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

CLASS: BTECH
BRANCH: ALL

SEMESTER: BACKLOG
SESSION: SP/2019

SUBJECT: CH101 CHEMISTRY

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.

Q1 (a) Define the Following (a) F-Centre (b) Forbidden Zone. [2]
Q1 (b) Explain the Inner Orbital complex and outer Orbital Complex with Suitable Example. [3]

Q2 (a) Define ambidentate ligand with example. [2]
Q2 (b) Construct a Born-Haber cycle for the formation of ionic compound of formula MX_2 (M = Alkaline earth metal, X = Halogen). [3]

Q3 (a) Using MO theory explain why O_2 is paramagnetic. [2]

Q3 (b) Describe the hybridization of the central atom and predict the geometry of molecule in each case (i) H_2O (ii) CO_2 (iii) SF6 (iv) CO_3^{2-} (v) NH_3 (vi) PCl_5 . [3]

Q4 (a) Define Metamerism and Tautomerism with example. [2]
Q4 (b) Draw the structure of Cis and trans isomers of 2,3-dichloro But-2-ene. Why trans isomers is more stable than cis. [3]

Q5 (a) Define activation Energy with diagram. [2]
Q5 (b) Explain the factors which affect the rate of reaction. [3]

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