Tanta University - Faculty of Science - Chemistry Department
"Supramolecular Chemistry"
Final Exam for Level four students
Sections: Chemistry, Chemistry/Biochemistry and Chemistry/Zoology
Date: 10/6/2015 Course Code: CH4218 Total assessment marks: 50 Time Allowed: 2h

Question (I) (16 Marks)

Answer the following: *(Illustrate your answer with figures).*

1- Explain why: Zwitterion hosts are better than Katapinand-like hosts for anion complexation.
2- Indicate the role of crown ether in the reaction of potassium fluoride with benzyl chloride in acetonitrile.
3- Explain the effect of chelate ring size on selectivity of cation complexation.
4- Compare between the cation affinity of the podand and their cyclic analogue.

Question (II) (10 Marks)

Complete the following:

1- Valinomycin is ..... selective for .....
2- Cyclodextrins consists of ..... units that are linked together by a ..... β-cyclodextrin: containing .....
3- Half protonated form of cryptand host is suitable for ..... Full protonated form is suitable for ..... Unprotonated form of cryptand host is suitable for .....
4- Weak-strength hydrogen bond occurs between .....
5- Transfer of insoluble MnO^{4-} ion into organic solvents by ..... results in quantitative oxidation of the organic substrates.

Question (III) (12 Marks)

Give a brief explanatory note on the following:

1- Self-assembly.
2- The kinetic and thermodynamic template effect.
3- Coordination polymers.

Question (IV) (12 Marks)

Put (√) in front of correct statement and (×) in front of wrong one and correct it:

1- An activation stage means that, the guest undergoes conformational readjustment in order to bind a host. It is energetically favorable. ( )
2- A host species with multiple binding sites that are covalently connected forms a more stable complex than multiple unidentate ligand. ( )
3- Hydrogen bond represents a special kind of ion–ion interaction. ( )
4- Cyclophane hosts include all organic molecules that containing a bridged amino group specific for cations. ( )
5- The role of the template is to enhance the rate of formation of the cyclic intermediate by stabilizing the cyclic product. ( )
6- Divalent cations bound strongly by hosts with large cavity. ( )

With My Best Whishes
Examiner: Prof. Dr. Dina M. Abd El-Aziz

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	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF CHEMISTRY			
	EXAMINATION FOR LEVEL FOURTH OF STUDENTS OF CHEMISTRY/BIOCHEMISTRY			
	COURSE TITLE:	CANCER BIOLOGY		COURSE CODE: BC4204
DATE:	6-6 2015	TERM: SECOND	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS

Answer all the following questions

I- Clarify diagrammatically each of the following **(36 marks)**

1- Survival (growth) factors activate cell cycle from G_1-S phase through cyclin and cyclin dependent kinase to inactivate retinoblastoma (Rb) protein. Mention at least 3types of growth factors **(12 marks)**

2- The mechanism of E_7 of human papilloma virus inactivate Rb protein **(4 marks)**

3- Absence of survival factors inactivate Bcl_2 and activate Bax to activate intrinsic pathway of apoptosis **(10 marks)**

4- Interleukin 2 expresses Fas ligands and extrinsic pathway of apoptosis by cytotoxic T-lymphocyte. **(10 marks)**

II- 1- Discusses by sketch and chemical structure the mechanism of formation of nitrosamine that is formed from 3 different types of food and cause mutation of ras protoncogene (loss of GTPase activity). **(14 marks)**

2- Compare between tumor specific antigen and tumor associated antigen with examples. **(8 marks)**

3-Clarify the totoumerization of deoxyadenosine by radiation cause mutation of key genes. It may be repair by mismatched repair; explain this repair **(10 marks)**

III- 1- Identify each of the following:

a- Malignant neoplasia b-Carcinoma in situ

c-Xeroderma Pigmentosum d- Error-prone Repair **(8 marks)**

2- Sketch only the chemical, radiation and viruses cause intiated cancer cells and proliferate to a malignant tumor **(8 marks)**

3-P53 act as guardian the genome, what happened if p53 is mutated **(8 marks)**

4-How proto-oncogene over-expressed and converts into oncogene? **(8 marks)**

Best Wishes

Prof. Ehab M.M. Ali

TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF CHEMISTRY			
FINAL EXAM FOR FORTH STUDENTS (CHEM/ BIO, ZOL, INS, GEO, MICR, BOT)			
COURSE TITLE:	SELECTED APPLICATION OF POLYMER		COURSE CODE: CH4246
DATE: JUNE 1, 2015	TERM: SECOND	TOTAL ASSESSMENT MARKS: 50	TIME ALLOWED: 2 HOURS

