Name: _____ Group №: _____

Date: _____/ _____ / _____ Course: _____

RAILWAY ELECTRIFICATION:

POWER SUPPLY

1 Read the text and translate it :

To begin with, the electric railway needs a power supply that the trains can receive at all times. It must be safe, economical and user friendly. It can use either DC (direct current) or AC (alternating current), the former being, for many years, simpler for railway traction purposes, the latter being better over long distances and cheaper to install, but, until recently, more complicated for controlling a train.

Transmission of power is always along the track by means of an overhead wire or at ground level, using an extra third rail laid close to the running rails. AC systems always use overhead wires. DC can use either an overhead wire or a third rail; both are common. Both overhead systems require at least one current collector attached to the train, so it can always be in contact with the power/Overhead current collectors use a «pantograph», so called because that was the shape of most of them until about 30 years ago. The return circuit is via the running rails that are at earth potential and are connected to the substation.

THIRD RAIL

Third rail uses a «shoe», perhaps because it was first called a «slipper» by the pioneers of the industry (it slipped along the rail) but later someone thought shoe was a better description.

Third rail current collection comes in variety of designs. The simplest is what is called «top contact» because that is the part of the rail upon which the pick-up shoe slides.

Being the simplest, it has some drawbacks, one of them being the danger that anyone or anything might come into contact with it, which is really very dangerous. It also suffers during bad weather, the smallest amount of ice or snow making top contact third rail systems almost unworkable. Side contact is not much better but, at least, it is less exposed. Bottom contact is the best – you can cover effectively most of the rail and it is protected from the worst of the cold weather.

2 Match the Words to their Definitions:

1.	Expanse	A	A train that does not stop in many places and therefore travels quickly.
2.	Advance	B	Using a system in which information is recorded or sent out electronically.
3.	Microwave	C	To provide a person or place with the things they need for a particular purpose.
4.	Express	D	A change, discovery, or invention that brings progress.
5.	Fleet	E	A very large area of water, sky, land.
6.	Signaling	F	A very short electric wave.
7.	Digital	G	Equipment with colored lights, used on a railway to tell train drivers whether they can continue or must stop.
8.	Equip	H	A group of vehicles that is controlled by one company.

3 Complete the sentences according to the text:

1. The electric railway needs a power supply that the trains can.....

2. It can use either DC (.....) or AC (.....).

3. AC systems always use.....

4. Third rail uses a.....

5. It also suffers during.....

6. Side contact is not much better but, at least, it.....

7. But, until recently, more complicated for.....

8. .....- you can cover effectively most of the rail and it is protected from the worst of the cold weather.

4 Translate into Russian:

1. It is Switzerland that played the leading part in early electrification of its railways.

2. There were locomotives at both ends of a heavy freight train.

3. Some of our former students occupy important posts in the Ministry of Railways heading different departments.

4. There are two ways of supplying current to trains: the catenary and the third rail. The former is used on overground railways, the latter in the underground systems.

5. The most extensive electrification in the US was done by the Pennsylvania Railroad at the end of the XIX century.

6. Today, in more than 95 percent of electrified railways of the world, current is collected from overhead wires.

7. Today electric trains can be controlled either by a driver or by means of Automatic Train Control Systems.

8. While electric railroads are popular throughout the world, they are less so in the US.

5 Make a short summary of the text:

_____

_____

_____

_____

_____

_____

_____

_____

_____