Exercise 2

1. Manufacture system designed to extend the capacity of machines is called **automation**
2. Automated manufacture arose out of division of **labor, power transfer and the mechanization** of the factory
3. The division of labor is, the reduction of a manufacturing or service process into its smallest **independent steps**
4. Another step necessary in the development of automation was **mechanization**
5. As a result of the development of power transfer specialized machines were **motorized** and their production efficiency was improved
6. The development of **power** technology also gave rise to the factory system of production
7. The transfer machine is a device used to move a **work piece** from one specialized machine tool to another
8. Industrial robots were originally designed only to perform **simple** tasks
9. The goal of the **assembly-line** system was to make automobiles available to people who previously could not afford them

Exercise 3

1. Automation is a system of manufacture designed to reduce the capacity of machines to perform certain tasks formerly done by humans. - **True**
2. In the fields of communications, aviation, and astronautics automation is used in a very limited scale. - **False**
3. Automated control systems are used to perform various operations much faster or better than could be done by humans. - **False**
4. Power transfer and the mechanization of the factory were the main obstacles in the development of automation. - **False**
5. The division of labor developed in the first half of the 19th century and was first discussed by the French economist Adam Smith. - **False**
6. Mechanization was the next step necessary in the development of automation. - **True**
7. The development of power technology gave rise to the factory system of production. - **True**
8. The transfer machine is a device used to move workers from one place to another. - **False**
9. In the 1920s the auto industry combined automation concepts into an integrated system of production. - **True**
10. The goal of the assembly-line system in auto industry was to make automobiles more expensive and luxurious. – **False**

Exercise 4

1. An automated production line consists of a series of workstations connected by a transfer system to move parts between the stations. - Автоматизированная производственная линия состоит из ряда рабочих мест, соединенных системой передачи для перемещения деталей между станциями.
2. Modern automated lines are controlled by programmable logic controllers. - Современные автоматизированные линии управляются программируемыми логическими контроллерами.
3. Automated production lines are utilized in many industries, most notably automotive. - Автоматизированные производственные линии используются во многих отраслях промышленности, в первую очередь в автомобилестроении
4. If the part is mass-produced, an automated transfer line is often the most economical method of production. - Если деталь производится серийно, автоматизированная линия часто является наиболее экономичным методом производства.
5. Transfer lines date back to about 1924. - Линии передачи датируются примерно 1924 годом.
6. Press working operations involve the cutting and forming of parts from sheet metal. – Операции с прессом заключаются в резке и штамповке деталей из листового металла.
7. An automated system is designed to accomplish some useful action, and that action requires power. - Автоматизированная система предназначена для выполнения определённого полезного действия, и для этого действия требуется мощность.

Exercise 5

1. Электричество является наиболее широко используемым источником энергии в современных автоматизированных системах. - Electricity is the most widely used energy source in modern automated systems
2. Автоматизированные системы выполняют в основном два вида операций: 1) обработка; 2) перемещение и расположение. - Automated systems perform mainly two types of operations: 1) processing; 2) movement and location.
3. Автоматизация это система производства, предназначенная для увеличения производительности машин и механизмов. - Automation is a production system designed to increase the productivity of machines and mechanisms.
4. Связь, авиация и космонавтика являются отраслями, наиболее широко использующими автоматизацию. - Communications, aviation and astronautics are the industries with the most extensive use of automation.
5. Разделение труда, передача энергии и механизация производства ускорили процесс развития автоматизации. - The division of labor, the transfer of energy and the mechanization of production have accelerated the development of automation.
6. Следующим шагом, необходимым в развитии автоматизации, стала механизация. - Mechanization was the next step necessary in the development of automation
7. Развитие технологии передачи энергии, способствовало развитию автоматизации. - The development of power transfer technology, promoted the development of automation

Промышленные роботы, изначально были разработаны для выполнения простых задач в опасных для человекаокружающих средах. - Industrial robots were originally designed to perform simple tasks in hazardous environments for humans.