فيزياء حيوية

Tanta University- Faculty of Science-Department of Physics
Examination for Senior (Fourth level) Students of Biophysics

Course title	Communication and control of biophysics		course code: BP4285
Date: 27/ 5/ 2015	term: 2st	Total assessment marks: 100	Time allowed: 2hours

First question

Complete the following (25 marks)

1- A collection of interconnected components to achieve a desired response in the face of external disturbances (control regulation response) system.

2- The Laplace transform of the function e^{at} is ($1/(s-a)$ - $(s-a)$ - $(s-a)^2$)

3- (Steady state equilibrium constant) condition is a condition that does not change over time.

4- (Hemoglobin homeostasis equilibrium) is the maintenance of steady states in the body by coordinated physiological mechanisms

5- (optical – nerve audible cutaneous) receptors include Meissner's corpuscles, Merkel's disks, Ruffini cylinders, and free nerve endings

6- What of the following is a temperature-increasing mechanism? (Vasodilation of skin blood vessels – Piloerection - heating)

7- What of the following is a temperature-decreasing mechanism? (Sweating Increase in thermogenesis – cooling)

8- The retina is considered as (audioreceptor nerve receptors photoreceptors)

9- (Lesion - histological – anatomical) studies have provided fundamental information about which parts of the brain are involved in various sensory and perceptual functions.

10- (Hypothalamus energy hyperthalamus) is responsible for regulating of body temperature

Second question (25 marks)

Describe with drawings how using resistance and capacitor to model biophysical systems and then provide a linear model for description the lung mechanics?

Third question (25 marks)

a) Compare between the servomechanism and the regulator as a control systems? **(5 marks)**

b) Compare with drawings between different modes of communication and signaling in living? **(20 marks)**

Fourth question (25 marks)

a) Prove a mathematical relation using drawings between the closed-loop gain (CLG) of the feedback system and the corresponding open-loop gain? **(15 marks)**

b) Draw a schematic diagram of the Smith model of pulsatile luteinizing hormone release and describe the undelined mathematical model? **(10 marks)**

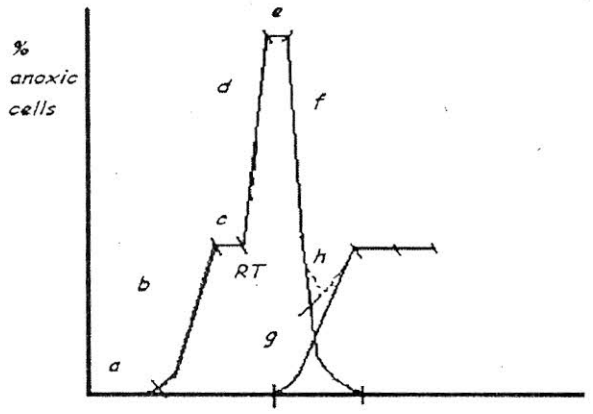
Good luck.....Dr. Reda Morsy

Tanta University
Faculty of Science
Department of Physics

Biophysics

Examination for Material Science Students (LEVEL 3 Credit hour system)

COURSE TITLE:	Radiobiology II	COURSE CODE: BP 4281	
DATE: June 6th, 2015	TERM: Second	TOTAL ASSESSMENT MARKS: 50	TIME ALLOWED: 2 HOURS

QUESTION	ANSWER THE FOLLOWING QUESTIONS:	Marks
1.	a- Write detailed notes about the brachytherapy, (source placement, dose rate, and duration of dose delivery). b- Complete the following sentences: 1- The dose could be fractionated by different ways according to the patient statues for optimum treatment from cancer to ....., ..., ..., and ..... (comment on one of these ways) 2- The models that based on microscopic response for normal tissue complication probability (NTCP) are; ....., ..., ... and that based on macroscopic response are....., ... 3- The therapeutic index improvement could be attained by ....., ..., ..., ...	15
2.	a- Write in details about the 5 Rs. b- Using the following graph, explain in details how can you qualitative explain the alteration in tumor population.  alteration of the percentage of hypoxic cells during irradiation.	15

فيزياء حيوى

	Tanta University - Faculty of Science - Botany Department			
كلية العلوم	Examination for 4th Level Students of Biophysics			
	COURSETITLE	**Bioinformatics BP4284**	COURSE CODE	
	June 2015	TERM: second	Total Assessment Marks: 100	TIME ALLOWED: 2 HOURS

First question (20 Degtees)

1- Identify the science of bio-informatics?

