**1. Answer the questions to the text:**

1. What is thermodynamics?

Thermodynamics is the study of the relationships between heat, work, and energy.

1. Where can thermodynamics be applied?

Thermodynamics can be applied to chemistry, biology, and other sciences

1. How can physical life be described?

Physical life itself can be described as a continual thermodynamic cycle of transformations between heat and energy

1. Are transformations perfectly efficient?

Transformations are never perfectly efficient, as the second law of thermodynamics shows

1. Can the work output of a system be greater than the net energy input?

Do not possible to get "something for nothing," as the first law of thermodynamics demonstrates: the work output of a system can never be greater than the net energy input.

1. Is it possible to create a perpetual motion machine?

NO

1. What creations were made due to the laws of thermodynamics?

The laws of thermodynamics did make possible such highly useful creations as the internal combustion engine and the refrigerator.

1. How can any physical system be described?

Any physical system will spontaneously approach an equilibrium that can be described by specifying its properties, such as pressure, temperature, or chemical composition.

1. What do the laws of thermodynamics predict?

The three laws of thermodynamics describe changes in pressure, temperature, or chemical composition and predict the state of equilibrium of a system.

**2. Insert a preposition or a conjunction if necessary :**

1. These transformations are never perfectly efficient, **as** the second law of thermodynamics shows.
2. Thermodynamics is the study of the relationships **between** heat, work, and energy.
3. The work output of a system can never be greater **than** the net energy input.
4. The three laws of thermodynamics describe these changes and predict the equilibrium state **of** the system.
5. The laws of thermodynamics made possible such highly useful creations **as** the internal combustion engine and the refrigerator.
6. It has a clear application **to** chemistry, biology, and other sciences.
7. It can be described **by** specifying its properties, such as pressure, temperature, or chemical composition.
8. Any physical system will spontaneously approach an equilibrium.

**3. Insert a necessary word or word combination:**

Thermodynamics, application, transformations, efficient, output, input, perpetual motion machine, internal combustion engine, equilibrium, external constraints, predict, physical system

1. **Thermodynamics** is the study of the relationships between heat, work, and energy.
2. Any physical system will spontaneously approach an **equilibrium**.
3. If **external constraints** are allowed to change, these properties generally change.
4. Many industrialists of the early nineteenth century believed it might be possible to create a **perpetual motion machine**.
5. Physical life itself can be described as a continual thermodynamic cycle of **transformations** between heat and energy.
6. **physical system** can be described by specifying its properties, such as pressure, temperature, or chemical composition.
7. The laws of thermodynamics made possible such creations as the **internal combustion engine** and the refrigerator.
8. The three laws of thermodynamics describe these changes and **predict** the equilibrium state of the system.
9. The transformations are never perfectly **efficient**.
10. The work **output** of a system can never be greater than the net energy **input**.
11. Thermodynamics has a clear **application** to chemistry, biology, and other sciences.