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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.