2- Compare between the data and information?

3- Write the equation of the total sum of squares?

4- What is the difference between the variable and observation?

Second question (20 Degrees)

1- Make up plans showing a randomized layout for a **completely random design (CRD)** with 6 treatments replicated 3 times, and a **randomized complete block design (RCBD)** with 7 treatments replicated 5 times.

2- Key out the degrees of freedom (df) of both designs.

3-Explain the meaning and importance of replication and randomization.

4- Indicate the advantages and dis-advantages of each of the two designs.

Third question (20 Degrees)

Set up a **Latin square design** for the effect of 5 levels of salinity (S_1, S_2, S_3, S_4, S_5) on the yield of barley. **Key out** the degrees of freedom (df). **Mention** the advantages and dis-advantages of this experimental design.

→

Tanta University
Faculty of science
Physics department

جامعة طنطا
كلية العلوم
قسم الفيزياء

امتحان الفرقه الرابعة

فى الفيزياء

رقم المقرر PH 4264

تاريخ الامتحان ٢٠١٥/٦/١٠

زمن الامتحان: ساعتان

Answer the following questions:

1- "Nuclear analytical techniques still suitable for study samples in all fields of life", discuss.

2-a Classify the nuclear detectors and mention the properties required for a semiconductor detector material.

2-b What are the applications of Mossbauer spectroscopy?

3-a Write down the method of analysis based on Rutherford backscattering spectroscopy.

3-b Define: Neutron activation analysis, Mossbauer spectroscopy, thermal and fast neutrons, NIM - Nuclear Instrumentation Module, Discriminators.

3-a True or false:

1- RBS is the most frequently used ion beam analysis method. It relies on the fact that the energy of an elastically backscattered particle depends on the mass of the target atom (kinematic factor) and on the depth at which the scattering took place (energy loss on the way to and from the point of interaction).
2- Elastic Recoil Detection Analysis is used for Light elements detectable on heavy substrates

3-b discuss in details neutron activation analysis technique.

4-a Elastic and inelastic scattering of MeV ions with target nuclei can be used to identify the elemental composition of the target. The depth scale of the compositional profile is provided by the energy loss of the ions in the material. Elastic Recoil Detection Analysis is one tool that has been used for this purpose, how?

4-b Atomic absorption/emission spectrometry has a specific role in atomic analytical techniques, discuss in brief this technique.

WITH MY BEST WISHES

فيزياء حيوى ٤

TANTA UNIVERSITY
FACULTY OF SCIENCE
DEPARTMENT OF PHYSICS

EXAMINATION OF SENIORS (FOURTH YEAR) STUDENTS OF BIOPHYSICS

COURSE TITLE:		ENVIRONMENTAL BIOPHYSICS 2		COURSE CODE: BP 4283
DATE:	23\05\2015	TERM: SECOND	TOTAL ASSESSMENT MARKS:50	TIME ALLOWED: 2HOURS

Answer the following 4 questions:

Question 1

Write about:

a- Air temperature diurnal cycle. *(6 marks)*

b- Diurnal variation of soil temperature and its dependence on soil depth. *(6 marks)*

.....

Question 2

a- Define the water potential. *(3 marks)*

b- Write on osmotic and pressure water potentials. *(10 marks)*

.....

Question 3

Write in details on thermo-neutral diagram. (13 marks)

.....

Question 4

True or false (Correct the false statement): (12 marks)

a- Macroenvironment is the environment that immediately surrounds the living organism and occurs on a scale similar to its size.

b- Twinkling of stars and the scintillation of terrestrial light sources at night are related to fluctuations in atmospheric temperature.

c- In animal cells, if the plasma membrane is impermeable to the solute, water will move from solution with higher solute concentration to solution with lower solute concentration.

d- Cold-blooded animals maintain their body temperature independent of the environment by adjusting the rate at which heat is produced by metabolism or dissipated by evaporation

e- Hyperthermia is most often caused by exposure to cold weather or immersion in a cold body of water.

f- In frost-nip, the skin's temperature falls below the freezing point and ice crystals form within the live cells of the skin.

