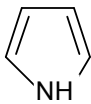
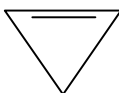

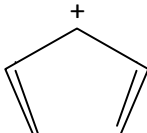
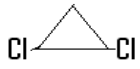


|   |   |
|---|---|
| 1 | <p>The number of optically active stereoisomers of tartaric acid, (HOOC.CHOH.CHOH.COOH) is</p> <p>A. 4<br/>B. 2<br/>C. 1<br/>D. 3</p>   |
| 2 | <p>Which of the following structures is aromatic?</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>I</p> </div> <div style="text-align: center;">  <p>II</p> </div> <div style="text-align: center;">  <p>III</p> </div> <div style="text-align: center;">  <p>IV</p> </div> </div> <p>A. Structures I and II<br/>B. Structure I only<br/>C. Structure II only<br/>D. Structure III only</p> |
| 3 | <p>Salicylic acid on treatment with bromine water will give</p> <p>A. 2-bromo-6-hydroxybenzoic acid<br/>B. 2,4,6-tribromophenol<br/>C. 2,6-dibromobenzoic acid<br/>D. 1,3-dibromo-6-hydroxybenzoic acid</p>   |
| 4 | <p>In which of the following compounds is the oxidation number of the transition metal, zero ?</p> <p>A. <math>[\text{Fe}(\text{H}_2\text{O})_3](\text{OH})_2</math><br/>B. <math>[\text{Co}(\text{NH}_3)_6]\text{Cl}_2</math><br/>C. <math>[\text{Ni}(\text{CO})_4]</math><br/>D. <math>[\text{Pt}(\text{C}_2\text{H}_4)]\text{Cl}_3</math></p>  |
| 5 | <p>If each of the following salts has solubility product <math>K_{\text{sp}} = 1 \times 10^{-9}</math>, which of them is least soluble in water?</p> <p>A. XY<br/>B. <math>\text{X}_2\text{Y}</math><br/>C. <math>\text{XY}_2</math><br/>D. <math>\text{X}_3\text{Y}</math></p>   |
| 6 | <p>A DNA sample stored at 4°C was removed from the refrigerator and heated in a hot water bath with temperature increasing gradually. Which bond of the DNA molecule will break first?</p> <p>A. Phosphodiester bond<br/>B. Glycoside linkage</p>   |


