**A set of questions for conducting the final assessment (written work) test in "GENERAL CHEMISTRY".**

**Option number 1**

1. **Chemical bonding. Types of chemical bonds.** theories of covalent bonding and its formation. The formation of a valence bond. Hybridization of atomic orbitals in the formation of molecules. Valence states and maximum valence in atoms. Donor-acceptor mechanism of covalent bonding.

2. Write the hydrolysis reaction of Na 2 CO 3 in the form of molecular, complete and short ionic reactions. Explain solution medium based on dissociation theory.

3. If the reaction rate increases 3 times at a temperature of 10 0 C, how many times will the reaction rate increase when the temperature is increased from 20 0 C to 60 0 C ?

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**A set of questions for conducting the final assessment (written work) test in "GENERAL CHEMISTRY".**

**Option number 2**

1. **Thermal effect of chemical reactions. Exothermic and endothermic reactions.** Internal energy and enthalpy. Calculation of thermal effects of thermochemical reactions. Hess's law and its conclusions.

2. **Cu + HNO 3 → ….** continue the reaction. Show the coefficient of oxidizing and reducing molecules.

3. Write the hydrolysis reaction of Na 2 SO 3 in the form of molecular, complete and short ionic reactions. Explain solution medium based on dissociation theory.

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**A set of questions for conducting the final assessment (written work) test in "GENERAL CHEMISTRY".**

**Option number 3**

1. **Elements of the thirteenth group of the periodic system of elements.** Electronic formula of boron and aluminum, occurrence in nature, extraction, physical and chemical properties. Aluminum oxides, hydroxides, carbides. Aluminum salts, their properties, solubility, importance in industrial water treatment.

2. If the temperature increases twice every 10 0 C, the rate of the reaction at 20 0 C is 5 M/L\*s, and when it is increased to 60 0 C, how much M/L\*S will the rate of this reaction be?

3 . Determine the molecular formula of a compound that is 1.59% H, 22.21% N, 76.2% O. Determine the molecular mass of the compound.

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**A set of questions for conducting the final assessment (written work) test in "GENERAL CHEMISTRY".**

**Option number 4**

1. **Atomic structure . Name of atomic components - nucleus , protons, neutrons and their charge and mass.** Particle and quantum nature of electron motion . Quantum mechanics De Broglie equation. The essence of the Schrodinger equation, Geyserberg's principle of noi q . Atom based on quantum mechanics to explain the existence of salt . Electron energy quantum characterizing with numbers.

2. Write the hydrolysis reaction of AlCl 3 in the form of molecular, complete and short ionic reactions. Explain solution medium based on dissociation theory.

If 1 mole of a substance is dissolved in 1 liter of non- electrolyte solution at 20 0 C, calculate the osmotic pressure of this solution.

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**A set of questions for conducting the final assessment (written work) test in "GENERAL CHEMISTRY".**

**Option number 5**

1. **Solutions and processes of their formation.** The solubility of gases, crystals in liquids and its dependence on the nature of the substance, temperature, and pressure. Unsaturated, saturated and supersaturated solutions.

2. Write the reaction of Na 2 SO 4 with BaCI 2 in the form of molecular, complete and short ionic reactions.

3. How many grams of a 40% solution of table salt should be taken to prepare 200 grams of a 5% solution of table salt.

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**A set of questions for conducting the final assessment (written work) test in "GENERAL CHEMISTRY".**

**Option number 6**

1. Properties of **solutions** . Osmosis, osmotic pressure and its role in nature. Van't Hoff's law. Vapor pressure of solutions. Changes in freezing and boiling temperatures of solutions. Raoult's laws.

2. Formulas NH 3 , PH 3 , HC1, SiH 4 , What is the valency of nitrogen, phosphorus, chlorine, silicon, and sulfur in H 2 S compounds?

3. In this N 2 + 3H 2 ↔ 2NH 3 equilibrium system, the concentration of substances is 0.1, respectively; Calculate the equilibrium constant if 0.2;0.2 M/L.

" **GENERAL CHEMISTRY".**

**Option number 7**

1. **Phosphorus and arsenic.** Their electronic formula, occurrence in nature, extraction, allotropy, physicochemical properties. Hydrogen and oxygen compounds of phosphorus. Phosphine. Phosphoric acid and its salts. Use of phosphorus and its compounds.

2 . In the following compounds: a) monovalent; b) bivalent; c) trivalent; g) tetravalent; d) Name the elements that are pentavalent. Na 2 O, HC1, PH 3 , Fe 2 O 3 , MgO, ZnO, SO 2 ; P 2 O 5 , CaO.

3. **Cu + HNO 3 → ….** continue the reaction. Show the coefficient of oxidizing and reducing molecules.

