**Option number 1**

1. How can carbon atoms be hybridized in organic molecules? Describe the shape and spatial structure of the atomic orbitals in each view.
2. s and p – rate the parks. Consider the formation of these bonds in ethylene C 2 H 4 and acetylene C 2 H 2 molecules.
3. What reagents can be used to distinguish between toluene and styrene?
4. Name the compounds formed from the following reaction:

…. …. →….. →…..;

**Option number 2**

1. Write the structural formula of ethylene, propylene, two butylene and isobutylene. Name these compounds according to rational and international nomenclature.
2. 2-methylhexene-2 can be obtained from what alcohol and what haloalkyl? Give the reaction schemes. Describe Zaisev's rule.
3. What products are produced in the following scheme of changes:

→ …. → …. → ….

1. From which substance can only 2,3-dimethylbutane be obtained based on the virus reaction? Explain based on the reaction.

**Option number 3**

1. Show the schemes for obtaining the following substances from benzene:

NH2 \_ OH

O 2 N NO 2

1. b)

NO 2

1. C 5 H 8 write the structural formulas of all diene hydrocarbons. them name according to international nomenclature.
2. How many grams of benzene (60% yield) will be produced from 26.88 g of acetylene?
3. Name the compounds formed as a result of the following reactions: *CH 3 CH(CH 3 )CH 2 CH 3* ..... … …..

**Option number 4**

1. What substance is formed when isopropylbenzene is oxidized in the presence of KMnO 4 ?
2. 14.33 g of a dihalogen compound was obtained from the chlorination of a hydrocarbon obtained by hydrogenation with butadiene -1.3. Find the mass of the intermediate saturated hydrocarbon?
3. 1,6-dibromo-2-methylhexane forms a compound after the following chain reaction:

A B C .....; show the reaction and its mechanism.

1. the product formed by the oxidation of ethylene with a dilute solution of KMnO 4 .

**Option number 5**

1. Construct the structural formulas of the hydrocarbons named below:
2. 2,4,6 - triethyl benzochloride, 2) 2 - ethyl, 4 - nitro phenol, 3) pentachlorotoluene
3. Determine the alkene formed as a result of zinc metal exposure to 2,3-dibromobutane?
4. Find the product formed in the reaction

C 6 H 6 A B C …..

1. many grams of monobromine product can be obtained from the product formed as a result of the complete hydrogenation of 44.8 l et ele n gas ?

**Option number 6**

1. What are the forms of carbon atoms in organic molecules? Explain the shape and spatial structure of atomic orbitals in each view.
2. As a result of chlorination of N-butane, how many different digaloid products can be obtained.
3. Find the products formed in the reaction:
4. 3
6. How many grams of bromine can be added to the product formed as a result of the hydrogenation of 2.5 l of ethylene gas. Find the mass of hydrocarbon released from the action of sodium metal on the resulting halide compound?

**Option number 7**

1. Name the following halogenated hydrocarbon according to systematic nomenclature:
2. Identify the substances X,Y,Z that will be produced as a result of the following changes.

X Y Z

1. Explain the formation of aromatic hydrocarbons based on reaction equations?
2. 2.5 liters (under normal conditions) of an unknown saturated hydrocarbon equals 4.9125 g. Find out what its formula looks like.

**Option number 8**

1. If butyl chloride and ethyl chloride are subjected to the Wuers reaction through sodium metal, what will the formula of the obtained saturated hydrocarbon look like?
2. Name the following halogenated hydrocarbon according to systematic nomenclature:
3. Identify the substances that result from the following changes.



1. A mixture of 25 grams of ethanol vapor and air was passed over the heated copper. Determine the mass of the resulting organic matter.

