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Total No. of Pages : 02

Total No. of Questions : 09

M.Sc.(Chemistry) (2015 to 2017) (Sem.-3)

SPECTROSCOPY – II

Subject Code : MSCH-302

M.Code : 72620

Time : 3 Hrs.

Max. Marks : 100

INSTRUCTIONS TO CANDIDATES :

1. First question is compulsory. Attempt one question from each unit and five questions in

Q1 Answer briefly : (2×10=20)

- a. What is soft ionization?
- b. What is MacLafferty rearrangement?
- c. What is quadrupole effect?
- d. What are metastable ions?
- e. Name spin-spin splitting rules.
- f. What is shielding effect?
- g. How many peaks in ^1H NMR will be observed for 4-methyltoluene?
- h. How many peaks in ^1H NMR will be observed for ethanol?
- i. How will you differentiate between o-phenylenediamine & p-phenylenediamine?
- j. What are chemical shift reagents?

UNIT-I

- Q2. a. Write a note on chiral resolving agents with suitable examples. (6)
- b. What is NOE effect? (6)
- c. Write a note on: DEPT, HETCOR & magnetic resonance imaging. (8)

- Q3. a. Write a detailed account on first order and second order spectra. (10)
b. Describe the effect of solvent on chemical shift. (5)
c. Write a note on 2D NMR spectroscopy. (5)

UNIT-II

- Q4. Write a detailed account on NQR spectroscopy with applications. (20)
Q5. Write a detailed account on EPR spectroscopy with applications. (20)

UNIT-III

- Q6. Describe various applications of Mossbauer spectroscopy. (20)
Q7. a. Describe Mossbauer spectrum and its parameters in detail. (10)
b. Describe the scheme of Mossbauer experiment with the help of block diagram. (10)

UNIT-IV

- Q8. a. Describe various ionization methods used in mass spectrometry. (10)
b. What is nitrogen rule? Describe its importance with suitable examples. (10)
Q9. a. Describe fragmentation patterns of alkyl and aryl halides with suitable examples. (6)
b. Describe the importance of relative abundance in mass spectrometry. (6)
c. Write a note on molecular weight and molecular formula determination by mass spectrometry. (8)

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.