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**College of Agricultural Engineering Sciences - final examination/ second Semester** **2022-2023**

**Organic Chemistry**

**Time: 2hr**

**Q1/ Draw the chemical structure for five of the following: (20marks)**

**o- Dibromobenzene, Furan , 2,2,3-trimethyl heptane, 1,3-Hexadiene , 2-Pentene,**

**Toluene**

**Q2/ Define five of the following: (20marks)**

**Molecularl formula, , Free radical, , Polymerization, Hydrocarbone**

**Heterocyclic compound ,Conjugated dienes**

**Q3/ Answer the following questions: (20mark)**

 **A- What are the most physical properties of alkenes?**

**B-Define resonance then write Kekule &Dewar structure of benzene.**

**C-Write reduction reaction of benzene?**

**D-Count classes of carbons according to their binding to other carbon?**

**Q4/ A- Complete the following chemical reactions: (20mark)**

**1-C4H10 + KMnO4 ?**

**2-CH2=CH2 + H2 ?**

**3-C3H8 + HNO3 ? + ?**

***4 -CH3MgBr + H2O******? + ?***

***5- 1,4 -dichlorobutane***  *+****Zn*** ***? ? + ?***

**Q5/ A- Choose the most correct answer for each of the following: (20mark)**

**1- If a hydrogen is removed from an alkane it can be used as substitut functional group called:**

 **a:alkyne , b:alkylhalide, c:alkyle group, d: diene**

**2-The name of the hydrocarbone with fourcarbon atoms and having only single bonds between carbone atom is: a:Propane , b:ethane, c:butane, d:methane**

**3- The formula that shows the way by which the atoms are attached to one a nother is:a:molecular fomula,b:polymer ,c:structural formula ,d:both a&c**

**a: a:alkyne , b:aldehyde c:ketone, d:alkyle halide**

**4-What element forms the selekton of organic molecules?**

**a:hydrogen , b:oxygen, c:carbone , d:nitrogen**

**5-Alkanes from C5-C17 at room temperature are:**

 **a:gas , b:solid , c:liquid, d:non of them**

**6-The alkene functional group is:**

 **a:carbon-carbon triple bond , b:carbon-carbon double bond , c:double bond between C&O, d:non of them**

**7-Carbon atom in an alkane organic compounds has:a:**

**a:alkane&aldehyde ,b:alkane&alkene, c:alkane &ketone , d:alkane&alkyne**

**8-When hydrocarbon undergo complete combustion the products are: a:CO&H2O ,b:H2&CO2 ,c:H2&H2O ,d:CO2&H2O**

**9-Isomers with similar groups on the same side are called as:**

 **a:trans, b:cis, c:toutomerism , d:polymer**

**10-Alkanes are tipically :a:reactive ,b:moderately reactive ,c:non reactive**

 ***Dr.Chnar Hadi Vian Jawher Faris Nawroz Omer***

**Q1/ Draw the chemical structure for five of the following: (20marks)**

**3,3-Dibromopentane, , 2-Butene , Cyclohexanol, 2,3-Dimethyl butane, Dimethyl ether**

**Toluene ,2-Methyl-1-propene**

**Q2/ Define five of the following: (20marks)**

**Molecural formula, , Aromatic compound , Hydrocarbon, Free radical, Polymerization**

**Concerted reaction, Trans isomer**

**Q3/Answer only two (20marks)**

 **A- Explain the physical properties of alkanes :**

 **B-Write reduction reaction of benzene?**

 **C-Write addition of HBr to1- Propene in peroxide and with out of it?**

 **Q4/ A- Complete the following chemical reactions: only five (20marks)**

**1 -C2H6+ KMnO4 ?**

**2- C4H10 + O2 ? + ?**

**3- C3H8 + HNO3 ? + ?**

***4 - CH3MgBr + H2O******? + ?***

***5- 1,4 -dichlorobutane***  *+****Zn*** ***? ? + ?***

***6- Etanol +/95 H2SO4*** *?+ ?*

**Q5/ A- Choose the most correct answer for each of the following: (20marks)**

**1- If a hydrogen is removed from an alkane it can be used as substitut functional group called:**

 **a:alkyne , b:alkylhalide, c:alkyle group, d: diene**

**2-The name of the hydrocarbone with three carbon atoms and having only single bonds between carbone atom is: a:Propane , b:ethane, c:butane, d:methane**

**3- What element forms the selekton of organic molecules?**

**a:hydrogen , b:oxygen, c:carbone , d:nitrogen**

**4- Alkanes from C1-C4 at room temperature are:**

 **a:gas , b:solid , c:liquid, d:non of them**

**5-The carbone-carbone double bond is a functional group in a family compounds of:**

 **a:alkenes , b:alkanes , c:alkynes , d:alcohol**

**6-Which factor is most important in determining the chemistry of an organic molecule?**

 **a:melting point, b:functional group , c:the number of C-C bonds , d:boiling point**

**7-Bayer test used to distinguish between :**

 **a:alkane&aldehyde , b:alkane&alkene, c:alkane &ketone , d:alkane&alkyne**

**8-Isomers with similar groups on the same side are called as:**

 **a:trans, b:cis, c:toutomerism , d:non of them**

**9- Alkanes are typically : a:reactive , b:moderately reactive , c:non reactive**

 **10-The formula that showes the way by which the atoms are attached to one another is:**

 **a:molecular formula , b:structural formula , c:emprical formula**

***With Best Wishes***

***Lec.Nawroz Omer***

**Nawroz O. Muhammed**