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| Tanta University | | Faculty of Science | | Chemistry Department | |
| Final Examination for Seniors (fourth year students) | | | Entomology Section | | |
| Course Title: | Biochemistry | | | Course Code: 14104 | |
| Jan. 2013 | Term: First Semester | Total Marks 60 | Time allowed: 3 hrs. | | |

Answer the following questions

- 1)- "Many neurotransmitters biosynthesis depend on PLP". Write the biosynthetic pathway of noradrenalin. (6 marks)
- 2)- In the following conversions write the corresponding enzymes and coenzymes: (6 marks)
 - i- Histidine into Histamine.
 - ii- Pyruvate into Acetyl CoA.
 - iii- D-Glyceraldehyde-3-phosphate into 1,3-Diphospho glycerate.
- 2)- Hepatic fructose can form 1,3- diphosphoglycerate . (4 marks)
- 4)- "Active succinate is the precursor of hem biosynthesis" Explain its biosynthetic pathway from α -ketoacids. (6 marks)
- 5)- Write the mechanism of oxidative deamination of L-alanine by amino acid oxidase. (4 marks)
- 6)- Write equations of the non-oxidative pathway of HMS. (6 marks)
- 7)- The biochemical pathway of the reaction of acetyl CoA in the presence of co-carboxylase. (5 marks)
- 8)- Biosynthesis of Glycine. (5 marks)
- 9)- Conversion of D-Glucose into D-Ribulose -5- phosphate. (5 marks)
- 10)- Conversion of OAA into Fumaric acid. (5 marks)
- 11)- Write the β -degradative pathway of fatty acids. (4 marks)
- 12)- Explain the role of PLP in transamination reaction by GPT. (4 marks)

Good Luck

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| Tanta University | | Faculty of Science | | Chemistry Department | |
| Reset Examination for Seniors (fourth year students) | | | Botany Section | | |
| Course Title: | Instrumental Analysis and Biochemistry | | | Course Code: 14073 | |
| Jan.. 2013 | Term: First Semester | Total Marks 60 | Time allowed: 3 hrs. | | |

Sec. A Chromatography (20 Marks)


- 1) Give an account on the following:
- a- Ion exchange capacity . (5 Marks)
 - b- Detectors for gas chromatography (5 Marks)
- 2) Discuss in details the applications of the following methods:
- a- Gel chromatography (5 Marks)
 - b- HPLC chromatography . (5 Marks)

Sec. B Biochemistry (40 Marks)

Answer the following:-

- 1)- In the following conversions write the corresponding enzymes and coenzymes: (3 marks)
- i- Histidine into Histamine.
 - ii- Pyruvate into Acetyl CoA.
 - iii- D-Glyceraldehyde-3-phosphate into 1,3-Diphospho glycerate.
- 2)- Write the biosynthetic pathway of Uridylic acid. (5 marks)
- 3)- Conversion of α -ketoisovaleric acid into Pantothenic acid. (3 marks)
- 4)- Conversion of hypoxanthine into AMP and GMP. (5 marks)
- 5)- Biosynthesis of Epenipherin. (4 marks)
- 6)- Uric acid from inosine. (4 marks)
- 7)- "L-alanine can form pyruvate and NH_3 , Explain the mechanism. (4 marks)
- 8)- "Active succinate is the precursor of heam biosynthesis" Explain its biosynthetic pathway from α -ketoacids. (4 marks)
- 9)- The biochemical pathway of the reaction of acetyl CoA in the presence of co-carboxylase. (4 marks)
- 10)- Biosynthesis of Glycine. (4 marks)

Good Luck

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|  | TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF CHEMISTRY | | | |
| | EXAMINATION FOR FOURTH YEAR - STUDENTS OF ZOOLOGY | | | |
| COURSE TITLE: | Analytical chemistry | | COURSE CODE: 14093 | |
| DATE: 5 - 1 - 2013 | JAN, 2013 | TERM: FIRST | TOTAL ASSESSMENT MARKS: 60 | TIME ALLOWED: 3 HOURS |