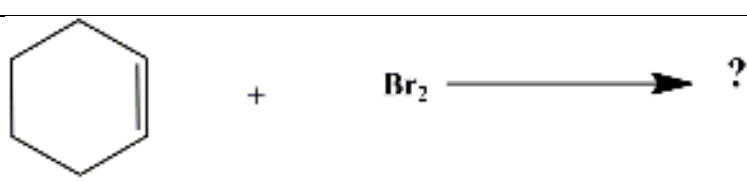


|                  |  |                  |                 |                  |                |
|------------------|--|------------------|-----------------|------------------|----------------|
|                  | <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <math display="block">  \begin{array}{c}  \text{CHO} \\    \\  \text{H} - \text{C} - \text{OH} \\    \\  \text{HO} - \text{C} - \text{H} \\    \\  \text{H} - \text{C} - \text{OH} \\    \\  \text{H} - \text{C} - \text{OH} \\    \\  \text{CH}_2\text{OH}  \end{array}  </math> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;">D-<br/>Glucose</div> </div> <div style="text-align: center;"> <math display="block">  \begin{array}{c}  \text{CHO} \\    \\  \text{HO} - \text{C} - \text{H} \\    \\  \text{HO} - \text{C} - \text{H} \\    \\  \text{H} - \text{C} - \text{OH} \\    \\  \text{H} - \text{C} - \text{OH} \\    \\  \text{CH}_2\text{OH}  \end{array}  </math> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;">D-<br/>Mannose</div> </div> <div style="text-align: center;"> <math display="block">  \begin{array}{c}  \text{CHO} \\    \\  \text{H} - \text{C} - \text{OH} \\    \\  \text{HO} - \text{C} - \text{H} \\    \\  \text{HO} - \text{C} - \text{H} \\    \\  \text{H} - \text{C} - \text{OH} \\    \\  \text{CH}_2\text{OH}  \end{array}  </math> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;">D-<br/>Galactose</div> </div> </div> <p>The above structures are related to each other as</p> <ol style="list-style-type: none"> <li>identical substances</li> <li>diastereomers</li> <li>enantiomers</li> <li>epimers</li> </ol> |                  |                 |                  |                |
| 13               | <p>Which one of the following is not a valid structure for dinitrogen oxide?</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <math display="block">  \begin{array}{c}  \ddot{\text{N}} = \ddot{\text{N}} = \ddot{\text{O}} \\  \text{I}  \end{array}  </math> </div> <div style="text-align: center;"> <math display="block">  \begin{array}{c}  \ddot{\text{N}} = \text{N} = \ddot{\text{O}} \\  \text{II}  \end{array}  </math> </div> <div style="text-align: center;"> <math display="block">  \begin{array}{c}  \ddot{\text{N}} \equiv \text{N} - \ddot{\text{O}} : \\  \text{III}  \end{array}  </math> </div> <div style="text-align: center;"> <math display="block">  \begin{array}{c}  : \ddot{\text{N}} - \text{N} \equiv \text{O} : \\  \text{IV}  \end{array}  </math> </div> </div> <ol style="list-style-type: none"> <li>I</li> <li>II</li> <li>III</li> <li>IV</li> </ol>  |                  |                 |                  |                |
| 14               | <p>A mixture of acidified <math>\text{K}_2\text{Cr}_2\text{O}_7</math> and 10% KI is titrated against <math>\text{Na}_2\text{S}_2\text{O}_3</math> (Sodium thiosulphate) solution using starch indicator. The colour of the reaction mixture at the end point is</p> <ol style="list-style-type: none"> <li>Yellow</li> <li>Blue</li> <li>Green</li> <li>Colourless</li> </ol>   |                  |                 |                  |                |
| 15               | <p>The gas which liberates bromine from a solution of KBr is</p> <table style="width: 100%; border: none;"> <tbody> <tr> <td style="width: 50%;">A) <math>\text{Cl}_2</math></td> <td style="width: 50%;">B) <math>\text{I}_2</math></td> </tr> <tr> <td>C) <math>\text{SO}_2</math></td> <td>D) <math>\text{HI}</math></td> </tr> </tbody> </table>   | A) $\text{Cl}_2$ | B) $\text{I}_2$ | C) $\text{SO}_2$ | D) $\text{HI}$ |
| A) $\text{Cl}_2$ | B) $\text{I}_2$  |                  |                 |                  |                |
| C) $\text{SO}_2$ | D) $\text{HI}$   |                  |                 |                  |                |
| 16               | <p>The bond order of <math>\text{NO}^+</math> ion is</p> <table style="width: 100%; border: none;"> <tbody> <tr> <td style="width: 50%;">A) 1</td> <td style="width: 50%;">B) 2</td> </tr> <tr> <td>C) 2.5</td> <td>D) 3</td> </tr> </tbody> </table>  | A) 1             | B) 2            | C) 2.5           | D) 3           |
| A) 1             | B) 2   |                  |                 |                  |                |
| C) 2.5           | D) 3   |                  |                 |                  |                |
| 17               | <p>What is not true for both cellulose and DNA?</p>  |                  |                 |                  |                |

|    |  |
|----|--|
|    | <p>A. Both are long chain polymers<br/> B. Both contains similar monomers<br/> C. Both have glycosidic linkages<br/> D. Both can break down by enzymatic hydrolysis</p>  |
| 18 | <p>An enzyme working at pH 4.5 became inactive when treated with a hydrophobic surfactant. The enzyme may be</p> <p>A. Cytosolic<br/> B. Extracellular<br/> C. Peripheral membrane bound<br/> D. Integral membrane bound</p>   |
| 19 | <p>Which of the the following molecules cannot show geometric isomerism?</p> <p>A        <math>\text{CH}_3\text{CH}=\text{NOH}</math><br/> B        <math>(\text{CH}_3)_2\text{C}=\text{NOH}</math><br/> C        <math>\text{HO}-\text{N}=\text{N}-\text{OH}</math><br/> D</p> <p style="text-align: center;">  </p> |
| 20 | <p>Which of the following is most stable?</p> <p>A. 2,3-Dimethyl-2-butene<br/> B. 2-Butene<br/> C. 2-Methyl-2-butene<br/> D. 1-Butene</p>  |
| 21 | <p>RNA forms loop structure because</p> <p>A. It always contain uracyl instead of thymine<br/> B. of presence of nearby complementary bases<br/> C. all RNAs have to form loop structure to function<br/> D. they are always single stranded</p>   |
| 22 | <p>Which is the strongest oxidising agent among the species given below?</p> <p>i) <math>\text{In}^{3+}</math> <math>E^0 = -1.34\text{V}</math><br/> ii) <math>\text{Au}^{3+}</math> <math>E^0 = 1.40\text{V}</math></p>   |





