AI—194—2017

FACULTY OF SCIENCE

M.Sc. (Second Year) (Fourth Semester) EXAMINATION

OCTOBER/NOVEMBER, 2017

ANALYTICAL CHEMISTRY

Paper XXII (CH-543/4)

(Chromatography and Other Process in Chemical Analysis-II)

(Thursday, 16-11-2017)   **Time : 2.00 p.m. to 5.00 p.m.**

Time— Three Hours   *Maximum Marks*—75

N.B. :—   (*i*)   *All* questions carry equal marks.

       (*ii*)   *All* questions are compulsory.

       (*ii*)   Use of calculator and log table is allowed.

1.   Answer any *three* :

   (*a*)   Explain banded phase packing.

   (*b*)   What is distribution ratio in liquid-liquid extraction process ?

   (*c*)   How will you explain the mobile and stationary phase in HPLC.

   (*d*)   Give the principle of automatic elemental analyser.

   (*e*)   Explain the exhaustive extraction.

2.   Answer any *three* :

   (*a*)   Discuss the working of automatic chemical analyser.

   (*b*)   Describe the application of HPLC in forensic chemistry.

   (*c*)   Explain the multiple extraction in detail.

   (*d*)   Explain solvent treatment system for HPLC technique.

   (*e*)   Discuss the extraction of metal chloride by liquid-liquid extraction process.

P.T.O.

3. Answer any *two* :

(*a*) Explain the selectivity of extraction in liquid-liquid extraction.

Or

Explain the infra-red process analyser in detail.

(*b*) Discuss the working of industrial process analyser.

Or

If x, y, z are respectively 0.44 cm, 0.42 cm^2/sec and 0.18 sec^{-1}, calculate the minimum plate hight and best flow rate.

4. Answer any *two* :

(*a*) Describe the method based on bulk properties.

Or

Explain the role of 8-hydroxy quinoline for the separation of metal ion by liquid-liquid extraction.

(*b*) Explain pumping and sample injection system of HPLC in detail.

Or

Explain the principle and application of automatic chemical analyser.

5. (A) Choose the *correct* choice :

(*i*) Nucleic acids are separated on column with HPLC packed with.

(*a*) Porous layer of beads.

(*b*) Bonded silica gel

(*c*) Ion exchanger

(*d*) Glass beads.

(*ii*) Automated methods of analysis are :

(*a*) rapid needing no man power

(*b*) need trained manpower

(*c*) are accurate and precise

(*d*) permit limited analysis

(*iii*) When an increase in temperature the solvent or sample is :

(*a*) dissociate (*b*) decompose

(*c*) decrease (*d*) none of these

(*iv*) The solubility in aquious phase for solvent is :

(*a*) Low (*b*) High

(*c*) Equal (*d*) None of these

(*v*) The non-dispersive analyser detector is filled with :

(*a*) SO_2 (*b*) NO_2

(*c*) O_2 (*d*) CO_2

(B) Write brief notes on (any *two*) :

(*a*) Oxygen analyser

(*b*) Nerst's distribution

(*c*) Application of HPTLC.