Of Master Copy May-26
Regular

Exam. Code: 0906
Sub. Code: 33293

2056
B.E., Second Semester
ASC-X01: Applied Chemistry
(Common with CSE, IT, CIV & BIO)

Time allowed: 3 Hours **Max. Marks: 50**

NOTE: ***Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Section.***

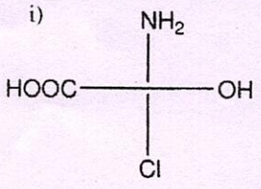
x-x-x

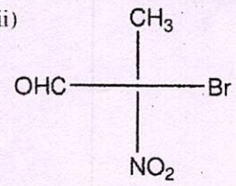
Q.1. (a) Differentiate between meso compounds and diastereomers.
(b) Define auxochrome with examples.
(c) Explain the principle of IR spectroscopy.
(d) What is Zeroth law of thermodynamics?
(e) Explain Wilkinson's catalyst with its function? **(5×2=10)**

Section-A

Q.2. (a) Explain valence bond theory with its limitation in co-ordination compounds.
(b) Describe the crystal field stabilization energies of octahedral complexes and its applications. **(4, 6)**

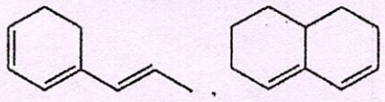
Q.3. (a) Describe the properties of enantiomers.
(b) Illustrate the conformations of cyclohexane
(c) Assign *R* or *S* designation to the following molecules with explanation:

i)


ii)


(3, 4, 3)

Q.4. (a) Using Woodward–Fieser rules (UV), calculate λ_{max} for the following compounds:



(b) With suitable example, explain the effect of solvent in Ultraviolet (UV) absorption spectroscopy.
(c) Distinguish between the following each pairs using IR spectroscopy:
(i) Ethanol and acetone
(ii) But-1-ene and propanal **(3, 3, 4)**

Section-B

Q.5. (a) Derive an expression for the work done in the isothermal reversible expansion of an ideal gas.
(b) What are the implications of first law of thermodynamics?
(c) Explain Gibb's-Helmholtz equation. **(5, 3, 2)**

Q.6. Discuss the followings using suitable examples:
(i) Acid base catalysis.
(ii) Wacker process **(5, 5)**

Q.7. (a) With suitable example, elaborate the mechanism of condensation polymerization.
(b) Describe the properties and uses of polystyrene & phenol-formaldehyde resin. **(5, 5)**

x-x-x