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**A set of questions for conducting the final assessment (written work) test in "GENERAL CHEMISTRY".**

**Option number 8**

1. Electrolytic dissociation of water. The importance of water ion multiplication and hydrogen indicator pH in processes.

2. If there are 9.8 grams of solute in 2 liters of H 2 SO 4 solution, determine the molar concentration of this substance.

of K 2 CO 3 with Ca(NO 3 ) 2 in the form of molecular, complete and short ionic reactions.

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**A set of questions for conducting the final assessment (written work) test in "GENERAL CHEMISTRY".**

**Option #9**

1. Oxidation-reduction reactions. Types of redox reactions. Basic oxidizing and reducing agents. The role of the environment in the occurrence of oxidation-reduction reactions. Methods of forming equations of oxidation-reduction reactions.

2 . This balance: what external factors, how should be affected to shift the system N 2 + 3H 2 ↔ 2NH 3 + **Q to ten. (pressure, temperature and concentration)**

3. Write the hydrolysis reaction of Na 2 CO 3 in the form of molecular, complete and short ionic reactions. Explain solution medium based on dissociation theory .

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**A set of questions for conducting the final assessment (written work) test in "GENERAL CHEMISTRY".**

**Option No. 10**

1. **General properties of metals. their division into classes based on their physical and chemical properties,** theories of the internal structure of metals, general characteristics of rare and rare metals, metal alloys. Stress series of metals.

2. Find the number of particles in the SO 4 -2 ion. (proton, neutron, electron)

3. To prepare 370 g of 7.5% aqueous solution of CaCl 2 salt, how much solvent and solute should be spent?

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**A set of questions for conducting the final assessment (written work) test in "GENERAL CHEMISTRY".**

**Option No. 11**

1. **Corrosion of metals.** Their types and the damage they cause to the national economy. Coating, chemical, electrochemical and heat treatment methods of corrosion control. Inhibitors.

2. What is the amount of solvent and solvent used to prepare 250 ml of a 9% solution of NaNO 3 salt? do you need lashes?

3. Calculate the mass of metal released at the cathode when the CuSO 4 solution is electrolyzed with a power of 5 Amperes for 2 hours.

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**A set of questions for conducting the final assessment (written work) test in "GENERAL CHEMISTRY".**

**Option No. 12**

1. **Electrolysis processes.** Oxidation-reduction reactions resulting from electrolysis. Electrolysis of liquids and solutions of electrolyte substances in water. Faraday's laws. Application of electrolysis processes in industry.

2. Write the hydrolysis reaction of Na 2 CO 3 in the form of molecular, complete and short ionic reactions. Explain solution medium based on dissociation theory.

3. Calculate the mass of metal released at the cathode when AgNO 3 solution is electrolyzed with a current of 2 amperes for 1 hour.

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**A set of questions for conducting the final assessment (written work) test in "GENERAL CHEMISTRY".**

**Option No. 13**

1. Elements of the third group of the periodic system of elements. Their electronic formula, general characteristics, occurrence in nature, production methods, chemical properties, oxides, hydroxides, complex compounds and their use.

2. Find the mass of sulfur IV-oxide under normal conditions . 2,24 lHow many moles and how many molecules is this?

3. **Zn + HNO 3 → ….** continue the reaction. Show the coefficient of oxidizing and reducing molecules.

**A set of questions for conducting the final assessment (written work) test in "GENERAL CHEMISTRY".**

**Option No. 1 4**

1. **Chemical bonding. Types of chemical bonds.** theories of covalent bonding and its formation. The formation of a valence bond. Hybridization of atomic orbitals in the formation of molecules. Valence states and maximum valence in atoms. Donor-acceptor mechanism of covalent bonding.

2. Write the hydrolysis reaction of Na 2 CO 3 in the form of molecular, complete and short ionic reactions. Explain solution medium based on dissociation theory.

3. If the reaction rate increases 3 times at a temperature of 10 0 C, how many times will the reaction rate increase when the temperature is increased from 20 0 C to 60 0 C ?

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**A set of questions for conducting the final assessment (written work) test in "GENERAL CHEMISTRY".**

**Option No. 15**

1. **Thermal effect of chemical reactions. Exothermic and endothermic reactions.** Internal energy and enthalpy. Calculation of thermal effects of thermochemical reactions. Hess's law and its conclusions.

2. **Cu + HNO 3 → ….** continue the reaction. Show the coefficient of oxidizing and reducing molecules.

3. Write the hydrolysis reaction of Na 2 SO 3 in the form of molecular, complete and short ionic reactions. Explain solution medium based on dissociation theory.

