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

CLASS: BTECH
BRANCH: CSE/IT/ECE/EEE

SEMESTER: I
SESSION : MO/2019

SUBJECT : CH101 CHEMISTRY

TIME: 2.00 HOURS

FULL MARKS: 25

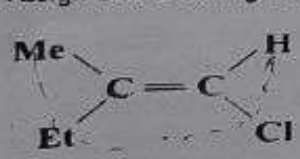
INSTRUCTIONS:
1. The total marks of the questions are 25.
2. Candidates may attempt for all 25 marks.
3. Before attempting the question paper, be sure that you have got the correct question paper.
4. The missing data, if any, may be assumed suitably.

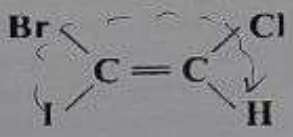
Q1 (a) Define Ambidentate ligand with suitable example. [2]
Q1 (b) Draw the shapes of the various d orbitals and explain how they are split into two groups t_2g and eg in an octahedral ligand field. [3]

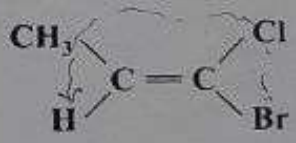
Q2 (a) Derive the radius ratio of trigonal planar complexes. [2]
Q2 (b) Explain hybridization, shape and magnetic behavior of the following complexes: [3]
$[Fe(CN)_6]^{-4}$, $[Fe(CN)_6]^{3-}$, $[Cr(NH_3)_6]^{2+}$, $[NiCl_4]^{2-}$, $[Ni(CO)_4]$, $[Ni(CN)_4]^{2-}$

Q3 (a) Using MO theory explain why O_2 is paramagnetic [2]
Q3 (b) Draw the MO diagram of (1) CO (2) O_2 (3) HF [3]

Q4 (a) Why trans form is more stable than Cis form of geometrical isomerism [2]
Q4 (b) Assign E or Z configuration to the following compounds: [3]







Q5 (a) Define Pseudo unimolecular reaction with example. [2]
Q5 (b) Derive the Arrhenius equation. [3]

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