**Option #9**

1. How many primary, secondary, tertiary and quaternary carbon atoms are there in this hydrocarbon (CH 3 ) 3 C-CH(CH 3 ) 2 ?
2. CH 3 -CH(CH 3 ), C(CH 3 )Br-C 2 H 5 and What kind of alkanes are formed when CH 3 -C(CH 3 )Br-C(CH 3 ) 3 derivatives interact with sodium (according to Wiers reaction)?
3. What saturated hydrocarbons are produced by catalytic hydrogenation of the following unsaturated hydrocarbons? Write the reaction equations and name the products.

a) C 5 H 10 , b) CH 3 -C(CH 3 )=CH-CH 3 , c) C 7 H 14 ;

1. How much volume (in n.s.) of an oxygen-ozone mixture containing 10 O 3 is needed to burn 42 liters of propane ?

**Option No. 10**

1. 2 and sp 3 orbitals are involved in the formation of a propylene molecule .
2. 2 is formed compared to the volume of the hydrocarbon taken for burning . Find its formula.
3. Write the structural formulas of the following substances and name them in rational nomenclature.

a) 2,2,5,5 tetra methyl hexine-3 b) 2,2,5 tri methyl heptin-3

1. many ml (in n.s.) of methane can be obtained from 41 grams of Na acetate by the Dumas method? How much Na propionate is needed to produce 20 L of ethane in this way ?

**Option No. 11**

1. Which halogen derivatives can be used to obtain a) hexane b) 2,7-dimethyloctane according to the virus reaction?

a) CH 3 J; b) CH(CH 3 ) 2 -CH 2 -Br ; s) CH 3 -CH(CH 3 )-(CH 2 ) 2 -Br ; d) C(CH 3 ) 3 (J) ; g) CH 3 -(CH 2 ) 2 -J ;

1. Make the following genetic changes:

CH 3 -C≡ CH A B

1. Balance the following oxidation-reduction reactions:

C 5 H 8 +KMnO 4 +H 2 SO 4 → K 2 SO 4 +Mn SO 4 +H 2 O+ C 3 H 6 O +C 2 H 4 O 2

1. How many grams of potassium permanganate are needed to produce the gas needed to convert 49 grams of benzene to hexachlorine?

**Option No. 12**

1. Write the structural formulas of all isomers of n-heptane. a) How many isomers? b) What is the number of secondary S in all isomers? s) What is the number of primary S d) What is the number of quaternary S
2. derivatives to obtain hexane and 2,7-methyloctane according to the virus reaction ?
3. Write the equations for the reactions that allow the following changes to occur:

ethyl alcohol X Y Z butadiene -1,3

1. HNO 3 is required to obtain 22.3 g of 2,4,6-trinitrophenol when the reaction yield is 90%? required?

**Option No. 1 3**

1. Write the structural formulas of 2,4-dimethyl hexadiene-1,3 and 2,4,5,5-tetramethyl hexadiene-1,3 and name them in systematic nomenclature.
2. How can methane be produced in two different ways? Write the equations for the reactions that need to take place.
3. 2-methylbutene-1 is formed when an alkane derivative is treated with a solution of potassium hydroxide in alcohol.
4. Continue the sequence of reactions below.

C 2 H 4 A B C ….

**Option No. 14**

1. Determine the number of alkenes that have one tertiary carbon atom from molecules with the composition C 6 H 12 .
2. Write the nitration reaction of cyclohexane and methylcyclopentanes according to the Konavalov method.
3. Indicate the name of the Y product formed as a result of the reaction .

Cyclopropane X Y...

1. 13.44 L of KMnO 4 used to oxidize propylene to propylene glycol of and calculate the mass of the organic matter formed.

**Option No. 15**

1. *C 2 H 5 (CH 3 )C(CH 2 OH)CH 2 C(CH 3 ) 2 CH 2 CH 3* Name the substance according to systematic nomenclature.
2. The following changes can be made using what reactions;

Methane → acetylene → benzene → nitrobenzene → aniline → 2,4,6-tribromaniline. Write the equations of this reaction and their conditions

1. Determine the substances A, B, and C formed according to the scheme:

1,4 - dichlorobutane A B C…..

