**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI**
**(MID SEMESTER EXAMINATION)**

**CLASS: IMSC** **SEMESTER: II**
**BRANCH: CHEMISTRY** **SESSION: SP/2020**

**SUBJECT: CH108 ORGANIC CHEMISTRY-I**

**TIME: 2 HOURS** **FULL MARKS: 25**

**INSTRUCTIONS:**
1. The total marks of the questions are 25.
2. Candidates may attempt for all 25 marks.
3. Before attempting the question paper, be sure that you have got the correct question paper.
4. The missing data, if any, may be assumed suitably.
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

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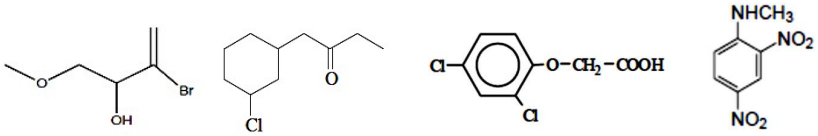
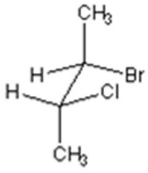
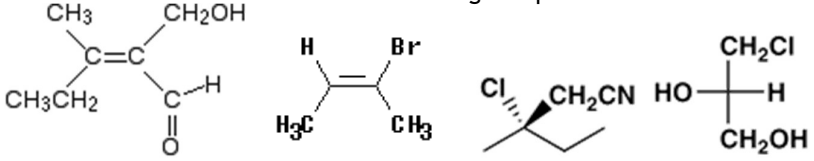
| | | | | CO | BL |
|---|---|---|---|---|---|
| Q1 | (a) | Give the IUPAC nomenclature of following compounds.  | [2] | CO1 | 3 |
| Q1 | (b) | Which one is more electron donating; N,N-dimethylaniline or 2,6-dimethyl-N,N-dimethylaniline and why? Explain the order of dipole moment of compounds; $CCl_4$, $CHCl_3$, $CH_2Cl_2$, $CH_3Cl$ and $CH_4$. | [3] | CO1 | 3 |
| Q2 | (a) | Describe the structural difference between Dimethylcarbene and di-tertiary-butylcarbene with proper figure. | [2] | CO2 | 3 |
| Q2 | (b) | Why is pyridine more basic than pyrrole? Explain and arrange the increasing order of acid strength of the following compounds; $CH_3COOH$, $CH_3CH_2COOH$, $CH_3OCH_2COOH$, $HOCH_2COOH$ | [3] | CO2 | 3 |
| Q3 | (a) | Explain the improper axis of symmetry with example. | [2] | CO3 | 5 |
| Q3 | (b) | What is resolution? Why is both racemic mixture and meso isomer optically inactive? | [3] | CO3 | 2 |
| Q4 | (a) | Convert the following compound into Fischer projection formula and define R/S nomenclature for each chiral center.  | [2] | CO1 | 1 |
| Q4 | (b) | Explain the order of priority for groups; -C≡CH, -COOH, $CH_2OH$ and $CH_3$. Give the E/Z or R/S nomenclature for following compounds  | [3] | CO2 | 3 |
| Q5 | (a) | Define configurational isomer and conformational isomer with example. | [2] | CO1 | 2 |
| Q5 | (b) | Explain the possible conformations with proper energy barrier of n-butane by rotation of C1-C2 and C2-C3 bond in Sawhorse projection. | [3] | CO3 | 5 |

**:::: 28/02/2020M ::::::**