٤ لله الحيوية (ظاهر)

	TANTA UNIVERSITY *FACULTY OF SCIENCE* *DEPARTMENT OF CHEMISTRY*			
	Examination for Fourth year students of Biochemistry (Special)			
	COURSE TITLE:	**Physical Biochemistry**		
DATE: 29-12-2016	CORSE CODE	**BC 4125**	TOTAL ASSESSMENT MARKS: 50	TIME ALLOWED: 2 HOURS

I- Define each of the following terms: (18 marks)

1) The buffering capacity of the buffer, β
2) Western blotting
3) The electron impact ionization in MS (EI/MS) analysis
4) The partition coefficient, K, in chromatography
5) The momentum, μ, of the species in Mass spectrometry
6) Two-Dimensional SDS PAGE

II- Describe the procedure of Solid phase peptide synthesis. (6 marks)

III- Mention in steps, how to identify multi-protein complexes and its individual proteins by an electrophoresis method. (6 marks)

IV- State the principle of Functional protein arrays. (5 marks)

V- Describe the similarities and differences between reversed phase and hydrophobic interaction chromatography techniques. (6 marks)

See questions on the back.....

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF CHEMISTRY			
	EXAMINATION FOR SENIOR (FOURTH YEAR) STUDENTS OF BIOCHEMISTRY			
	COURSE TITLE:	GENETIC ENGINEERING		COURSE CODE: BC 4103
DATE:	27.12.2016	TERM: FIRST	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS

Answer the following questions

I. **a. Write the scientific term corresponding to each of the following:** **(15 marks)**

1. The direct manipulation of an organism's genome in an attempt to introduce desirable traits into it.
2. The description of cleavage sites of restriction enzymes within a piece of DNA.
3. The application of some sort of pressure during the growth of host cells containing recombinant DNA (rDNA).
4. The number of transformants per total colony forming units (CFU).
5. A technique in which a brief electric shock is applied to a living cell, causing temporal permeability of the cell membrane, through which a foreign material such as DNA may pass.
6. A method used to analyze a cloned gene that provides much useful information about coding sequences, control regions, and other features.
7. Chemically synthesized DNA molecules with preformed cohesive ends.
8. An approach used to engineer proteins depending on some detailed information about the protein being available.
9. A molecular biology technique often used in genetic engineering in which a mutation is created at a defined site in a DNA molecule.
10. A technique in which a library of variants of a peptide or protein are expressed on the outside of phage virions, while the genetic material encoding each variant resides on the inside of the corresponding virion.

b. Briefly describe: **(16 marks)**

1. The protocol for doing heat shock transformation in *E. coli*.
2. Insertional inactivation in the α-complementation system.

II. **a. Describe how:** **(20 marks)**

1. Probes are used to screen DNA libraries?
2. In direct evolution, genetic diversity is created at the genetic level by random mutagenesis?

b. A scientist wishes to produce a mammalian protein in *E. coli*. The protein is a glycoprotein with a molecular weight of 40,000. Approximately 20% of its mass is polysaccharide. The isolated protein is usually phosphorylated and contains three disulfide bonds. The cloned gene contains no introns. **(10 marks)**

1. What sequences or sites will be required in the vector to get this gene regulated, transcribed, and translated in *E. coli*?
2. What problem(s) that might arise in producing a protein identical to that isolated from mammalian cells?

4. **In genetic engineering, *in vitro* packaging is used to:**
   a. Cut a desired region out of the host bacterium's chromosome.
   b. Ensure that genetically engineered bacteria are not accidentally released into the environment.
   c. Incorporate recombinant DNA into infectious bacteriophage particles.
   d. Splice a desired gene into a plasmid.
5. **A gene for insulin has been inserted into a vector for the purpose of obtaining its protein product only. Such a vector is called**
   a. Expression vector
   b. Suppression vector
   c. Storage vector for genomic library
   d. None of the above
6. **A scientist has a processed mRNA transcript for a gene he/she wants to clone into a bacterial vector. What must he/she do as a first step in this process?**
   a. Use PCR to create a cDNA molecule.
   b. Sequence the mRNA transcript.
   c. Digest the mRNA and cloning vector with the same restriction endonuclease.
   d. Ligate the mRNA into the cloning vector.
7. **Plasmid DNA can be directly delivered into the cytoplasm of mammalian cells using**
   a. Electroporation
   b. Microinjection
   c. Biolistic particle delivery
   d. a, b, and c
8. **The polymerase chain reaction or PCR is a technique that**
   a. Was used to demonstrate DNA as the genetic material.
   b. Uses short DNA primers and a thermostable DNA polymerase to replicate specific DNA sequences *in vitro*.
   c. Measures the ribosome transfer rate during translation.
   d. Detects the level of polymerases involved in replication.
9. **A probe is used in which stage of the gene transfer process?**
   a. Cleaving DNA
   b. Recombining DNA
   c. Cloning
   d. Screening
10. **_____ is an approach for screening engineered proteins from large libraries that does not involve direct connection between genotype and phenotype.**
   a. Ribosome display
   b. mRNA display
   c. *In vitro* compartmentalization
   d. None of the above

