1)How vacuum tubes changed the world of electronics?

\* The simplest vacuum tube, the diode, invented in 1904 by John Ambrose Fleming, contains only a heated electron-emitting cathode and an anode. • Electrons can only flow in one direction through the device—from the cathode to the anode. • Adding one or more control grids within the tube allows the current between the cathode and anode to be controlled by the voltage on the grids

\* 1907 invention of the three-terminal "audion" tube • A crude form of what was to become the triode. • Being essentially the first electronic amplifier, such tubes were instrumental in long-distance telephony and public address systems • Introduced a far superior and versatile technology for use in radio transmitters and receivers. • The electronics revolution of the 20th century arguably began with the invention of the triode vacuum tube.

These devices became a key component of electronic circuits for the first half of the twentieth century. • They were crucial to the development of radio, television, radar, sound recording and reproduction, long-distance telephone networks, and analog and early digital computers. • Although some applications had used earlier technologies such as the spark gap transmitter for radio or mechanical computers for computing, it was the invention of the thermionic vacuum tube that made these technologies widespread and practical, and created the discipline of electronics

\* The simplest form of vacuum tubes is called a [diode](https://en.wikipedia.org/wiki/Diode" \o "This link will take you away from steemit.com) and includes only two parts: the heated filament (cathode) and an anode plate. This setup allows current to flow just in one direction when the cathode is heated through the application of electricity. Introducing a third component (the grid) affords us some level of control using the vacuum tube.

When electricity is applied to the cathode, it begins to heat up, and electrons start to break free from there and drift freely toward the anode through the grid. The movement of the electrons do not encounter any resistance because the insides of the tube are evacuated of all substances, hence the name **vacuum tubes**. The mode of operation of the vacuum tube is important for reasons that will become apparent before the end of this post. For the vacuum tube to be used in computing as it was used in those days in the [ENIAC](https://en.wikipedia.org/wiki/ENIAC), it needed to have a switching function or an ability to allow electrons flow to the anode or not. This is achieved by applying a negative voltage to the grid.

*A Schematic of Vacuum Tubes Showing the Grid Repelling Electrons*

The negative voltage applied to the grid makes it negatively charged such that electrons emitted from the cathode would be repelled by the grid and the light bulb connected the circuit will be \*\*OFF\*\*. When the voltage is reversed once again, the circuit is completed, and the light bulb would come \*\*ON\*\*. This is how the vacuum tube achieves its switching functionality that began the advent of binary coding with \*\*1\*\* being represented by \*\*ON\*\* and \*\*0\*\* zero being represented by \*\*OFF\*\*. The first general-purpose computer (the ENIAC) was built with this technology with over 18,000 vacuum tubes. The machine weighed tonnes and filled a room with associated heavy power consumption and problems with regular vacuum tube burnouts and changes. To put this in perspective, your mobile phone has over two billion of these switches in the form of miniaturised transistors made into silicon wafers, and the cell phone can do calculations faster than the ENIAC. An improvement was necessary.

2)Discuss the role of transportation in development of “civilization” and “industrial revolutions” in general?

3)Why in many countries there are organizations like TUBITAK?

4)Discuss how industry 4.0 will affect the countries like Turkey.

\* Thus, a general conclusion is that the Fourth Industrial Revolution may contribute to the **increase of poverty and hunger and to the widening of income and social inequality with rich** and high-skilled people taking advantage from the technological progress and low-paid and less qualified employees suffering a greater (it is like ottoman times people who were producing handmade stuff.)

5)What are the important characteristics of “Age of Enlightment”?

Reason

Enlightened thinkers believed truth could be discovered through reason or logical thinking.

Nature

philosophies believed that what was natural was good and reasonable

Happiness

Philosophies rejected the medieval notion that people find joy in the hereafter and urged people to seek well being on earth.

Progress

the philosophies stressed that society and mankind could improve

Liberty

Philosophies called for the liberties that the English people had won in their glorious revolution and Bill of Rights