|    |   |
|----|---|
|    | <p>B. is first order with respect to <math>[\text{NO}_2]</math><br/>           C. is second order with respect to <math>[\text{NO}_2]</math><br/>           D. order cannot be determined from the information given</p>  |
| 38 |  <p>The carbanion expels a leaving group LG to yield an alkene as shown above by</p> <p>A. <math>\text{E}_1\text{cB}</math> mechanism<br/>           B. <math>\text{E}_1</math> mechanism<br/>           C. <math>\text{E}_2</math> mechanism<br/>           D. Such a reaction does not take place</p>                   |
| 39 | <p>Select the most correct statement among the following:</p> <p>A. <math>\text{SN}^1</math> mechanism takes place in non-polar solvents<br/>           B. <math>\text{SN}^2</math> mechanism in chiral substrates gives racemic mixtures as products<br/>           C. <math>\text{SN}^1</math> mechanism is encouraged by polar solvents<br/>           D. The solvent never influences the mechanism</p> |
| 40 | <p>Fehlings solution is</p> <p>A. <math>\text{AgNO}_3</math> solution + <math>\text{NaOH}</math> solution + <math>\text{NH}_4\text{OH}</math><br/>           B. Alkaline solution of Cupric ion complexed with citrate ion<br/>           C. Copper Sulphate + sodium potassium tartarate + <math>\text{NaOH}</math><br/>           D. Copper sulphate solution</p>   |
| 41 |  <p>Cyclohexene + <math>\text{Br}_2 \longrightarrow ?</math><br/>           Product</p> <p>The correct name of the product obtained is</p> <p>A. cis -1,2-dibromocyclohexane<br/>           B. cis 1,4- dibromocyclohexane<br/>           C. trans-1,2- dibromocyclohexane</p>  |







|    |  |
|----|--|
|    |  |
| 52 | <p>Van Arkel method of purification of metals involves converting the metal to a</p> <p>A. Volatile compound<br/>         B. Volatile unstable compound<br/>         C. Non-volatile stable compound<br/>         D. Non-volatile unstable compound</p>  |
| 53 | <p>Which of the following reaction mechanisms does not involve carbocation as an intermediate ?</p> <p>A. Baeyer-Villiger Oxidation<br/>         B. Beckman rearrangement<br/>         C. Fries Rearrangement<br/>         D. Diels- Alder Reaction</p>  |
| 54 | <p>Which of the following statements is correct?</p> <p>A. <math>-\text{NO}_2</math> group activates the benzene ring for attack of electrophile at <i>ortho</i> and <i>para</i> positions.<br/>         B. <math>-\text{NH}_2</math> group activates the benzene ring for attack of electrophile at <i>ortho</i> and <i>para</i> positions.<br/>         C. Both <math>-\text{NO}_2</math> group as well as <math>-\text{NH}_2</math> group activate the benzene ring for attack of electrophile at <i>ortho</i> and <i>para</i> positions.<br/>         D. Neither <math>-\text{NO}_2</math> group nor <math>-\text{NH}_2</math> group activate the benzene ring for attack of electrophile at <i>ortho</i> and <i>para</i> positions.</p> |
| 55 | <p>Which of the following does not have an active methylene group?</p> <p>A. <math>\text{CH}_3\text{CH}_2\text{NO}_2</math><br/>         B. <math>\text{CH}_3\text{COCH}_2\text{COCH}_3</math><br/>         C. <math>\text{PhCOCH}_2\text{CN}</math><br/>         D. <math>\text{CH}_3\text{CH}_2\text{NH}_2</math></p>  |
| 56 | <p><math>\text{CH}_2=\text{CHCl}</math> is monomer of</p> <p>A. Poly styrene<br/>         B. Natural rubber<br/>         C. PVC<br/>         D. Nylon-6</p>  |
| 57 | <p>A cell membrane acts as a semi-permeable selective boundary because it contains</p> <p>A. Lipids and carbohydrates<br/>         B. Proteins and carbohydrates<br/>         C. Proteins and Nucleic acids<br/>         D. Lipids and proteins</p>  |
| 58 | <p><math>4s</math> orbital has lesser energy than <math>3d</math> orbital because it has</p>   |



