Ministry of Higher Education
& Scientific Research
AlMuthanna University
College of Science
Department of Chemistry

Subject: Separation Method
Stage: MSc.
Date: / 06 /2019
Time: (3) hours

21. 10. 2019

((Assessment of the final exam for the second semester))
Academic year 2019 - 2018

45

Q1// A:- Substance A and B were found to have tR of (16.4) and (17.63) minute on column length is (30.0 cm). Unrented species passed through the column in (1.3mm) w of A, B (1.11) and (1.21) minute calculate:- 1- Resolution 2- N (average number)

3- The plate height d.Le .tR (B) 4- The place height required for R of (1.5) on the original (30 cm) column and the original time. (10Marks)

Q2// What is the meaning of the following terms:-

1- Flash Vaporization 2- Retention Time 3- Solid Support 4- Selectivity Factor
5-Analytical Column 6- Electron capture detector 7- Capillary Electrophoresis
8-PTFE 9- Stationary Phase (HPLC) 10-Resolution (10Marks)

Q3//A:- How do you calculate column efficiency? (5Marks)

Q3// B:- What are the factors affecting distribution of substance between mobile phase and stationary phase ? (5Marks)

Q4// A:- What are the most common technical problems when doing HPLC? (5Marks)

Q4// B:- What is the main purpose of chromatography? (5Marks)

Q5// What is the basic (principle of these techniques):-

1- Ion exchange 2- Size exclusion 3- Thin layer chromatography
4- Adsorption 5- Partition chromatography (15Marks)

Q6//A:- 1-Why is silica polar in (HPLC) columns? (5Marks)

2- What is a Chromatogram? What information can be obtained from a chromatogram? (5Marks)

Q6//B:- What is the difference between thin layer chromatography and paper chromatography? (5Marks)

Good Luck

Lecturer
Dr.khawla.kani.jassim

Head of Department
Assistant Prof. Dr. Riyadh Jaleel Nahi

الكيمياء / كيمياء عضوية

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Subject: Advanced Organic Synthesis
Stage: MSc Study
Date: / /2018
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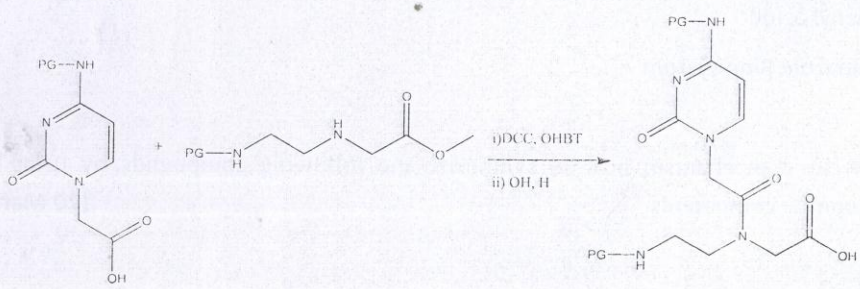
Q1: Draw the general scheme of solid phase peptide synthesis (SPPS). If you have an unprotected resin show by a mechanism the activation and coupling steps of the amino acid glycine. **(10 Marks)**

Q2: Give the full mechanism of the following reaction: **(10 Marks)**



Q3: Explain the following scientific terms: **(6 Marks)**

1- The exocyclic amino group of nucleobase of PNA monomer has to be protected during the solid phase synthesis strategy.
2- For the synthesis of Schiff bases, it is preferred using aromatic aldehydes.
3- Alkylation of cytosine nucleobase occurs at N1-position not at the exocyclic amino functional group.

Q4: Give a general scheme for the synthesis 1,2,3-trazole ring system using Cu (I) compounds (Click Reaction). **(8 Marks)**

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Lecturer
Assist. Prof. Dr. Riyadh J. NAHI

Head of Department
Assist. Prof. Dr. Riyadh J. NAHI

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Q5: Give the general structure for **FIVE** of the following compounds: **(10 Marks)**

1- Thiadiazole ring system

2- Oxazepine ring system

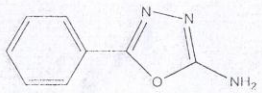
3- Thiazole ring system

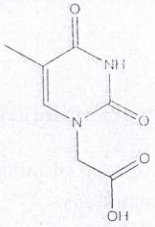
4- Imine structure

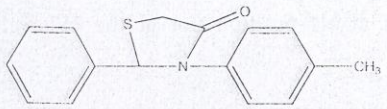
5- Phenyl azide

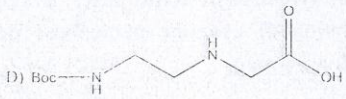
6- Imidazole Ring system

Q6: Show by a mechanism how to synthesize the following compounds by using the appropriate compounds. **(20 Marks)**

A) 

B) 

C) 

D) 

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