CLASS: BTECH
BRANCH: ALL

SEMESTER: I
SESSION: MO/2018

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) What are F- centre? Differentiate between n-type and p- type semiconductor? [2]
Q1 (b) Construct and describe Born- Haber cycle for the formation of compound MX (M= alkaline [3]
         earth metal, X = Halogen).

Q2 (a) What are ligands? Discuss different types of ligands with examples. [2]
Q2 (b) Illustrate with an example the following with respect to coordination compounds: [3]
         (i) Ionisation isomerism   (ii) Geometrical isomerism   (iii) Optical isomerism

Q3 (a) Explain the following with example: [2]
         (i) Metamerism   (ii) Tautomerism
Q3 (b) What do the symbol E and Z stand for? What are the advantages of E and Z system over [3]
         conventional cis -trans system. Assign E and Z configuration to the following:
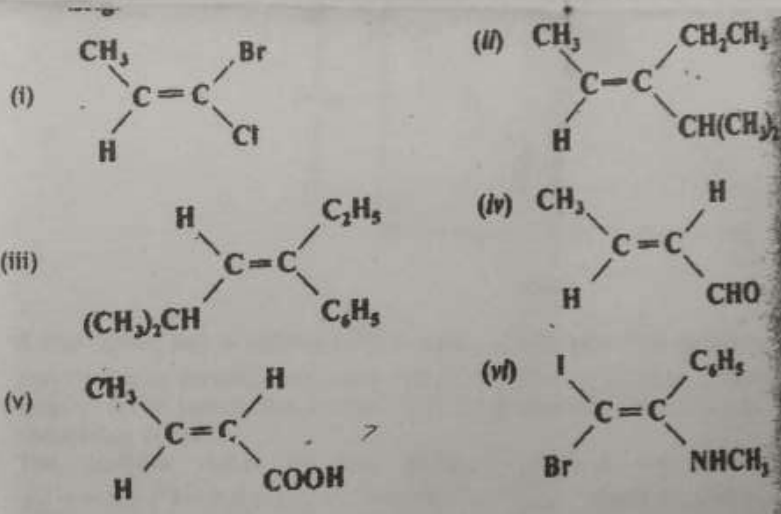
Q4 (a) Differentiate between bonding and antibonding molecular orbital. Draw the bonding and [2]
         anti-bonding molecular orbitals formed by overlapping of the following atomic orbitals of
         two atoms: (i) 'p_z orbital' overlapping with 'p_z orbital'
Q4 (b) Draw the MO energy level diagram for the following molecules. Also, find their bond [3]
         order and comment on their magnetic property.
         (i) N_2 (ii) O_2^- (iii) F_2

Q5 (a) What is meant by activation energy? Explain how activation energy is determined with [2]
         the help of Arrhenius equation.
Q5 (b) Explain the kinetics of parallel reaction.
         A→ B (main reaction)
         A → C (side reaction)
         Graphically represent the variation of concentrations of A, B, C with time. [3]

:::::: 10/10/2018 M ::::::