1. 5.6 L of acetylene was oxidized to acetaligide acid formed in (n.sh.). The resulting acid is subjected to an etherification reaction with a molar amount of ethyl alcohol. How many grams of complex ether are formed.

**Option No. 16**

1. Write the formula of isopropyl acetate and determine the sum of the oxidation states of the carbon atoms in it.
2. Diene series hydrocarbons, explain the rubber industry and its production and uses.
3. Specify the name of the product resulting from the above changes.

Butanol-1 X Y Z

1. NaOH solution is required to obtain 21.6 g of propanal from 1.1 dichloropropane .

Developer: "K and CT" department senior teacher. DMMirzayev

Head of the "K and KT" department: OKRakhmonov

**Option No. 17**

1. What is the number of isomers of octane containing both primary, secondary, and tertiary C atoms?
2. Explain the process of etherification in organic compounds from methods of analysis: Explain the reaction of the following substances. In isobutyl alcohol and butyric acid.
3. Which substance is formed as a result of the action of an aqueous solution of potassium hydroxide on dihaloidalkane with the composition CH 3 CH 2 C(Cl)(CH 3 )(Cl)C(CH 3 )CH 3 ?
4. How many grams of acetaldehyde can be obtained by oxidizing 184 grams of ethanol with CuO? How many grams of Cu are released in this .

**Option No. 18**

1. What is the cracking process? Write the equation for the methane cracking reaction and state the conditions.
2. CH 3 CH(CH 3 )C(CH 3 ) 2 Br and CH 3 CH(CH 3 )CH 2 CH 2 Br interact with sodium (according to Wiers reaction).
3. Show the substances A, B, C formed as a result of the following changes;

CH 3 -CH 2 -CH 2 -CH 2 -J A B C...

1. 250 grams of propylene mass obtained as a result of dehydration of propanol-2 decolorize 3.2% bromine water. Taken for reaction

propanol - 2 determine the mass of

**Option No. 19**

1. 2-methylbutene-1 is formed when potassium hydroxide solution in alcohol is applied to any halogen derivative of alkane.
2. Find the number of isomers of hexane, the sum of all the isomers, primary, secondary, tertiary, and quaternary carbons.
3. Substances produced in the following chain reaction;

CH 3 CH 2 COOH X X X …..

1. benzene with aluminum chloride was passed through a solution of silver nitrate. Calculate the mass of benzene (g) and the volume of chlorine (lnsh) involved in the reaction.

**Option No. 20**

1. hydrocarbons are formed when a) ethyl chloride b) propyl chloride acts on benzene in the presence of AlCl 3 .
2. Give the structural formula for the spatial isomers of the aromatic hydrocarbon shown below. C 6 H 2 (CH 3 ) 2 C 2 H 5 Cl
3. The density of cycloalkane vapor relative to hydrogen is 42. A cycloalkane molecule has no side branches from the main carbon chain. Determine the formula of cycloalkane.
4. When the reaction mixture is treated with bromine water, 14.2 g of tribromophenol is formed. How many grams of phenol were in the mixture?

**Option No. 21**

1. State the main rules of the theory of the structure of organic substances developed by AMButlerov.
2. Give examples of functional group compounds.
3. Indicate the products formed in the following reactions;

C 6 H 12 X CH 3 Cl Y Z

1. 18.9 g of nitric acid was used for nitration of phenol obtained by the Kumol method. How many grams of acetone are released during the synthesis of phenol?

**Option No. 22**

1. Explain the nomenclature and isomerism of aromatic hydrocarbons with examples.
2. List and name all open-chain and closed-chain isomers of the substance with the following composition; C 6 H 12
3. Write the following variable reaction equations:

*CH 4 C 2 H 2 C 6 H 6 C 6 H 5 Cl C 6 H 5 CH 3*

1. How many grams of benzene are needed to synthesize 116 g of acetone according to the method for obtaining phenol in C anoate? The yield of the resulting product is 96%.

