

Roll No. :

Total No. of Questions : 11]

[Total No. of Printed Pages : 3

BPF-2197

M.Sc. (Final) Examination, 2022

CHEMISTRY

Paper - V (CH-501)

(Spectroscopy, Photochemistry and Computer in Chemistry)

Time : 3 Hours]

[Maximum Marks : 75

Section-A

(Marks : 2 × 10 = 20)

Note :- Answer all *ten* questions (Answer limit **50** words). Each question carries **2** marks.

Section-B

(Marks : 5 × 5 = 25)

Note :- Answer all *five* questions. Each question has internal choice (Answer limit **200** words). Each question carries **5** marks.

Section-C

(Marks : 10 × 3 = 30)

Note :- Answer any *three* questions out of five (Answer limit **500** words). Each question carries **10** marks.

Section-A

1. (i) Define Molar Absorptivity.
- (ii) What are Combination Bands ?
- (iii) Define Cotton effect.

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- (iv) What is DEPT ?
- (v) What is Hyperfine Coupling ?
- (vi) What is first order spectra in NMR-Spectroscopy ?
- (vii) What is Valence Isomerisation ?
- (viii) Define Actinometry ?
- (ix) Define Metastable Peak.
- (x) What is Database ?

Section-B

2. Write a short note on FTIR.

Or

Write a short note on Quadrupole-interactions in Mossbauer Spectroscopy.

3. Explain the contact and pseudo contact shifts.

Or

Explain Nuclear Overhauser Effect (NOE).

4. Write a note on singlet molecular oxygen reactions.

Or

Write a note on Cyclohexadienones.

5. Explain kinetics of solid state reactions.

Or

Explain organic charge transfer complex.

6. Write a short note on small computer codes in Chemistry.

Or

Write a short note on Word Processing Software.

Section-C

7. Write basic principle of Mossbauer Spectroscopy. How Mossbauer spectroscopy is helpful in structure determination ?
8. Explain electron spin resonance spectroscopy application to transition metal complexes.
9. Write a note on photochemistry of alkenes.
10. Write basic principle of Mass Spectrometry and explain mass spectral fragmentation of organic compounds.
11. Write a note on linear simultaneous equations to solve secular equations within the Huckel theory.