Total No. of Questions : **11**]   [Total No. of Printed Pages : **3**

SP–681

M.Sc. (Final) Examination, 2021

CHEMISTRY

Paper - X (A)

(Group-D)

CH–509

(Analytical Chemistry)

Time : 1½ Hours]   [*Maximum Marks : 75*

Section–A   **(Marks : 2 × 10 = 20)**

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

(खण्ड–अ)   **(अंक : 2 × 10 = 20)**

नोट :–   सभी **दस** प्रश्नों के उत्तर दीजिए (उत्तर-सीमा **50** शब्द)। प्रत्येक प्रश्न **2** अंक का है।

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.

(खण्ड–ब)   **(अंक : 5 × 5 = 25)**

नोट :–   सभी **पाँच** प्रश्नों के उत्तर दीजिए। प्रत्येक प्रश्न में विकल्प का चयन कीजिए (उत्तर-सीमा **200** शब्द)। प्रत्येक प्रश्न **5** अंक का है।

Section–C   **(Marks : 10 × 3 = 30)**

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

(खण्ड–स)   **(अंक : 10 × 3 = 30)**

नोट :–   पाँच में से किन्हीं **तीन** प्रश्नों के उत्तर दीजिए (उत्तर-सीमा **500** शब्द)। प्रत्येक प्रश्न **10** अंक का है।

BI–322   (1)   **SP–681**   P.T.O.

Section–A 2 each

1. Attempt all questions. Answers should not exceed **50** words in each question.

   (i) The result of an analysis are found to be 36.89% compared with true value of 36.98%. What is the relative error in parts per thousand ?

   (ii) What is separation factor ? Give formula for 'R'.

   (iii) What is the requirement for a vibration to be Raman active ?

   (iv) Give equation to calculate the energy of activation in Mass Spectrometry.

   (v) Cu^{+2} was combined with a chelating agent. The fluorescing chelate gave a slope of 15 intensity units per 1.2 mg litre of Cu^{+2} concentration in the system which gave on intensity reading of 85. Calculate the Cu^{+2} concentration in the system.

   (vi) Write two limitations of flame photometry.

   (vii) What is Retention Factor ?

   (viii) Write application of ion exchange chromatography in separation of Lanthanides.

   (ix) Write physical properties of minerals.

   (x) Write Kerr and Kulp equation.

Section–B 5 each

Attempt all questions. Answer should not exceed **200** words in each question.

2. Explain accuracy and instrument calibration.

Or

Explain automatic chemical analyzer and element (C, H, N, O) analyzer.

3. Discuss the instrumentation of Raman Spectroscopy.

Or

Explain electron microscopy with reference to TEM and SEM.

4. Explain differential and derivative spectroscopy.

Or

Discuss the instrumentation for AAS.

5. Explain basic principles and instrumentation for TLC.

Or

Explain HPLC in detail.

6. What do you mean by Raw Material ? Give details of raw material for glass and cement.

Or

Explain chemical composition of minerals and classify in detail.

Section–C   10 each

Attempt any *three* questions out of five. Answer should not exceed **500** words in each.

7. What are Computer Aided Analysis ? Explain in detail.

8. Explain instrumentation and experimental technique of X-rays spectroscopy.

9. Explain instrumentation for Reame-Emission spectroscopy. Give its application.

10. Discuss theory and instrumentation of GLC.

11. Classify Chromatography. Explain in detail paper and thin layer chromatography.