SITUATION TASKS in the discipline "General Pharmaceutical Chemistry"

1. A pharmaceutical company's pharmacy analyst has received substance of a drug for the production of CHI3 drug powder.

To quantify the substance, the pharmacy pharmacist heated a suspension of the substance with an excess of titrated silver nitrate solution in the in the presence of nitric acid diluted for 30 minutes in a water bath with reflux condenser.

- Give the Latin and rational names of the drug.
- Evaluate the preliminary steps of the analytical pharmacist to quantify the drug.
- Name the method of quantification.
- What precipitation titration "argentometry" methods do you know?
- Give the chemistry.
- 2. In the quantification of the pharmaceutical substances NaCl and KI, a precipitation titration method "mercurimetry" was used.
 - Conclude on the appropriateness of using this method for quantification of these drugs.
 - Suggest the chemistry of this method and its characteristics.
 - What working solutions and indicators are used.
 - Advantages and disadvantages of the mercurimetry method.
- 3. A concentrate of hydrogen peroxide was received by the quality control department of a pharmaceutical company to make a hydrogen peroxide solution.

A trainee suggested a method for quantifying hydrogen peroxide called "permanganatometry".

- Was the quantification method chosen correctly?
- Characteristics of the permanganatometry method.
- Working solution, standardization.
- Determination of oxidizing and reducing agents.
- Advantages and disadvantages of the method.
- 4. A pharmaceutical company pharmacist received a drug substance for the preparation of ascorbic acid tablets. To quantify ascorbic acid, the pharmacist used an iodometric titration.
 - Give the chemistry of this determination.
 - Give a general description of the iodometric titration method.
 - Suggest a method of fixing the point of equivalence.

- Describe the preparation and standardization of working solutions in iodometry.
- 5. A drug substance was delivered to a pharmaceutical company's pharmacist for the production of metamizole sodium tablets. To quantify this substance, the pharmacist-analyst used an iodometric titration.
 - Give the chemistry of this determination.
 - Give a general description of the iodometric titration method.
 - Suggest a method of fixing the point of equivalence.
 - Preparation, standardization of working solutions in iodometry.
- 6. A drug substance was delivered to a pharmaceutical company's pharmacist for the manufacture of nicotinic acid tablets. To quantify this substance, the pharmacistanalyst used an acid-base titration.
 - Give the chemistry of this determination.
 - Give a general description of aqueous and non-aqueous acid-base titration and a classification of these methods.
 - Suggest a method for fixing the equivalence point.
 - Acid-base titration working solutions and standard substances of this method.
- 7. For quantitative assessment of complex drugs, having in their composition Fe²⁺, a method of dichromatometric titration method is used.
 - Characteristics of the dichromatometric titration method;
 - Titration methods, working solutions.
 - Chemistry of dichromatometry method, advantages and disadvantages.
- 8. A drug substance was delivered to the quality control department of a pharmaceutical company for the production of eye drops of levomycetin. To quantify the substance, the pharmacist-analyst took an exact sample of the substance with a solution of concentrated hydrochloric acid and added zinc dust in several portions. After the zinc dust was completely dissolved and cooled, the reaction mixture was titrated with the working solution under the conditions of the technique.
 - Was the quantification method chosen correctly?
 - Characteristics of the nitritometry method. Titration methods
 - Working solution, standardization.
 - Advantages and disadvantages of the nitritometry method.
- 9. A pharmaceutical company pharmacist has received a drug substance for the preparation of magnesium sulfate powder. To quantify this substance, the pharmacist-analyst performed a complexometric titration.

- Give the chemistry of this determination for the analysis of double-charged cations.
- Give a general description of complexometric titration. Trilon B standard solution.
- Suggest a method of fixing the equivalence point.
- 10. A pharmaceutical company's pharmacy analyst has received a drug substance for the preparation of bismuth nitrate base powder. To quantify this substance, the pharmacist-analyst used a chemometric titration.
 - Give a general description of complexometric titration. Complexons.
 - Trilon B working solution. Standardization.
 - Give the chemistry of this method for the analysis of three-charged cations.

11.For the analysis of substances of organic drugs with common formulas:



- Identify the classes of organic compounds to which these structures belong.
- Propose detection (authenticity) reactions for each structure.

12.For the analysis of organic drug substances with common formulas:



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- Propose detection (authenticity) reactions for each structure.

13.For the analysis of organic drug substances with common formulas:



- Identify the classes of organic compounds to which these structures belong.
- Propose detection (authenticity) reactions for each structure.
- 14.A concentrate of hydrogen peroxide was received by the quality control department of a pharmaceutical company for the production of hydrogen peroxide solution. A trainee suggested a method for quantifying hydrogen peroxide called "permanganatometry.
 - Was the quantification method chosen correctly?
 - Characteristics of the permanganatometry method.
 - Working solution, standardization.
 - Determination of oxidizing and reducing agents.
 - Advantages and disadvantages of the method.
- 15.A drug substance for the production of levomycetin eye drops was delivered to the quality control department of a pharmaceutical company. To quantify the substance, the pharmacist-analyst took an exact sample of the substance with a solution of concentrated hydrochloric acid and added zinc dust in several steps. After the zinc dust was completely dissolved and cooled, the reaction mixture was titrated with the working solution under the conditions of the technique.
 - Was the quantification method chosen correctly?
 - Characteristics of the nitritometry method. Titration methods
 - Working solution, standardization.
 - Advantages and disadvantages of the nitritometry method.
- 16.A drug substance was delivered to a pharmaceutical company's pharmacist for the preparation of zinc sulfate powder. To quantify this substance, the pharmacist-analyst used a chemometric titration.
 - Give the chemistry for this determination for the analysis of double-charged cations.
 - Give a general description of the complexometric titration. Trilon B standard solution.
 - Suggest a method of fixing a point of equivalence.

- 17.The pharma-analyst of a pharmaceutical company received the drug substances NaCl and KBr, which were received for the production of medical solutions. To quantify both drugs, the pharmacist-analyst suggested using the argentometric method.
- Give a characterization of all argentometric titration methods
- Write the chemistry of these methods.
- Suggest possible ways of fixing the point of equivalence
- 18.A drug substance for the manufacture of levomycetin eye drops was delivered to the quality control department of a pharmaceutical company. For quantitative estimation, an analytical pharmacist took an exact concentrated hydrochloric acid solution and added zinc dust in several portions. After the zinc dust was completely dissolved and cooled, the reaction mixture was titrated with the working solution under the conditions of the technique.
 - Was the quantification method chosen correctly?
 - Characteristics of the nitritometry method. Titration methods
 - Working solution, standardization.
 - Advantages and disadvantages of the nitritometry method.
- 19. The precipitation titration method "mercurimetry" was used to quantify the pharmaceutical substances NaCl and KI.
 - Conclude on the feasibility of using this method to quantify these drugs.
 - Suggest the chemistry of this method and its characteristics.
 - What working solutions and indicators are used.
 - Advantages and disadvantages of the mercurimetry method.

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Head of the Department



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