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**A set of questions for conducting the final assessment (written work) test in "GENERAL CHEMISTRY".**

**Option No. 16**

1. **Elements of the thirteenth group of the periodic system of elements.** Electronic formula of boron and aluminum, occurrence in nature, extraction, physical and chemical properties. Aluminum oxides, hydroxides, carbides. Aluminum salts, their properties, solubility, importance in industrial water treatment.

2. If the temperature increases twice every 10 0 C, the rate of the reaction at 20 0 C is 5 M/L\*s, and when it is increased to 60 0 C, how much M/L\*S will the rate of this reaction be?

3 . Determine the molecular formula of a compound that is 1.59% H, 22.21% N, 76.2% O. Determine the molecular mass of the compound.

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**A set of questions for conducting the final assessment (written work) test in "GENERAL CHEMISTRY".**

**Option No. 17**

1. **Atomic structure . Name of atomic components - nucleus , protons, neutrons and their charge and mass.** Particle and quantum nature of electron motion . Quantum mechanics De Broglie equation. The essence of the Schrodinger equation, Geyserberg's principle of noi q . Atom based on quantum mechanics to explain the existence of salt . Electron energy quantum characterizing with numbers.

2. Write the hydrolysis reaction of AlCl 3 in the form of molecular, complete and short ionic reactions. Explain solution medium based on dissociation theory.

If 1 mole of a substance is dissolved in 1 liter of non- electrolyte solution at 20 0 C, calculate the osmotic pressure of this solution.

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**A set of questions for conducting the final assessment (written work) test in "GENERAL CHEMISTRY".**

**Option No. 18**

1. **Solutions and processes of their formation.** The solubility of gases, crystals in liquids and its dependence on the nature of the substance, temperature, and pressure. Unsaturated, saturated and supersaturated solutions.

2. Write the reaction of Na 2 SO 4 with BaCI 2 in the form of molecular, complete and short ionic reactions.

3. How many grams of a 40% solution of table salt should be taken to prepare 200 grams of a 5% solution of table salt.

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**A set of questions for conducting the final assessment (written work) test in "GENERAL CHEMISTRY".**

**Option No. 19**

1. Properties of **solutions** . Osmosis, osmotic pressure and its role in nature. Van't Hoff's law. Vapor pressure of solutions. Changes in freezing and boiling temperatures of solutions. Raoult's laws.

2. Formulas NH 3 , PH 3 , HC1, SiH 4 , What is the valency of nitrogen, phosphorus, chlorine, silicon, and sulfur in H 2 S compounds?

3. In this N 2 + 3H 2 ↔ 2NH 3 equilibrium system, the concentration of substances is 0.1, respectively; Calculate the equilibrium constant if 0.2;0.2 M/L.

" **GENERAL CHEMISTRY".**

**Option No. 20**

1. **Phosphorus and arsenic.** Their electronic formula, occurrence in nature, extraction, allotropy, physicochemical properties. Hydrogen and oxygen compounds of phosphorus. Phosphine. Phosphoric acid and its salts. Use of phosphorus and its compounds.

2 . In the following compounds: a) monovalent; b) bivalent; c) trivalent; g) tetravalent; d) Name the elements that are pentavalent. Na 2 O, HC1, PH 3 , Fe 2 O 3 , MgO, ZnO, SO 2 ; P 2 O 5 , CaO.

3. **Cu + HNO 3 → ….** continue the reaction. Show the coefficient of oxidizing and reducing molecules.

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**A set of questions for conducting the final assessment (written work) test in "GENERAL CHEMISTRY".**

**Option No. 21**

1. Electrolytic dissociation of water. The importance of water ion multiplication and hydrogen indicator pH in processes.

2. If there are 9.8 grams of solute in 2 liters of H 2 SO 4 solution, determine the molar concentration of this substance.

of K 2 CO 3 with Ca(NO 3 ) 2 in the form of molecular, complete and short ionic reactions.

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**A set of questions for conducting the final assessment (written work) test in "GENERAL CHEMISTRY".**

**Option No. 22**

1. Oxidation-reduction reactions. Types of redox reactions. Basic oxidizing and reducing agents. The role of the environment in the occurrence of oxidation-reduction reactions. Methods of forming equations of oxidation-reduction reactions.

2 . This balance: what external factors, how should be affected to shift the system N 2 + 3H 2 ↔ 2NH 3 + **Q to ten. (pressure, temperature and concentration)**

3. Write the hydrolysis reaction of Na 2 CO 3 in the form of molecular, complete and short ionic reactions. Explain solution medium based on dissociation theory .

