Sessional Exam 2025

North Gauhati College

Semester : IV (Major) (FYUGP)

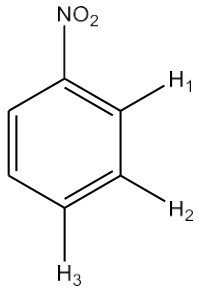
Subject : Chemistry IV

Paper Code: CHE0400404

Total marks: 30 **Time: 1hr 30 mins**

1. What is the principle of ^{1}H-NMR spectroscopy ? **2**

2. Arrange the chemical shift value of the following protons (in increasing order) **2**



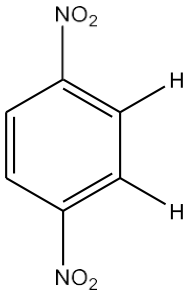
3. Write the splitting pattern of ^{1}H-NMR signals of iodoethane. **2**

4. What is zeeman effect? Explain with diagram. **2**

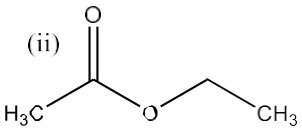
5. What is molecular ion peak and base ion peak in mass spectrometry? **2**

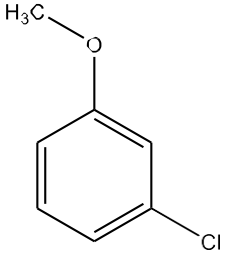
6. Write two factors in which intensity of mass spectrum depends. **2**

7. Write the number of signals of the following compounds in ^{1}H-NMR – **3**



(ii)





8. What is the cell constant of a conductivity cell, if the specific conductance of a solution is 0.68 $ohm^{-1}m^{-1}$ and the resistance is 17 ohm? **3**

9. Write down the cell reaction and where oxidation and reduction occur, specify from the following **3**

$Cu(s)|Cu^{2+}(aq)||Ag^{+}(aq)|Ag(s)$

10. Is the following reaction thermodynamically feasible or not? **4**

$Sn(s) + 2Fe^{3+}(aq) \longrightarrow 2Fe^{2+}(aq) + Sn^{2+}(aq)$

Given E^0 $(Fe^{3+}|Fe^{2+})$ = 0.77 V and E^0 $(Sn^{2+}|Sn)$ = -0.14V

11. Write the Nernst equation and calculate the emf of the following cell at 298K **5**

$Cu(s)|Cu^{2+}(0.130M)||Ag^{+}(0.0001M)|Ag(s)$

Given E^0 $(Cu^{2+}|Cu)$ = 0.34 V and E^0 $(Ag^{+}|Ag)$ = 0.80V

****