Ime: _____ Priimek: _____ Razred: _____

I. *After having read the text below, answer the following questions with* ***short answers:***

1. How do engineers solve practical problems? _____
2. Which scientific field is a certain engineer especially familiar with? _____
3. When does the needs analysis have to be done? _____
4. Where is the needs analysis done? _____
5. What can the design process be compared with? _____

What Is Engineering?

Engineers apply science to solve practical problems. There are lots of different kinds of engineering: aerospace, electrical, chemical, civil, mechanical, environmental, computer, and industrial are a few kinds. This means that different kinds of engineers have knowledge of different scientific fields. For example, environmental engineers apply much of the theoretical knowledge from environmental science.

Engineers don't design things and then see if anybody wants to use them. If they did, there would be a lot of creations that no one wants to have. Instead, researchers study the market (the people who might want what's going to be designed) to find out what they want and need. Because of this system, the products that engineers make meet people's needs or wants.

In their everyday work, engineers need to use a variety of skills. Their work involves a lot of creative problem solving. Their work is also interdisciplinary. This means that they apply the knowledge from many different subject areas, or disciplines, to their work. For example, a mechanical engineer could use knowledge of mathematics, physics, computers, and robotics. Engineers also need to know how to work in teams. In order to complete a successful design, engineers need to work with different people at different stages of the project.

When engineers are designing something, they often follow a *design process*. (This serves a purpose similar to scientists using the *scientific method*.) Different engineers may follow different steps, they may do some steps in a different order, or they may return to some steps more than once. Still, this is a common version of the *design process:*

1. Identify the **problem**.
2. Create **criteria**.
3. **Design** your product.
4. **Optimization**.
5. Build a **prototype**.

From(adapted): http://collections.ic.gc.ca/science/english/eng/intro.html

II. *Now discuss the text* ***in groups of four*** *into more detail. Prepare a group report (in writing).*

1. What do aerospace engineers deal with?
2. What is the relationship between environmental engineering and environmental science?
3. Which subject areas (disciplines) do computer engineers use?
4. Which personal characteristics do engineers have to possess to be able to work in teams?
5. Compare the design process with the scientific method. What is similar / different?