EXAMINERS	DR. MOHAMED SHAHEEN

أطيب التمنيات بالتوفيق

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF PHYSICS		
	FINAL EXAMINATION OF 4TH YEAR BIOPHYSICS STUDENTS		
COURSE TITLE:	**Radiobiology I**		COURSE CODE: BP 4180
18/1/2015	TERM: FINAL	TOTAL ASSESSMENT MARKS:50	TIME ALLOWED: 2 HOURS

Answer the following questions:

First question:- (15 Marks)

a. Choose the correct answer from between the brackets: (5 Marks)

1- Assuming D is the absorbed dose. The probability of chromosomal aberrations at low doses proportional to **(D / D^2 / D^3)**, while it is proportional to (**D / D^2 / D^3**) at higher doses.

2- The larger the shoulder region in the survival curve, the **(more / less)** dose will initially be needed to kill the same proportion of cells.

3- The Optimal value of LET is **(10 / 100 / 1000)** keV/μm and at this density of ionization, the average separation between ionizing events just about coincides with the diameter of the **(DNA/ RNA)** double helix.

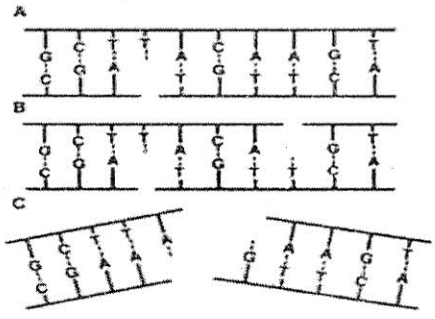
b. Put true or false and correct the false ones: (10 Marks)

1. The slop of the survival curve indicates the relative radiosensitivity.
2. Free radical are highly reactive and cause repair to biological matter.
3. Lethal damage, which is irreversible and irreparable, leads irrevocably to cell death.
4. Survival curve is mainly used to assess biological effectiveness of radiation.
5. Biological effects usually are related to the radiation absorbed dose.

Second question: - (10 marks)

a. Explain direct and indirect action of radiation in biological cell. (5 Marks)

b. Explain the radiation-induced damage in each case as shown in the figure. In which case(s) the damage could be repaired and why. (5 Marks)



Third question: - (10 Marks)

a. How does the Oxygen Enhancement Ratio (OER) vary with linear energy transfer (LET)? Draw a diagram if it will help to explain your answer. (5 Marks)

b. Explain in brief the Mechanism Of Sublethal Damage Repair. (5 Marks)

Fourth question:- (15 Marks)

a. Explain the oxygen fixation hypothesis. (5 Marks)

b. Define: Radiation quality factor - KERMA – absorbed dose – plating efficiency (PE) - Relative Biological Effectiveness (RBE). (10 Marks)

(Best wishes -------- Dr. Yasser Abdou)

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF PHYSICS		
	FINAL EXAMINATION OF 4TH YEAR BIOPHYSICS STUDENTS		
COURSE TITLE:	Astrobiology I		COURSE CODE: BP 4103
15/1/2015	TERM: FINAL	TOTAL ASSESSMENT MARKS:50	TIME ALLOWED: 2 HOURS

Answer the following questions:

First question:- (10 marks)

a- Explain how the simple molecules had turned into complex organic molecules by the researchers Miller-Urey.

b- What are the six characteristics of life?

Second question: - (10 marks)

Put true or false and correct the false ones:

1. Atmospheric O-2 cycle works as a thermostat to Earth's climate.
2. most of the material from which we and our planet are made was created inside stars that died before the birth of our Sun.
3. Astronomers have detected organic compounds and amino acids in meteorites and comets in space.
4. According to Kepler's first law: all objects orbit so that they sweep out equal areas in equal times.
5. Life on Earth is silicon-based.

