FACULTY OF SCIENCE

B.Sc. IV-Semester (CBCS) Examination, May / June 2019

Subject : Chemistry

Paper – IV (DSC)

Time : 3 Hours **Max. Marks: 80**

PART – A (5 x 4 = 20 Marks)
(Short Answer Type)
Note : Answer any FIVE of the following questions.

1 Explain linkage, coordination ligand isomerism exhibited by coordination compounds using suitable examples.
2 Give the classification of arganometallic compounds with examples.
3 Arrange acetic acid, trimethyl acetic acid, tribhloroacetic acid in increasing order of acidity. Explain.
4 Write the mechanism for Claisen ester condensation.
5 What is cell constant? What are its units? Calculate the cell constant of a cell in which the electrodes are 2.2 cm apart and the area of cross section 3.8 sq cm.
6 Explain the terms Electrophoretic effect and relaxation effect.
7 Explain thermal and photochemical pericyclic reactions.
8 Give the retrosynthetic analysis of phenyl ethyl bromide.

PART – B (4 x 15 = 60 Marks)
(Essay Answer Type)
Note: Answer ALL from the questions.

9 (a) What is EAN rule? Calculate the EAN of the central atom in
(i) $K3[Fe(CN)_6]$ (ii) $[CoF_6]^{3-}$ (iii) $[Cu(NH_3)_4SO_4$

OR

(b) How do you explain the formation of $Ni(Co)_4$, $Fe(CO)_5$ and $Fe_2(CO)_9$ on the basis of 18-electron rule?

10 (a) (i) What are the special methods of preparation of aromatic acids ? Explain.
(ii) Propose mechanism for acid catalysed ester hydrolysis.

OR

(b) Write a note on reduction reactions of nitrobenzene in different media.

11 (a) What is Ostwald's dilution law? What are its uses and limitations?

OR

(b) Write a note on (i) glass electrode (ii) quinhydrone electrode

12 (a) What are cycloaddition reactions? Explain them using FMO theory.

OR

(b) (i) Define and explain enantiomeric excess and diastereomerics excess.
(ii) Write a note on Target molecule, synthon, synthetic equivalent, functional group interconversion.

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