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Total No. of Questions : 11 ]

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# CHEMSEM-104

M.Sc. (Ist Semester) Examination Dec., 2022

## CHEMISTRY

Paper - CC-4

### (Analytical Chemistry-I)

*Time : 3 Hours ]*

*[ Maximum Marks : 40*

#### Section-A

(Marks : 1 × 10 = 10)

*Note :-* Answer all *ten* questions (Answer limit **50** words). Each question carries 1 mark.

#### Section-B

(Marks : 3 × 5 = 15)

*Note :-* Answer all *five* questions. Each question has internal choice (Answer limit **200** words). Each question carries **3** marks.

#### Section-C

(Marks : 5 × 3 = 15)

*Note :-* Answer any *three* questions out of five (Answer limit **500** words). Each question carries **5** marks.

#### Section-A

- (i) What is meant by Antimicrobial Agents ?  
(ii) Define PFA Act.

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- (iii) How will you carry out acid-base titration by potentiometry ?
- (iv) Name the instruments which generally used for the measurement of potentials.
- (v) Explain Franck-Condon principle.
- (vi) Differentiate between the radiative and non-radiative decay.
- (vii) What do you mean by Overtones ?
- (viii) Explain the Stoke and Anti-stokes lines.
- (ix) Explain Debye Scherrer equation.

**Section-B**

2. Define the class-I and class-II type of preservatives.

*Or*

Discuss about the food standards.

3. What is meant by an ion selective electrode ? Explain with suitable example.

*Or*

Explain the difference between conductometry and high frequency titrations.

4. Discuss about the vector representation of momenta and vector coupling.

*Or*

Explain the electronic spectra of polyatomic molecules.

5. Explain the principle of Raman and Laser Raman.

*Or*

How would you differentiate between these using FTIR ?

- (i) Ethanol and Ethanal
- (ii) Propanone and Propanal

6. Write short note on Miller Indices.

*Or*

Explain Ramchandran diagram.

**Section-C**

7. What is meant by drug ? Discuss about the various protocols utilised for the analysis of standard drugs.

8. What is meant by Conductometry ? Explain the low and high frequency titrations.

9. Write short notes on the following :

(i) Atomic spectra of alkali metal atoms

(ii) Energy levels and molecular orbitals

10. Discuss the basic principles of FTIR and UV-vis spectroscopy and mention the application of FTIR and UV-vis spectroscopy.

11. Write short notes on the following :

(i) Laue method

(ii) Absolute configuration of molecules