Name: _____ Group №: _____

Date: _____/ _____ / _____ Course: _____

RAILWAY ELECTRIFICATION:

OVERHEAD LINE (CATENARY)

1 Read the text and translate it :

The mechanics of power supply wiring is not as simple as it looks. Hanging a wire over the track, providing it with current and running trains under it is not easy, if the wiring is to do the job properly and work long enough. The wire must be able to cam' the current (several thousand amps), remain in line with the route, withstand wind, extreme cold and heat and other weather conditions.

Overhead catenary systems have a complex geometry7, usually designed by computer. The contact wire has to be held in tension horizontally and pulled laterally to negotiate curves in the track. The contact wire tension is in about 2 tonnes. The wire length is usually between 1.000 and 1,500 metres, depending on the temperature ranges. The wire is zigzagged to even the wear on the train's pantograph as it runs underneath.

The tension of the wire is maintained by weights suspended at each end of its length. Each length is overlapped by its neighbour to ensure a smooth passage for the «pan». Incorrect tension will cause the pantograph head to start bouncing. An electric arc occurs with each bounce and a pan and wire soon become worn out under such conditions.

More than one pantograph on a train can cause a similar problem when the leading pantograph head sets up a wave in the wire. High speeds worsen the problem. The French TGV (High Speed Train) has a power car at each end of the train but runs with one pantograph raised under the high speed 25 kV AC lines. The rear car is supplied through a cable running along the length of the train.

2 Find all international words in the text and translate them:

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3 Translate the sentences into Russian:

1. The first main line locomotive for standard gauge called «Ampere» was built in America in 1883.

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2. The profile of the Talgo power cars was designed on the basis of the data obtained in wind tunnel tests.

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3. The Turbotrain (Jet Train) locomotive designed by Bombardier demonstrated the same speed and acceleration as an electric one.

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4. Almost all passenger trains in Europe have coaches equipped for passengers in wheelchairs.

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5. If trains are stopped and passengers have to be evacuated, the current has to be turned off before they can leave the cars and step on the track.

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6. Sometimes the communication cable can have unequal voltages induced in it.

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7. Multiple-units have become very popular since their introduction in many countries.

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4 Give the definition (in English) of:

*a track circuit-*_____

*a track relay-*_____

*an insulating joint-*_____

*an electronic track relay-*_____

*track circuit resistor-*_____

5 Speak on the principles of track circuit operation.

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