GOOD LUCK

EXAMINERS	**PROF. DR. AFRAH F. SALAMA** **DR. RASHA H. ABU-KHUDIR**

	FACULTY OF SCIENCE DEPARTMENT OF CHEMISTRY			Tanta UNIVERSITY
	EXAMINATION for Seniors (Fourth Year) students OF Biochemistry			
COURSE TITLE:	Immunology			COURSE CODE: BC 4107
DATE: JANUARY, 2017	TERM: FIRST	TOTAL ASSESSMENT MARKS:100		TIME ALLOWED: 2 HOURS

1- **Prove the following** **(25 marks)**

a- Cellular cooperation in the immune response by Calaman Experiment
b- Cytotoxicity of ABO transfusion
c- Thymus depend on the age
d- Ig G of toxoplasmosis by indirect ELISA test and RIA.
e- Pattern of identity and non identity Ag

2- **Illustrate with a diagram of the following** **(25 marks)**

a. Immunoglobulin that predominant in lymph fluid and smallest Ig
b. The lymph node structure
c. Kinetic of immune response
d. Ag processing by APC

3- **Differentiate between:** **(25 marks)**

a. Direct and Indirect of coomb's test
b. Genetic variation of L and H chain of IG
c. Classical and non classical complement pathway
d. Endogenous and Exogenous protein Ag in definition, Ag presenting cell and MHC class type
e. MBP and ECP

4- **Give account of each the following:** **(25 marks)**

a. Innate immunity in respiratory tract
a. How inflammation caused after activation of neutrophil
b. Importance of lymph
c. Direct complement fixation test of rubella IgG in seum
d. Arthus sickness

أطيب التمنيات بالنجاح و التوفيق

Prof Tarek M Mohamed

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT CHEMISTRY – BIOCHEMISTRY SECTION			
	EXAMINATION FOR SENIORS (4TH YEAR) STUDENTS OF SPECIAL BIOCHEMISTRY			
	COURSE TITLE:	Biotechnology I - Ph. D. Afrah Fatthi Salama		COURSE CODE: BC4119
DATE: 17	JANUARY 2017	TERM: FIRST	TOTAL ASSESSMENT MARKS: 100	TIMELLOWED: 2 HOUR

ANSWER ALL THE FOLLOWING QUESTIONS (10 marks each)

I)By figure with full information illustrate the following :

1- A schematic representation of a fermentation process?
2- Secondary metabolite producing culture?
3- Method of cheese preparation?
4- Enzymes in processing starch?
5- Use of enzymes in hydrolysis of cellulose?

II) 1- Give note on using lactases in the dairy industry, full information?

2- What is the importance of drug targeting, what is the best kind, giving reason?

3- What are restriction enzyme polymorphisms and its importance?

4- What are molecular bases for inherited diseases, giving example?

5- How can you increase fermentation products?

أطيب التمنيات بالنجاح و التوفيق
ا.د/ أفراح فتحي سلامه

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF CHEMISTRY			
	Examination for 4th Year Biochemistry Students			
	COURSE TITLE:	Neurochemistry		
TE: 1 - 1 - 2017	COURSE CODE: BC4111	TERM: FIRST TERM	MARKS: 100	TIME ALLOWED: 2 HOURS

I. Discuss the following questions: (35 marks)

1. Action potential triggers release of neurotransmitters, explain.
2. Classification of neurons.
3. Biosynthesis and clearance of acetylcholine.
4. Relationship between glutamate, GABA and energy production in brain.
5. Compare by diagram between cAMP and IP3 when act as secondary messengers.
6. Biosynthesis and degradation of catecholamines.
7. Dopamine and adrenergic receptors, showing agonists and antagonists.

II. Clarify each of the following questions: (35 marks)

1. Chemical synapse.
2. Biosynthesis, degradation and clearance of 5HT.
3. Functions of glial cells.
4. Types of inhibition in the brain.
5. Functions and dysfunctions of dopamine and noradrenaline.
6. Excitatory amino acids act as neurotransmitters via binding three types of receptors which affected by agonists and antagonists, explain.
7. Overactivity and loss of noradrenergic synaptic transmission.

