

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID-SEMESTER EXAMINATION MO/2025)

CLASS: BSc
BRANCH: Chemistry

SEMESTER: V
SESSION: MO/2025

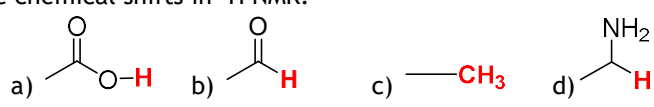
SUBJECT: CH332 ORGANIC CHEMISTRY-I

TIME: 02 Hours

FULL MARKS: 25

INSTRUCTIONS:

1. The question paper contains 5 questions each of 5 marks and total 25 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
4. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates

		CO	BL
Q.1(a)	What are the four major pieces of information observed from NMR?	[2] 1	1
Q.1(b)	Explain the basis of the NMR phenomenon and draw a fundamental equation of NMR.	[3] 2	2
Q.2(a)	Why is TMS used as a reference standard in NMR?	[2] 1	1
Q.2(b)	Draw and discuss the ^1H -NMR spectrum of dimethoxy methane with the approximate chemical shift in Hz & PPM and splitting, if any.	[3] 2	3
Q.3(a)	Arrange the following H nuclei (bold) from upfield to the downfield order of their relative chemical shifts in ^1H NMR: 	[2] 1	1
Q.3(b)	Explain the ^1H -NMR spectrum of ethyl acetate with the approximate chemical shift and splitting.	[3] 2	2
Q.4(a)	Draw a schematic energy diagram to demonstrate the energy gap order for electronic transitions in UV-Vis spectroscopy.	[2] 1	1
Q.4(b)	Discuss the four effects of chromophore on λ -shift and intensity. Explain the difference in λ_{max} of s-cis and s-trans acyclic butadiene.	[3] 2	3
Q.5(a)	Explain the basis of IR spectroscopy. Discuss the three regions of electromagnetic radiation in IR spectroscopy.	[2] 1	2
Q.5(b)	Discuss the IR spectrum of Benzoic acid with peak assignment.	[3] 2	3

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