Registration no: | | | | | | | | | | |

Total Number of Pages: 02 **M.Sc. I**

FCYC502

5th Semester Regular / Back Examination 2017-18

Organic Chemistry-IV

BRANCH: M.Sc.I (AC)

Time: 3 Hours

Max Marks: 70

Q.CODE: B610

Question No.1 which is compulsory and any five from the rest

The figures in the right hand margin indicate marks.

Q1 **Answer the following questions:** **(2x10)**

a) What do you mean by alternant and non-alternant hydrocarbons? Explain with examples.

b) Define aromatic and anti-aromatic compounds with suitable examples.

c) What is carbene? What are the different types of carbenes? Draw the structures.

d) What is Racimic mixture. Explain with an example.

e) What is Huckels rule? What are the conditions for a compound to be aromatic apart from obeying Huckel rule.

f) What is annulene? Give examples of two annulenes and draw their structures.

g) What do you mean by Walden inversion? Explain with example.

h) Why Benzene prefers electrophilic substitution reaction rather than addition reaction. Explain with an example.

i) What is a non-classical carbocation? Give example.

j) What is Decalin? Differentiate between cis and trans decalin.

Q2 **a)** Define and explain conjugation, cross-conjugation and hyper-conjugation with suitable examples **(5)**

b) What is Resonance? What are the characteristics for the stability of the contributing structures? **(2)**

c) Explain Tautomerisim with suitable example. What are the factors that affect the keto-enol tautomerisim. **(3)**

Q.3 **a)** What is optical activity? What makes a compound optically active? **(2)**

b) What are the compounds that are optically active in the absence of chiral carbon? Give a brief explanation. **(6)**

c) How many stereo isomers are possible for tartaric acid? Draw the different optical isomers. Identify the enantiomers and diastereomers. **(2)**

Q4 **a)** What are SN1 and SN2 reactions? **(4)**

b) What are the different factors that affect the SN1 and SN2 of reaction? **(4)**

c) Discuss the stereochemistry of the products formed in both the reaction. **(2)**

Q5 **a)** What is Hard-soft acid base (HSAB) principle? Explain clearly what are the conditions for hard, soft acid and bases. Give examples **(5)**

b) What do you mean by border-line acid and bases? Give examples **(2)**

c) Give the applications of HSAB principle in organic synthesis **(3)**

Q6 **a)** What is crown ether complex? Why it is important. What is its role in organic chemistry **(4)**

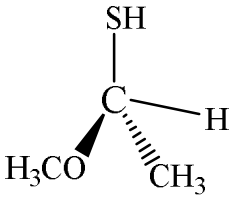
b) What are Inclusion compounds and clathrates? Give examples. Write some of its applications. **(4)**

c) What is purple benzene? How it is formed? **(2)**

Q7 **a)** What is Resolution? Discuss the biochemical and chemical methods of resolution. **(6)**

b) Assign R and S configuration to the following compounds **(4)**
For each chiral carbon atom.

(i)



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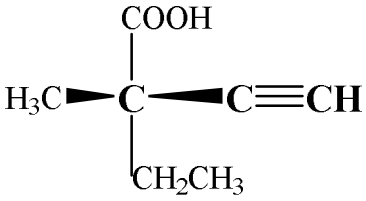

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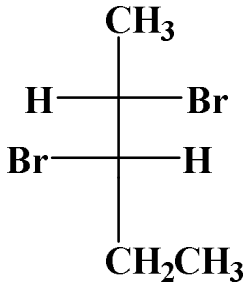

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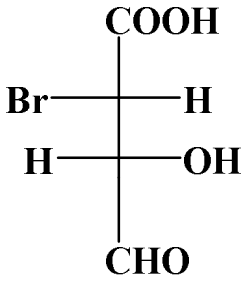

Q8 **Write short notes on the following :**

(i) Conformational analysis of cyclohexane **(4)**

(ii) Structure and stability of Carbanions **(4)**

(iii) Orientation and reactivity of mono substituted benzene **(2)**