|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | | | | | |
|  | | | | | |
| **PERIODIC TEST 1 (2023--24)**  **ANSWER KEY** | | | | | |
| **Subject: CHEMISTRY**  **Grade: XII** | | Max. Marks:35Time:1Hr15mts | | | |
| **Name:** | | | **Section:** | **Roll No:** | |
| ***General Instructions:***   * GENERAL INSTRUCTIONS: Read the following instructions carefully.   1. There are 16 questions in this question paper.  2. SECTION A - Q. No. 1 to 5 are multiple choice questions carrying 1marks each.  3. SECTION B - Q. No. 6 to 10 are short answer questions carrying 2 marks each.  4. SECTION C- Q. No. 11 to 15 are short answer questions carrying 3 marks each.  5. SECTION C- Q. No. 16 is a long answer question carrying 5 marks.  6. All questions are compulsory.  7. Use of calculators is not allowed | | | | | |
|  | **SECTION A** | | | | |
| 1 | d | | | | 1 |
| 2 | c | | | | 1 |
| 3 | d | | | | 1 |
| 4 | c | | | | 1 |
| 5 | c | | | | 1 |
|  | **SECTION B** | | | |  |
| 6 | a) (CH3)3 C – I, Because Iodine is a better leaving group.  b) SN2- Inversion  SN1- Recimisation | | | | 2 |
| 7 | 1. Butan-2-ol is a chiral molecule. 2. Due to resonance, electron density is increased on ortho and para position for electron donating (via resonance) group like chlorine. | | | | 2 |
| 8 |  | | | | 2 |
| 9 |  | | | | 2 |
| 10 | 1. 1-Bromo-2,2-dimethylpropane 2. 3-Bromo-2-methylpropene | | | | 2 |
|  | **SECTION C** | | | |  |
| 11 | (a) 1-Bromopentane will be most reactive towards SN​2 as it is least hindered.  Primary alkyl halides are most reactive for SN​2 reaction.(b) 2-Bromopentane has a chiral carbon in it. So this compound is optically active.(c) 2-Bromo-2-methyl pentane will give a stable elimination product. (Most stable alkene i. e. more substituted) | | | | 3 |
| 12 | 1. H2SO4 cannot be used along with KI in the conversion of an alcohol to an alkyl iodide as it converts KI to corresponding acid, HI which is then oxidised by it to I2.  KCN is predominantly ionic and provides cyanide ions in solution. Although both carbon and nitrogen atoms of CN can donate electron pairs but the attack takes place mainly through carbon atom and not through nitrogen atom because C-C bond is more stable than C-N bond. However AgCN is mainly covalent in nature and nitrogen is free to donate electron pair forming isocyanide as the main product. c) Grignard reagents are very reactive. In the presence of **moisture, they react to give alkanes. Therefore, Grignard reagents should be prepared under anhydrous conditions.** | | | | 3 |
| 13 |  | | | | 3 |
| 14 | a)    b)    c)    . | | | | 3 |
| 15 | a)    b)  c) | | | | 3 |
|  | . **SECTION D** | | | |  |
| 16 | 1. n-Butyl bromide is a straight chain molecule with strong intermolecular forces whereas t-butyl bromide is a branched chain molecule with weak intermolecular forces due to smaller surface area. 2. Racemic mixture is an equimolecular mixture of enantiomeric pairs. The rotation caused by the molecules of one enantiomer is cancelled by the rotation caused by the molecules of other enantiomer.  The presence of nitro group at ortho or para position increases the reactivity of haloarenes towards nucleophilic substitution because −NO2​ group, being an electron-withdrawing group decreases the electron density over the benzene ring. ii) | | | | 5 |