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**A set of questions for conducting the final assessment (written work) test in "GENERAL CHEMISTRY".**

**Option No. 23**

1. **General properties of metals. their division into classes based on their physical and chemical properties,** theories of the internal structure of metals, general characteristics of rare and rare metals, metal alloys. Stress series of metals.

2. Find the number of particles in the SO 4 -2 ion. (proton, neutron, electron)

3. To prepare 370 g of 7.5% aqueous solution of CaCl 2 salt, how much solvent and solute should be spent?

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**A set of questions for conducting the final assessment (written work) test in "GENERAL CHEMISTRY".**

**Option No. 24**

1. **Corrosion of metals.** Their types and the damage they cause to the national economy. Coating, chemical, electrochemical and heat treatment methods of corrosion control. Inhibitors.

2. What is the amount of solvent and solvent used to prepare 250 ml of a 9% solution of NaNO 3 salt? do you need lashes?

3. Calculate the mass of metal released at the cathode when the CuSO 4 solution is electrolyzed with a power of 5 Amperes for 2 hours.

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**A set of questions for conducting the final assessment (written work) test in "GENERAL CHEMISTRY".**

**Option No. 25**

1. **Electrolysis processes.** Oxidation-reduction reactions resulting from electrolysis. Electrolysis of liquids and solutions of electrolyte substances in water. Faraday's laws. Application of electrolysis processes in industry.

2. Write the hydrolysis reaction of Na 2 CO 3 in the form of molecular, complete and short ionic reactions. Explain solution medium based on dissociation theory.

3. Calculate the mass of metal released at the cathode when AgNO 3 solution is electrolyzed with a current of 2 amperes for 1 hour.

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**A set of questions for conducting the final assessment (written work) test in "GENERAL CHEMISTRY".**

**Option No. 26**

1. Elements of the third group of the periodic system of elements. Their electronic formula, general characteristics, occurrence in nature, production methods, chemical properties, oxides, hydroxides, complex compounds and their use.

2. Find the mass of sulfur IV-oxide under normal conditions . 2,24 lHow many moles and how many molecules is this?

3. **Zn + HNO 3 → ….** continue the reaction. Show the coefficient of oxidizing and reducing molecules.

**A set of questions for conducting the final assessment (written work) test in "GENERAL CHEMISTRY".**

**Option No. 27**

1. Properties of **solutions** . Osmosis, osmotic pressure and its role in nature. Van't Hoff's law. Vapor pressure of solutions. Changes in freezing and boiling temperatures of solutions. Raoult's laws.

2. Formulas NH 3 , PH 3 , HC1, SiH 4 , What is the valency of nitrogen, phosphorus, chlorine, silicon, and sulfur in H 2 S compounds?

3. In this N 2 + 3H 2 ↔ 2NH 3 equilibrium system, the concentration of substances is 0.1, respectively; Calculate the equilibrium constant if 0.2;0.2 M/L.

" **GENERAL CHEMISTRY".**

**Option No. 28**

1. **Phosphorus and arsenic.** Their electronic formula, occurrence in nature, extraction, allotropy, physicochemical properties. Hydrogen and oxygen compounds of phosphorus. Phosphine. Phosphoric acid and its salts. Use of phosphorus and its compounds.

2 . In the following compounds: a) monovalent; b) bivalent; c) trivalent; g) tetravalent; d) Name the elements that are pentavalent. Na 2 O, HC1, PH 3 , Fe 2 O 3 , MgO, ZnO, SO 2 ; P 2 O 5 , CaO.

3. **Cu + HNO 3 → ….** continue the reaction. Show the coefficient of oxidizing and reducing molecules.

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**A set of questions for conducting the final assessment (written work) test in "GENERAL CHEMISTRY".**

**Option No. 2 9**

1. Electrolytic dissociation of water. The importance of water ion multiplication and hydrogen indicator pH in processes.

2. If there are 9.8 grams of solute in 2 liters of H 2 SO 4 solution, determine the molar concentration of this substance.

of K 2 CO 3 with Ca(NO 3 ) 2 in the form of molecular, complete and short ionic reactions.

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**A set of questions for conducting the final assessment (written work) test in "GENERAL CHEMISTRY".**

**Option No. 30**

1. Oxidation-reduction reactions. Types of redox reactions. Basic oxidizing and reducing agents. The role of the environment in the occurrence of oxidation-reduction reactions. Methods of forming equations of oxidation-reduction reactions.

2 . This balance: what external factors, how should be affected to shift the system N 2 + 3H 2 ↔ 2NH 3 + **Q to ten. (pressure, temperature and concentration)**

3. Write the hydrolysis reaction of Na 2 CO 3 in the form of molecular, complete and short ionic reactions. Explain solution medium based on dissociation theory .

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