Section A

Electrochemical methods of analysis (20 Marks)

Answer the following questions:

- 1) Define the following by an example or by an equation (10 Marks)
Modes of mass transfer, reference electrode, pH-electrode and Nernst equation
- 2) Compare the following techniques as analytical tools : (10 Marks)
Differential pulse polarography, and stripping voltammetry giving an application for each
- 3) a) Give two examples for each of amperometric and conductometric titrations (4 Marks)
b) Explain the electrolysis at controlled potential (2 Marks)
c) Write down the current- concentration relationship in the case of DC-polarography and linear-sweep voltammetry (4 Marks)

Section B

Chromatography (30 Marks)

Answer the following questions

- 1) Write down on the applications of ion exchange chromatography (5 Marks)
- 2) Mention the packing and sample application in column chromatography (5 Marks)
- 3) Write short notes on the following:
 - a) Applications of high performance liquid chromatography (HPLC) (5 Marks)
 - b) Two applications of gel chromatography (5 Marks)
 - c) Properties of ion exchange chromatography (5 Marks)
 - d) Detectors of HPLC (5 Marks)

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| EXAMINERS | PROF. DR. MOHAMED EL-MORSI | PROF. DR. YOUSSEF MOHARRAM |
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Tanta University
Faculty of science
Chemistry Department

Time allowed: 2 hours
Date: 28/ 12/ 2013

Final examination of fourth level students (C.H.) section:
(Chemistry and Chemistry/Biochemistry)
Statistical thermodynamics
CH4111

Answer all questions:

1-a) Discuss the relationship between entropy and probability.

b)

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|----|----------------|-----|-----|
| I | 1,2,3 4,5,6 | | |
| II | 1,3 | 4,6 | 5,2 |

The above diagram shows two “macrostates”, I and II.
Calculate the number of “microstates” corresponding to both
“macrostates” I and II.

2-a) Calculate the average energy for triatomic linear and nonlinear molecules.


b) Discuss the barometric formula.

3- Discuss Boltzmann distribution law.

4-Discuss the absolute reaction rate theory.

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|  | TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF CHEMISTRY | | |
| | EXAMINATION FOR CREDIT HOUR STUDENTS | | |
| | COURSE TITLE: LASER CHEMISTRY | | COURSE CODE: CH4113 |
| DATE: 30 DECEMBER, 2013 | TERM: FIRST | TOTAL ASSESSMENT MARKS: 50 | TIME: 2 HOURS |

Answer the following questions (10 marks each):

1- The synthesis of vinyl chloride from 1,2-dichloroethane is an important multibillion industrial process demonstrating the advantages of laser applications. Write the reaction scheme and mention the advantages of laser application in comparison with thermal applications.

2- The technique of thermal lensing is an important application on laser collimation. Draw a time- resolved thermal lensing experimental setup and trace upon using the technique to study singlet oxygen sensitization kinetics.

3- Using suitable diagrams and illustrations, describe each of the following laser systems:

i - He / Ne four energy level laser

ii - Excimer laser

iii - Proton transfer dye laser

iv - Solid state laser based on p-n junction.

4 - Discuss each of the following:

(a) The technique of Raman spectroscopy showing energy level diagram, the spectral output and band assignment.

(b) The principle of MUCAP reagent operation

(c) $\Delta E_{S,T}$ in carbonyl and olefinic compounds

(d) Photodynamic therapy (PDT)

5 - Explain the reason for each of the following:


(a) HClO_4 and not HCl is commonly used in adjusting pH of dye laser media.

(b) R6G-I^- solutions are strongly fluorescent in ethanol but non-fluorescent in chloroform.

END OF EXAM

EXAMINER: PROF. DR. EL-ZEINY MOUSA EBEID

(2) JSP/2

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