III. Give an account for the following: (30 Marks)

1. Describe the role of Phospholipase C in the activation of protein kinase C, with biochemical reactions.
2. Mention the types of G-proteins
3. Describe the roles of amyloid precursor and tau proteins in Alzheimer's disease
4. Explain how mutation of the parkin gene is responsible for the development of Parkinson's disease.
5. With equations, describe the formation and breakdown of cAMP.

Best Wishes

Dr. Karim Samy
Dr. Mohamed Mansour

	Tanta University Faculty of Science Chemistry Department Examination for fourth Year Students		
	Course Title: Chemistry of Textile fibers		Course Code:CH4121
	Date: January 2017	Total Assessment Marks: 50	Time Allowed: 2 hrs

1) Differentiate between each of the following: **(21 Mark)**

1. Effect of alkali and action of heat on cellulose and acrylic fibers.
2. *m*-Aramid and *p*-Aramid fibers.
3. The reduction of wool by thiols and phosphines.
4. Natural and man-made fibers.
5. Strength, resiliency, laundering, drying and ironing of wool and silk
6. Chemical Processing of Cotton and wool.

2) <u>Mark (√) or (×) and correct the wrong statement:</u> **(10 Marks)**

1. Wool undergoes pyrolysis above 250 °C. ( )
2. Cotton fibers are not as pure as Flax in terms of cellulose content; they contain only about 60% cellulose. ( )
3. As a result of the loss of sericin during degumming, silk loses 50 % of its weight. ( )
4. Cellulose II is the form found in native, untreated cotton. ( )
5. Wool fibers are more resistant to acids. ( )
6. Alkalis are the most destructive agents for cellulose, attacking the glycosidic linkages. ( )
7. After cotton, flax is the most widely used of the natural fibers. ( )
8. The optimum conditions required for peroxide bleaching of cellulose are treatment for about two hours at room temperature and at pH 5. ( )
9. The main sites for linking in keratin chains are the amino groups in the lysine residues. ( )
10. Viscose rayon is considered as man-made fibers. ( )

تابع الأسئلة في الصفحة القادمة

Tanta University Faculty of Science Chemistry Department	Final Exam Chemistry of Petroleum		
	Level Four	Course Code: CH 4145	
		Total Assessment Marks: 50	
Double Major	Time allowed : 2 Hours	Date: 15/1/2017	

Answer the following questions:

1) Illustrate the inorganic theory which discusses the genesis of petroleum.

(10Marks)

2) Write short notes on the following :(**10 Marks**)

i- Aniline Point.

ii- Oxygen compounds in petroleum.

iii-Olefins in crude oil.

iv- Lubricating oil and waxes. v- Gazoline Zone.

3) Define each of the following with examples: (**20 Marks**)

i- Catalytic Cracking. ii-Alkylation. iii-Hydrotreating.

iv-Classification of Crude Oils.

4) Show with equations how the following compounds could be prepared from petroleum and show its uses. (**10 Marks**)

1-Ammonium nitrate fertilizer. 2-Nylon 6, 6. 3-Teflon.

4- Phenolic Resins. 5-Hydrazine hydrate.

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Prof. El-Refaie Kenawy **Prof. Abd El-baset shoker**

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	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF CHEMISTRY			
	Examination for 4th Year Biochemistry Students			
	COURSE TITLE:	**Biochemical Toxicology**		
DATE: 15 - 1 - 2017	CORSE CODE: BC4121	TERM: FIRST TERM	ASSESSMENT MARKS: 50	TIME ALLOWED: 2 HOURS

I. Discuss the following questions:

1. Compare between short and long lived metabolites.
2. Dose responses of toxicants.
3. Toxicity of lead, mercury and cadmium.
4. Metabolism of bromobenzene.
5. Mechanism of lipid peroxidation induced by CCl_4.
6. Polycyclic Aromatic Hydrocarbons act as carcinogenic agents, explain the mechanism of their action.
7. Give by name one of CNS depressant, stimulants, opioids, hallucinogens, hepatotoxic agents

II. Clarify each of the following questions:

1. Metabolic activation of vinyl chloride, parathione and Aflatoxins.
2. Glutathione is a powerful detoxifying and conjugating compound, explain.
3. Aspects of chemically induced carcinogenesis.
4. Molecular targets of oxidative injury.
5. Phase I and phase II of toxicants metabolism.
6. Transport of toxicants, factors and tissues involved in their elimination.
7. Mechanism of hepatotoxicity.

Best Wishes

Dr. Karim Samy

	TANTA UNIVERSITY *FACULTY OF SCIENCE* *DEPARTMENT OF CHEMISTRY*			
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Best Wishes

Dr. Karim Samy

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