5. (i) What is adsorption chromatography ? Explain its principle. **7**

(ii) What are moving and stationary phase in paper chromatography ? **3**

(iii) State the factors on which the rate of flow of substances depends. **2**

(iv) Give applications of chromatography. **3**

Unit III

6. (i) What are anion exchange resins ? How do they work ? **8**

(ii) Explain mechanism of ion exchange chromatography. **7**

7. (i) Explain Plate theory with its advantages and limitations. **7**

(ii) Which techniques are used in ion exchange chromatography ? Explain. **4**

(iii) What are ion exchange equilibria ? **4**

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Dual Degree B.Sc. (Hons.) Bio-Technology-M.Sc. Bio-Technology EXAMINATION, May 2019

(Fourth Semester)

(Main Only)

PHY., BT

DCH214

CHEMISTRY-IV

Time : 3 *Hours*]　　　　[*Maximum Marks :* 75

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : The question paper consists of nine questions. The candidates have to attempt

five questions in all. The Question No. **1** is compulsory and comprising short answer type questions. The candidates have to attempt *four* more questions selecting at least *one* form each Unit.

1. (i) Write a short note on standard deviation. **2**

   (ii) What is mean ? **1**

   (iii) Can chromatography be used to purify volatile substances ? **2**

   (iv) What is meant by the term development ? **2**

   (v) What are characteristics of ion exchangers ? **2**

   (vi) What are cation exchange resins ? **2**

   (vii) What is Nernst Distribution law ? **2**

   (viii) What is solvent extraction method ? **2**

Unit I

2. (i) Analysis of a sample of haematite gave the following percentage values for the iron content :

7.08, 7.21, 7.12, 7.09, 7.16, 7.14, 7.07, 7.14, 7.18, 7.11. Find out the mean, standard deviation and coefficient of variation of the values. **8**

   (ii) What is Accuracy ? How can accuracy be determined ? **4**

   (iii) What are the used of statistics ? **3**

3. (i) What are the types of error ? How can errors be minimized ? Explain in detail. **10**

   (ii) Write a note on precision. **5**

Unit II

4. (i) What is meant by the term R_f value and on what factors does the R_f value a compound depend ? **3**

   (ii) Explain basic principle of chromatography. **5**

   (iii) Write note on partition chromatography. **7**

Unit IV

8. (i) Explain basic principle of solvent extraction. **5**

(ii) Which techniques are used for solvent extraction and how ? **5**

(iii) What are the applications of solvent extraction ? **5**

9. (i) What is solvent extraction equilibria ? What are the factors which affects solvent exchange equilibria ? **8**

(ii) Explain mechanism of solvent extraction process. **5**

(iii) State the factors on which the choice of solvent for extraction depends. **2**