

Day: Monday
Date: 30/10/2017

Time: 03.00 PM TO 06.00 PM
Max. Marks: 60

W-2017-0773

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Answers to both the sections should be written in **SEPARATE** answer book.
- 4) Draw neat and labeled diagrams **WHEREVER** necessary.

SECTION-I

Q.1 Attempt any **THREE** of the following: (15)

- a) Explain principle of chromatography with match- box model.
- b) Draw flow sheet presentation for gas chromatography and explain each component in detail.
- c) Describe in detail about principle and working of thin layer chromatography.
- d) Write a note on Electrophoresis.
- e) Discuss the principle of ion- exchange chromatography and describe various types of resins used in ion- exchange chromatography.

Q.2 A) Attempt any **ONE** of the following: (05)

- i) Explain the terms distribution ratio and distribution coefficient in the solvent extraction of a weak acid. Determine the relation between them.
- ii) Discuss any two analytical applications of ion- exchange chromatography.

B) Solve any **TWO** of the following: (10)

- i) In a TLC chromatographic separation solvent front was found to be 20cm and R_f values of below mentioned acids were found to be 0.14, 0.42, 0.49 and 0.64 respectively. Find the solute front of each amino acids A, B, C and D.
- ii) A gaseous mixture composed of o- cresol, m-cresol and p- cresol were subjected to chromatographic separation. The peak areas corresponded were measures as 45, 16 and 9cm² respectively. If the weight of sample mixture is 5mg. find the weight in mg of each constituent?
- iii) 12gm of benzoic acid is present in 100gm of its aqueous solution. How much of it would be left behind after extracting the solution with two successive applications of 40ml ether each. The distribution ratio of the benzoic acid between water and ether is 2 in favour of ether.

SECTION-II

Q.3 Attempt any **THREE** of the following: (15)

- a) Discuss the greenhouse effect and their contribution to global warming.
- b) Describe the equipment used for control of particulate emissions. Give schematic diagram wherever possible.
- c) Write principle air pollutants and explain sources and sink of any two air pollutants.
- d) Write a note on Bhopal disaster.
- e) Explain the analysis of CO in air by different instrumental methods.

Q.4 Attempt any **THREE** of the following: (15)

- a) Give the broad classification of water pollutants. Explain any one of them in detail.
- b) Describe the method for the analysis of ammonia water sample.
- c) Give an accounts of water pollution due to oil.
- d) Explain the chemical speciation of mercury in aquatic environment.
- e) Define the following terms:
 - i) DO
 - ii) BOD
 - iii) COD
 - iv) Acid mine drainage
 - v) Persistence of pesticides

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