and in the vertical plane, those closer to the observer.
  - c. Visible: in the horizontal plane, higher elements, and in the vertical plane, those farthest to the observer.
  - d. Visible: in the horizontal plane, lower elements, and in the vertical plane, those farthest to the observer.
  
5. When representing a pyramid, a hidden point:
  - a. Depending on the projection, occur in the junction of both view and hidden edge.
  - b. Occur in the junction of hidden edges, when the point is higher than the ground line.
  - c. Occur in the junction of hidden edges, when the point is lower than the ground line.
  - d. Always occur in the junction of hidden lines.
  
6. When representing an oblique cone:
  - a. The apparent contour is tangent to the base.
  - b. Generatrices of apparent contour are always opposite.
  - c. Generatrices of apparent contour are in true magnitude.
  - d. All genetrices cut in the middle of the projected base.
  
7. When representing an oblique prism:
  - a. Both bases have parallel edges.
  - b. Both bases are related by similarity laws, but, as the prism is oblique, their magnitude is different.
  - c. Both bases form an angle that is differ in the projections depending the point of view.
  - d. Both bases are oblique in the projections.

8. When dividing the part of the figure into basic surfaces, we observe:

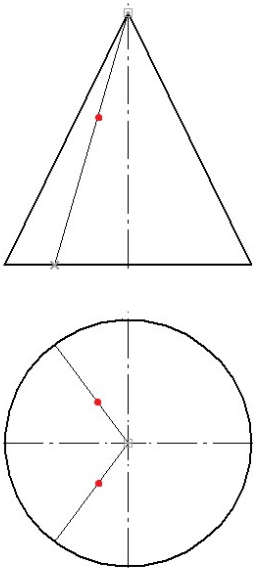
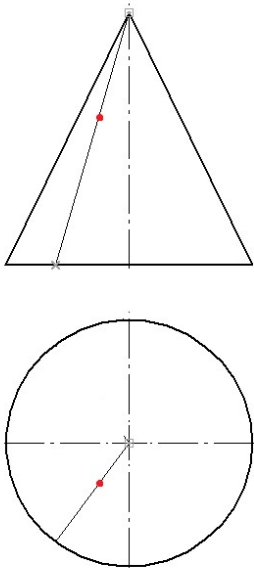
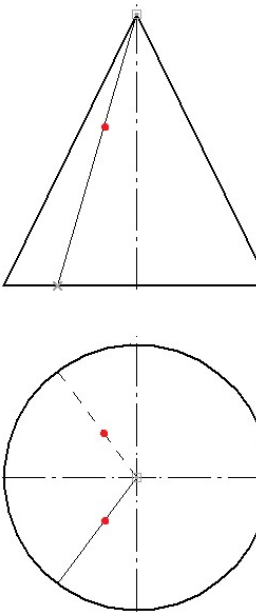
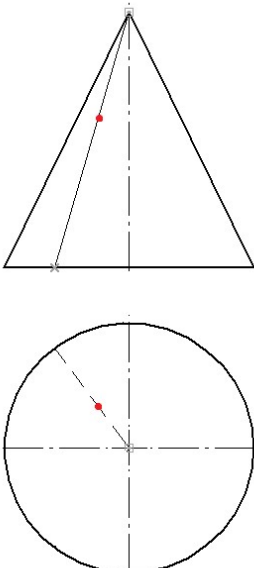


- It cannot be divided into basic surfaces.
- In this part, pyramid and cone are not represented.
- All surfaces contain faces, there are not curved surfaces.
- We observe surfaces with faces and curved surfaces.

9. Choose the correct representation of the cone:

<p>a.</p>	<p>b.</p>
<p>c.</p>	<p>d.</p>

10. Choose the representation that includes all possibilities of defining the red point in the front view:

<p>a.</p> 	<p>b.</p> 
<p>c.</p> 	<p>d.</p> 

## Solutions for surfaces representation testing

1c, 2b, 3d, 4a, 5d, 6a, 7a, 8d, 9d, 10a