1) **LDPE and HDPE, both are polymers of ethene but there is marked difference in their manufacturing and properties, Explain?** (4 marks)

2) **Choose the correct answers:** (18 marks)

i) **Natural rubber is:**
(a) Trans-polyisoprene; (b) Chloroprene;
(c) Buna-S; (d) Cis-polyisoprene

ii) **Filler added to polymer to……..**
(a) decrease working time; (b) Decrease the modulus
(c) decrease the cost (d) Decrease thermal properties

iii) **Polymer used in sunglass frame is**
(a) Poly(ethylene); (b) Poly(butadiene);
(c) Poly(cellulose acetate); (d) Poly(ethylene terephthalate)

iv) **Soft drinks and baby feeding bottles are generally made up of:**
(a) polystyrene; (b) polyester, (c) polyurethane (d) polyamide

v) **The miscible polymer blend has only…… phase**
(a) One; (b) two; (c) three; (d) multiple

vi) **Which of the following polymers is opaque, low-density, tough, rigid, non-toxic, and the recycling mark is number 7.**
(a) Polyethylene; (b) Acrylonitrile-butadiene-styrene
(c) Polyethyleneterephthalate; (d) Polytetrafluoroethylene

vii) **Presence of more hydrophilic groups in the backbone of polymers will**
(a) decrease the degradation of polymer

Please Turn Over

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	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF HEMISTRY			
	EXAMINATION FOR SENIORS (FOURTH YEAR)			
	COURSE TITLE:	CHEMISTRY OF DYES		COURSE CODE: CH4208
DATE:	27 MAY, 2015	TERM: SECOND	TOTAL ASSESSMENT MARKS: 50	TIME ALLOWED: 2 HOURS

1- Give short notes about the following: (20 Marks)

a- Classification of dyes based on their origin.

b- Preparation of different naphthol As.

c- Carful control of the P_H of the medium in coupling diazonium salts with amines.

d- Vat dyes.

e- Protein Textile Dyes.

2- Complete the following sentences: (15 Marks)

a- ..... used to test the light fastness of the dyed fabric, while ..... used to test the rubbing fastness of the dyed fabric.

b- The color coordinates are: L→ Whether the sample is ..... or ..... [*L*=0 (.....) to *L*=100 (.....)], a*→if the sample is ..... (+a) or ..... (-a) and b*→if the sample is..... (+b) or ..... (-b).

c- Azo-compounds that contain both an ..... and a ..... group can be utilized as indicators since the colors of the ..... and the ..... are different. Example is.....

3- **Explain the following sentences (give examples) (15 Marks)**

a- Carriers generally swell the fibers in dyeing process by using disperse dye.

b- The type of metal complex azodyes depends on number of dyes molecule.

c- To improve the wash fastness of direct dyed fabrics, after treatments are applied to increase the size of the dye molecule.

EXAMINER	DR. HALA FAWZY RIZK

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	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF CHEMISTRY			
	FINAL EXAM FOR FORTH STUDENTS (CHEM BIO, ZOL, INS, GEO, MICR, BOT)			
	COURSE TITLE:	POLYMER CHEMISTRY		COURSE CODE: CH4244
DATE:	MAY 23, 2015	TERM: SECOND	TOTAL ASSESSMENT MARKS: 50	TIME ALLOWED: 2 HOURS

1) **Write the monomers structure for each of the following polymers:** (10 marks)

(i) Dacron **(ii)** Polycarbonate **(iii)** Nylon 6

(iv) Epoxy resin v) Ebonite

2) **Choose the correct answers:** (16 marks)

i) Polymerizing styrene with BuLi then adding butadiene called.....polymerization

(a) condensation; **(b)** living; **(c)** stepwise; (d) ring-opening

ii) Bakelite is a polymer of .....

(a) benzaldehyde and phenol; **(b)** formaldehyde and phenols;

(c) formaldehyde and benzyl alcohol; **(d)** acetaldehyde and phenol;

iii) The species which can best serve as an initiator for the cationic polymerization is:

(a) $LiAlH_4$, **(b)** NaOH, **(c)** $AlCl_3$ **(d)** BaLi

iv) Which of the following are **True** regarding chain-growth polymers?