**Option No. 23**

1. C 4 H 8 O and name them according to systematic nomenclature.
2. Alkyl benzenes are oxidized to form hydroperoxides, and then they are decomposed into phenol and acetone under the influence of acid.
3. Composition C 9 H 12 There are several isomers of an aromatic hydrocarbon, and when they are oxidized, a dibasic aromatic carboxylic acid is formed.
4. many moles of KOH are used and how many grams of alcohol are produced to obtain pentanol-1 from 10.62 grams of 1-chloropentane.

**Option No. 24**

1. C 6 H 12 write the structural formulas of all isomeric cycloalkanes with the composition and name them.
2. Write the substances produced in the following chain reactions:

*C 6 H 5 CH 3 XYC 6 H 5 COONa*

1. Give reactions typical of alkadienes. How synthetic rubber is obtained in industry and laboratory.
2. 2.5 *l of* 1 *M* oxalic acid solution.

**Option No. 25**

1. Give the characteristics of acetylene. Acquisition, use, importance in industry, application.
2. Balance the following reaction and state the sum of its coefficients:

*S 2 H 5 OH + K 2 Cr 2 O 7 + H 2 SO 4 K 2 SO 4 + Cr 2 (SO 4 ) 3 + CH 3 CHO + H 2 O*

1. Write the substances formed in the following chain reaction:

*CH 3 CH 3 COOH….X…..Y....Z*

1. Benzene is concentrated *H 2 CO 4* and *HNO 3* s3.36 l (n.s.) of hydrogen was spent to return the product obtained when interacting with the mixture. Determine the mass of the final product formed.

**Option No. 26**

1. Write the formula of the substance isopropyl propionate and determine the sum of the oxidation states of the carbon atoms in it.
2. Diene series hydrocarbons, explain the rubber industry and its production and uses.
3. Write the structural formulas of isomeric dienes and alkynes with C 5 H 9 composition. write the structural formula of aldehydes and ketones and name them according to systematic nomenclature.
4. When the reaction mixture is treated with bromine water, 20 g of tribromophenol is formed. How many grams of bromine were in the mixture?

**Option No. 27**

1. Determine the number of alkenes that have one tertiary carbon atom from the molecules with the composition C 5 H 10 .
2. Show the reaction equations of aromatic alcohols and trinitro compounds of methyl benzene.
3. Indicate the name of the Y product formed as a result of the reaction .

Cyclopentane X Y...

1. 13.44 l of KMnO 4 used to oxidize ethylene to ethylene glycol of and calculate the mass of the organic matter formed.

**Option No. 28**

1. C 5 H 9 composition and name them according to systematic nomenclature.
2. 3 *l of* 0.5 *M* oxalic acid solution.
3. 10 % NaOH solution is required to obtain 20 g of propanal from 1.1 dichloropropane .
4. Write the isomers of hexane and name them according to systematic nomenclature.

**Option No. 29**

1. C 3 H 4 and write the structural formula of C 4 H 6 and name them according to systematic nomenclature.
2. What alkanes are formed when 1-bromo-2,2,3-trimethylbutane and 2-bromo-3-methylbutane interact with sodium.
3. C 10 H 29 composition. Name them according to rational and systematic nomenclature.
4. List the unknown substances listed below:

CH 3 CH CH 2 A B

**Option No. 30**

1. *C 2 H 5 (CH 3 )C(CH 2 OH)CH 2 C(CH 3 ) 2 CHCH 3* Name the substance according to systematic nomenclature.
2. The following changes can be made using what reactions;

Methane → acetylene → benzene → nitrobenzene → aniline → 2,4,6-tribromaniline. Write the equations of this reaction and their conditions

1. Determine the substances A, B, and C formed according to the scheme:

1,4 - dichloropentane A B C…..

1. 11.2 L of acetylene was hydrogenated to ethylene. How much mass of ethyl alcohol was obtained by hydrating the obtained substance.