|         | D. III only  |         |                      |     |                      |   |       |      |       |    |      |      |       |     |      |      |       |
|---------|--|---------|----------------------|-----|----------------------|---|-------|------|-------|----|------|------|-------|-----|------|------|-------|
| 66      | <p>Which of the following molecules is most volatile?</p> <p>A. Salicylaldehyde<br/>           B. p-nitrophenol<br/>           C. p-hydroxybenzoic acid<br/>           D. m-hydroxybenzoic acid</p>  |         |                      |     |                      |   |       |      |       |    |      |      |       |     |      |      |       |
| 67      | <p>The isoelectric point of an amino acid is :</p> <p>A. The pH at which it exists in the acidic form<br/>           B. The pH at which exists in the basic form<br/>           C. The pH at which it exists in the Zwitterion form<br/>           D. The pH which is equal to its <math>pK_a</math> value</p>   |         |                      |     |                      |   |       |      |       |    |      |      |       |     |      |      |       |
| 68      | <p>A gas shows positive Joule-Thomson Effect below its</p> <p>A. Boyle Temperature<br/>           B. Critical Temperature<br/>           C. Inversion Temperature<br/>           D. Transition Temperature</p>   |         |                      |     |                      |   |       |      |       |    |      |      |       |     |      |      |       |
| 69      | <p>The following data was recorded for the reaction:</p> $X + Y \longrightarrow P$ <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Set No.</th> <th>[A]</th> <th>[B]</th> <th>Rate of the reaction</th> </tr> </thead> <tbody> <tr> <td>I</td> <td>0.1 M</td> <td>0.2M</td> <td>0.001</td> </tr> <tr> <td>II</td> <td>0.2M</td> <td>0.2M</td> <td>0.004</td> </tr> <tr> <td>III</td> <td>0.2M</td> <td>0.8M</td> <td>0.008</td> </tr> </tbody> </table> <p>The order of the reaction is</p> <p>A. 1<br/>           B. 2<br/>           C. 2.5<br/>           D. 3</p> | Set No. | [A]                  | [B] | Rate of the reaction | I | 0.1 M | 0.2M | 0.001 | II | 0.2M | 0.2M | 0.004 | III | 0.2M | 0.8M | 0.008 |
| Set No. | [A]  | [B]     | Rate of the reaction |     |                      |   |       |      |       |    |      |      |       |     |      |      |       |
| I       | 0.1 M  | 0.2M    | 0.001                |     |                      |   |       |      |       |    |      |      |       |     |      |      |       |
| II      | 0.2M   | 0.2M    | 0.004                |     |                      |   |       |      |       |    |      |      |       |     |      |      |       |
| III     | 0.2M   | 0.8M    | 0.008                |     |                      |   |       |      |       |    |      |      |       |     |      |      |       |
| 70      | <p>Which solution has the highest pH?</p> <p>A 0.01M <math>CaCl_2</math><br/>           B 0.01M <math>KNO_2</math><br/>           C 0.01M <math>CH_3COOH</math><br/>           D 0.01M <math>CH_3COCH_3</math></p>   |         |                      |     |                      |   |       |      |       |    |      |      |       |     |      |      |       |
| 71      | <p>The minimum number of <math>H^+</math> ions that can be released by an amino acid is</p> <p>A. 1<br/>           B. 2<br/>           C. 3<br/>           D. 4</p>  |         |                      |     |                      |   |       |      |       |    |      |      |       |     |      |      |       |

|    |  |
|----|--|
| 72 | <p>Which of the following molecular structures is not possible?</p> <p>A. OF<sub>2</sub><br/>         B. SF<sub>2</sub><br/>         C. OF<sub>4</sub><br/>         D. SF<sub>4</sub></p>  |
| 73 | <p>K<sub>p</sub> for the reaction given below is 1.36 at 499K. Which of the following equations can be used to calculate K<sub>c</sub> for this reaction?</p> $\text{N}_2\text{O}_5(\text{g}) \longrightarrow \text{N}_2\text{O}_3(\text{g}) + \text{O}_2(\text{g})$ <p>A. <math>K_c = \frac{[(0.0821) \times (499)]}{[1.36]}</math><br/>         B. <math>K_c = \frac{[(1.36) \times (0.0821)]}{[499]}</math><br/>         C. <math>K_c = \frac{[1.36]}{[(0.0821) \times (499)]}</math><br/>         D. <math>K_c = \frac{[(1.36) \times (499)]}{[0.0821]}</math></p> |
| 74 | <p>A 55-kDa protein was acid hydrolysed to obtain a mixture of amino acids. How many amino acids could be present in the solution?</p> <p>A. 550<br/>         B. 500<br/>         C. 1000<br/>         D. 1100</p>   |
| 75 | <p>Which of the following phenols is most soluble in aqueous sodium bicarbonate?</p> <p>A. 2,4-dihydroxyacetophenone<br/>         B. p-cyanophenol<br/>         C. 3,4-dicyanophenol<br/>         D. 2,4,6-tricyanophenol</p>  |
| 76 | <p>6.24 g of ethanol are vaporized by supplying 5.89 kJ of heat energy. What is the enthalpy of vapourisation of ethanol?</p> <p>A. 43.5kJ      B. 47.0 kJ      = 21.75 kJ      D. = 435.0 kJ</p>  |
| 77 | <p>How many hyperconjugative structures are possible in the following carbocation?</p>   |

