

QP CODE: D3BCH2405

(Pages: 2)

Reg. No : .....

Name : .....

**THIRD SEMESTER FYUGP EXAMINATION, NOVEMBER 2025****Discipline Specific Core (DSC) Course - Minor****CHE3MN209 : Basic and Applied Organic Chemistry****(Credits: 4)****Time: 2 Hours****Maximum Marks: 70****Section A****Answer the following questions. Each carries 3 marks (Ceiling: 24 marks)**

1.	What is meant by electromeric effect? Give example.	BL1	CO1
2.	What is meant by stereoisomerism? What are the different types of stereoisomerism?	BL1	CO2
3.	Calculate the following for the radiation of wavelength 200 nm: wave number, frequency and energy per photon.	BL3	CO4
4.	Which is generally the most stable - 1°, 2° or 3° carbocation? Why?	BL2	CO1
5.	What are diastereomers? Draw the diastereomers of an organic compound.	BL2	CO2
6.	What is meant by bathochromic shift (red shift)?	BL2	CO4
7.	Give two examples each for +M groups and –M groups.	BL2	CO1
8.	Draw and label the E and Z isomers of 2-pentene.	BL2	CO2
9.	Draw the labelled schematic diagram of the proton nmr spectrum of acetone.	BL3	CO4
10.	State the selection rule for vibrational transitions.	BL2	CO4

**Section B****Answer the following questions. Each carries 6 marks (Ceiling: 36 Marks)**

11.	Explain the term hyperconjugation and its significance with illustrative examples.	BL2	CO1
12.	Draw the different conformations possible for butane in the Newman projection formulae.	BL2	CO2

**(PTO)**

13.	Explain the basic principle and method of purification of organic compounds by the method of vacuum distillation.	BL2	CO3
14.	Explain the role of steric effect in determining the order of basicity of methylamine, dimethylamine, and trimethylamine.	BL2	CO1
15.	Differentiate between optical isomerism and geometrical isomerism.	BL2	CO2
16.	Compare paper chromatography and TLC with respect to principle and use.	BL2	CO5
17.	Explain the importance of group frequencies in IR spectroscopy and describe how they aid in identifying functional groups during organic structure determination.	BL2	CO4
18.	Discuss the different types of electronic transitions ( $\sigma \rightarrow \sigma^*$ , $n \rightarrow \sigma^*$ , $\pi \rightarrow \pi^*$ , $n \rightarrow \pi^*$ ) with examples.	BL2	CO4

### Section C

**Answer any one question. Each carries 10 marks (1 x 10 = 10 Marks)**

19.	Explain +I and -I effect with examples. Discuss the role of the inductive effect in influencing the acidity of organic compounds.	BL2	CO1
20.	Giving the conformations of cyclohexane and methylcyclohexane, explain their conformational analysis.	BL2	CO2

**CO : Course Outcome**

**BL : Bloom's Taxonomy Levels** (1 – Remember, 2 – Understand, 3 – Apply, 4 – Analyse, 5 – Evaluate, 6 – Create)