647510 **BSc5CheC502x** **Seat No :_____**

B.Sc. Semester - 5 (Remedial) (*CBCS*) Examination
March/April-2022 (NEW COURSE)
Organic Chemistry and Spectroscopy(Core)

Time: 2:30 Hours **Marks: 70**

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate marks.

Que-1 (A) **Answer the following question.** (04)

1. Give the Gabriel pthalimide synthesis.

Que-1 (B) **Answer any two questions out of three.** (10)

1. Give any two synthesis of polypeptide.
2. Give the synthesis and applications of Saccharin.
3. Explain: various Conformations of cyclohexane with energy level diagram.

Que-2 (A) **Answer the following question.** (04)

1. Give the difference between $\sigma_v, \sigma_h \& \sigma_d$.

Que-2 (B) **Answer any two questions out of three.** (10)

1. Give point group and order of the point group of following molecules,
   (a) HCHO, (b) H_3BO_3, (c) PYRIDINE, (d) NH_3, (e) NAPHTHALENE
2. Give the principle, mechanism and applications of Arndt Eistert reaction.
3. Give the synthesis of coniine.

Que-3 (A) **Match the following pair:** (04)

Molecule		**No. of PMR signals**	
1	Ethyl chloride	**a**	1
2	2-chloropropene	**b**	3
3	p-toludine	**c**	4
4	benzene	**d**	2
		e	5

Que-3 (B) **Answer any two questions out of three.** (10)

1. Give the synthesis and uses of Adrenaline.
2. Write a note on: Mc-Lafferty rearrangement with example.
3. Explain: Shielding and deshielding effect with examples.

Que-4 (A) **Answer the following question.** (04)

1. Give any two differences between enantiomers-diastereomers.

Que-4 (B) **Answer any two questions out of three.** (10)

1. Prove that $\mathbf{S_6^6 = E}$ by example of staggered ethane.
2. Explain: Spin- spin coupling in NMR.
3. Give the principle, mechanism and applications of Benzil Benzilic acid rearrangement

Que-5 (A) **Answer the following question.** (04)

1. Explain: Coupling constant with examples.

Que-5 (B) **Answer any two questions out of three.** (10)

1. Why TMS is used as a reference in NMR spectroscopy.
2. Prove the presence of methylene group in Papaverine.
3. Determine the structure from following NMR data:

   Molecular formula:- C_8H_8O

   (a) 3H, singlet, 2.41 δppm

   (b) 2H, doublet, 7.36 δppm

   (c) 2H, doublet, 7.80 δppm

   (d) 1H, singlet, 9.89 δppm

Chemical Shift:	
Aldehydicproton:	*08.0-10.0* δ_{ppm}
Carboxylic acid proton:	*10.0-12.5* δ_{ppm}
Aromatic proton:	*6.5-8.5* δ_{ppm}
Alkyl proton:	*0.9-2.9* δ_{ppm}

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