(a) Polyamides and polyesters are this type of polymer.

(b) The reaction mechanism involves initiation, propagation and termination.

(c) Monomers contain two functional groups.

(d) A small molecule such as H_2O or HCl is released when the molecules react.

v) Which one is Not a characteristic of thermoplastic

(a) no cross links between chains **(b)** resistance to heat won't melt

(c) can be molded **(d)** commonly used as plastic bottle

vi) Which of the following statements is **false** concerning step-growth polymers?

(a) Step-growth polymers are also known as condensation polymers

(b) Polystyrene is this type of polymer

(c) A small molecule such as water or HCl is given off during polymerization.

(d) Each monomer used to make step polymers contains two functional groups.

Please Turn Over

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF CHEMISTRY			
	EXAMINATION FOR FOURTH (SENIOR) OF CHEMISTRY/BIOCHEMISTRY STUDENTS			
	COURSE TITLE:	DISTURBANCE METABOLISM		COURSE CODE:BC4214
DATE: 8/6/2015	JUNE, 2015	TERM: SECOND	TOTAL ASSESSMENT MARKS: 50	TIME ALLOWED: 2 HOUR

Answer all the following questions

I- Describe diagrammatically and/or the biochemical reaction in the disturbance metabolism of each of the following: (25 marks- 5 for each)

1-Metabolic pathway for carbohydrate and fat in Adipose tissue and brain during starvation.
2-Metabolic changes in type 2 Diabetes mellitus
3-Treatment of Gout disease by different methods.
4- Theories of obesity which based on two hypotheses.
5- Role of stress to control the release of free fatty acids from adipose tissue.

II- Compare between each of the following: (9 marks- 3 for each)
a- Pompe's and McArdle's disease.
b- Marasmus and Kwashiorkor disease.
c- Brown fat and Adipocyte as body fat store.

III- Clarify each of the following: (16 marks- 4 for each)
1- Hyperlipoproteinaemia and its types.
2- Fatty livers.
3- Thermogenesis.
4- Homocystinuria.

With my best wishes
Prof. Dr/ Ehab M.M. Ali
Dr/ Abeer khamis

1969	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF CHEMISTRY			
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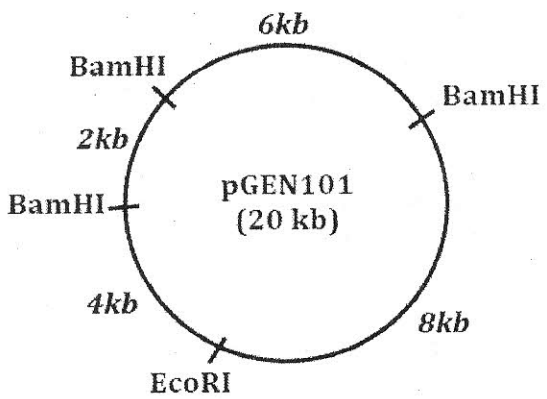
	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF CHEMISTRY			
	EXAMINATION FOR SENIOR (FOURTH YEAR) STUDENTS OF CHEMISTRY/BIOCHEMISTRY			
	COURSE TITLE:	GENETIC ENGINEERING		COURSE CODE: BC 4246
DATE:	03/06/2015	TERM: SECOND	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS

Answer the following questions

1. Below is a restriction map for the plasmid pGEN101 (total length = 20 kb).Using this map as a guide, give the number of restriction fragments along with their associated lengths that would result from digesting pGEN101 with the restriction enzymes *EcoR*I, *BamH*I, and a combination of *EcoR*I + *BamH*I. **(8 marks)**

