

Unit Seventeen 17

1. a) Cover the right column and read the English words. Translate them into Russian and check your translation.

b) Cover the left column and translate the Russian words back into English.

tube	[tju:b]	электронная лампа
bulb	[bʌlb]	баллон
grid		сетка
screen		экран
to contain	[kən'tein]	вместать
to collect	[kə'lekt]	собирать
to emit	[ɪ'mɪt]	излучать
to suppress	[sə'pres]	глушить, подавлять
control circuit		контрольная цепь
control grid		управляющая сетка
screen grid		экранирующая сетка
screen grid tube		экранированная лампа
suppressor grid		защитная сетка
counter flow		противоток
oscillatory circuit		колебательный контур

3. Distribute the words below into the three columns.

<i>Model:</i>	action	process	doer
	emit	emission	emitter

collector, heat, collection, suppress, collect, suppressor, suppression, contain, reaction, container, react, heater, reactor, computer, compute, oscillate, oscillating, oscillator

4. Read the words and put down their Russian equivalents. Then translate them back into English.

diode	[daɪəd]	_____	cathode	['kæθoud]	_____
triode	[traɪəd]	_____	metal	['metl]	_____
tetrode	[tet'roud]	_____	glass	[glɑ:s]	_____
pentode	[pen'toud]	_____	oscillator	['ɔsɪleɪtə]	_____

Electron Tubes

Let us consider electron tubes. Among the electron tubes in use nowadays there are a diode, a triode, a tetrode and a pentode. The main parts of electron tubes are electrodes. Electrodes are placed into a glass or metal bulb.

A diode contains the cathode and the plate. When a diode operates the cathode emits electrons, the plate collects them.

A triode contains the cathode, the plate and the control grid. When the tube operates the cathode emits electrons, the plate collects them and the grid controls the flow of electrons. Therefore, the grid is called a *control grid*.

A tetrode contains the cathode, the plate, the control grid and the screen grid.

When a tube operates it may oscillate. The function of the screen grid is to eliminate oscillations. Therefore it is called a *screen grid*.

A pentode contains two electrodes and three grids: the control grid, the screen grid and the suppressor grid. When a pentode operates the suppressor grid eliminates the secondary emission. Common troubles in tubes are an open heater and low emission. These troubles result from constant use or from some other reason. In case a tube has a trouble it stops operating or operates badly. A tube with a trouble should be replaced by another one.

5. Complete the sentences using the correct variant:

1. A pentode contains
 - a) the cathode, the plate, two screen grids and the suppressor grid.
 - b) the cathode, the plate, the control grids, the screen grid and the suppressor grid.

2. A tetrode contains
 - a) the cathode, the plate, the suppressor grid and the screen grid.
 - b) the cathode, the plate, the screen grid and the control grid.

3. A triode contains
 - a) the cathode, the plate and the screen grid.
 - b) the cathode, the plate and the control grid.

4. The function of the cathode is
 - a) to collect electrons.
 - b) to eliminate the secondary emission.
 - c) to emit electrons.

5. The function of the plate is
 - a) to eliminate oscillations.
 - b) to emit electrons.
 - c) to collect electrons.

6. The function of the control grid is
 - a) to emit electrons.
 - b) to control the electron flow.
 - c) to eliminate secondary emission.

7. The function of the screen grid is
 - a) to collect electrons.
 - b) to reduce the capacity.
 - c) to eliminate oscillations.

8. The function of the suppressor grid is
 - a) to control the electron flow.
 - b) to eliminate secondary emission.
 - c) to eliminate oscillations.

9. Constant use of a tube results in
 - a) high emission.
 - b) low emission.

c) an open heater.

6. Answer the following questions:

1. What types of electron tubes are used nowadays?
2. How many electrodes does a diode (a triode, a tetrode, a pentode) contain?
3. What is the function of the cathode (the plate, the control grid, the screen grid, the suppressor grid)?
4. What does the constant use of a tube result in?
5. What does low emission result from?
6. When must a tube be replaced?

7. Read and translate the text.

Pentode

When in an operating tube the screen-grid voltage is high, secondary emission does not return to the plate and passes to the screen grid. This results in a counter flow of electrons. To eliminate this counter flow, a third grid was placed between the plate and the screen grid and connected to the cathode. This grid is called a suppressor grid. Since the suppressor grid has a negative potential it returns the secondary emission back to the plate and thus eliminates it in the tube. The tube containing electrodes – the cathode, the plate, the control grid, the screen grid and the suppressor grid – is called a pentode. The cathode emits electrons, the plate collects them, the control grid controls the flow of electrons, the screen grid helps the plate to collect electrons and reduces the capacity between the control grid and the plate, the suppressor grid eliminates the secondary emission