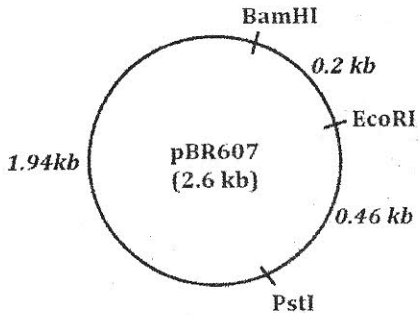


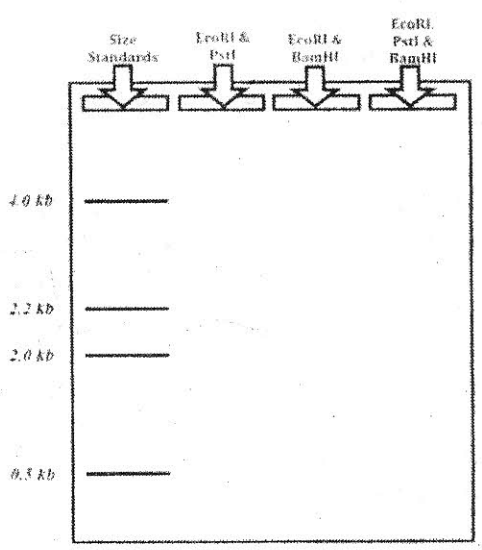
2. List the enzymes used in making cDNA and explain the function of each one? **(10 marks)**

3. Describe the essential steps for obtaining a clone of a specific fragment of DNA.**(15marks)**

4. Describe the features that distinguish plasmid, Bacteriophage λ, Cosmids, BAC, and YAC cloning vectors. **(10 marks)**

5. Plasmid pBR607 is a 2.6 kb plasmid containing Ampicillin and Tetracycline resistance markers, an origin of replication, and unique restriction sites for the restriction enzymes *EcoR*I, *BamH*I, and *Pst*I. Given the restriction map for pBR607 for the enzymes *EcoR*I, *BamH*I, and *Pst*I, show on the agarose gel picture below where the approximate positions of the restriction fragments generated from the given restriction digests would be located after carrying out electrophoresis. **(7 marks)**





ii. Discuss the different non-viral methods of delivering genes into mammalian tissues with referring to their advantages and disadvantages. **(6 marks)**

iii. Will somatic gene therapy prevent the treated person from passing on the defective gene to their children? **(3 marks)**

iv. Why is gene therapy an unrealistic option for multifactorial diseases (caused by multiple genes? **(3 marks)**

v. Even if you could get a new gene into a human, what else would be needed to make sure it worked as a therapy? **(3 marks)**

Good luck

EXAMINERS	PROF. DR. EHAB M. ALI
	DR. THORIA A. AZIZ
	DR. RASHA HAMMAD

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Tanta University - Faculty of Science - Chemistry Department
Final Exam of physical polymer
(Chemistry/Microbiology-Chemistry/Geology-Chemistry/Botany)
Date: 25/5/2015 Course Code: 4252 Total assessment marks: 50 Time Allowed: 2h

Answer the following questions:

1- Complete the following: **(10 Marks)**

i- Nylon 66 has ---------- critical point than PE due to ----------

ii- Presence of secondry force --------the energy of intermolecular interaction and lead to ---- crystalline force leading to ------ T_m, -------- mobility of amorphous leading to-------T_g.

iii- Glassy state of polymers is characterized by-------

iv- Addition of clay minerals to polybutadiene leads to -------

v- Increasing the strain rate of polyethylene leads to----------

vi- LDPE has ------ modulus, ---------- elongation at break than HDPE due to --------

vii- Addition of plasticizer to polyamides leads to ----------

viii- Exposure of isotactic polymer to gamma radiation causes -----

ix- Vinylchloride-acrylonitrile Copolymer has ---------- modulus than polyacrylonitrile due to ---------

x- Polyhexamethylene adipamide has ---------- modulus than polystyrene because-----

2- Explain the factors affecting on chain flexibility of macromolecular chain giving examples **(10 Marks)**

3- Differentiate between: **(10 Marks)**

i-Macroporous and macroreticular resins according to method of preparation and properties.

ii-Elastomer, plastic and fibers then draw stress strain curve

4-i-Discuss the effect of molecular weight of polymer on glass transition temperature and mechanical strength **(5 Marks)**

ii-Write short notes on gravimetric method to determine swellability **(5 Marks)**

5-Compare between each pair of the following giving the reason **(10 Marks)**

i- vinylacetate/vinylchloride copolymer and polyvinylchloride in modulus.

ii-Nylon 66 and nylon 77 in melting temperature.

iii-Polyethylene glycol terphthalate and Polyethylene glycol adepate in glass transition temperature.

iv-Styrene-acrylonitrile copolymer and polystyrene in modulus.

v-polyvinylfluride and polyvinyl difluride in rigidity.

With My Best Wishes

Examiner:Prof.Nehal Salahuddin