Third question:- (15 marks)

a- What does plate tectonics do for life on Earth?

b- Order the sentences to get a possible chain of events that ends with a biological cell:

a) Membranous cells evolve into biological cells.
b) Lipid cells group RNA, improving the effectiveness of the chemistry;
c) Replicating RNA entered a stage of chemical evolution;
d) Lipid cells evolve membranes;
e) Simple molecules assembled into organic molecules such as amino acids;
f) Clay-facilitated reactions can cause the creation of RNA;
g) Organic molecules accumulate on lattice-like silicate clay deposits;

Fourth question:- (15 marks)

a- Explain the three basic requirements for a global magnetic field.

b- What is the greenhouse effect, and what effect does it have on Earth's habitability?

(Best wishes -------- Dr. Yasser Abdou)

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF PHYSICS			
	EXAMINATION FOR JUNIORS (FORTH YEAR) STUDENTS OF BIOPHYSICS			
	COURSE TITLE:	**BIOMATERIALS**		COURSE CODE: BP4174
	DATE: 8 JANUARY 2015	TERM: FIRST	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS

Answer the following questions

First question **(25 marks)**

A- Complete (10 marks)

1- The two degradation processes of polymers are ..... and ..... .
2- The mechanism of the nearly inert micro-porous ceramics is ..... .
3- The surface treatment of metals includes ..... and ..... .
4- The main types of natural polymers are ..... , ... and ..... .
5- The toughness is ..... .

B- What are the advantages and disadvantages of natural polymers? (10 marks)

C- Compare between the substitution alloys and interstitial alloys. (5 marks)

.....

Second question **(25 marks)**

A- Write short notes about the applications of degradable and non-degradable polymers. (12.5 marks)

B- Compare between thermosetting and thermoplastic polymers. (12.5 marks)

.....

Third question **(25 marks)**

A-What are the composition of stainless steel and cobalt alloy? (10 marks)

B- Give the reason: **1-** poly methyl methacrylate is good for lenses. (15 marks)

2- Stainless steel is suitable in temporary devices only.

3- Hydroxyapatite can be used as scaffold but Al_2O_3 is not suitable.

.....

Forth question **(25 marks)**

A- Explain how can different biomaterials be used in total hip joint replacement. (12.5 marks)
B- Give some examples of natural and synthetic polymers. (12.5 marks)

Examiners	Dr. Enas Hassan El-Ghazzawy

انتهت الأسئلة

☺☺ Best Wishes ☺☺

	Tanta UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF PHYSICS			
	EXAMINATION FOR SENIORS (FOURTH YEAR) STUDENTS OF BIOPHYSICS – FINAL EXAM			
	COURSE TITLE:	ENVIRONMENTAL BIOPHYSICS		COURSE CODE:BP 4178
DATE:	JANU. , 2015	TERM: IST. TERM	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 3 HR..

(Answer the following question)

تتم الاجابة فى هذه الورقة

(I) Choose the correct answer **(21)**

1, We

- **a. are part of the natural world**
- **b. are not part of the natural world**

2. Humans depend completely on the environment for survival

- **a. depend completely on the environment for survival**
- **b. independent completely on the environment for survival**

3. Natural source of air pollution such as

- **a. fuels used in cars**
- **b. dust storm**

4. Unnatural source of air pollution such as

- **a. fuels used in cars**
- **b. dust storm**

5. Major Sources of Water Pollution

- **a. Industrial**
- **b. mining**

6. The fertilizers in the runoff are

- **a. a point source of pollution**
- **b. a nonpoint source of pollution**

7. Many water organisms can live in only a narrow range of temperatures.

- **a. a wide range of temperatures**
- **b. a narrow range of temperatures**

8. Impervious Cover

- **a. Does not provides a surface for accumulation of pollutants**
- **b. Provides a surface for accumulation of pollutants**

9. Impervious Cover

- **a. leads to increased polluted runoff and flooding**
- **b. leads to decreased polluted runoff and flooding**

10. Impervious Cover

- **a. Not inhibits recharge of groundwater**
- **b. inhibits recharge of groundwater**

Toxics can impact life and contaminate drinking water supplies.
True ( ) False ( )

Sediment reduces light penetration in stream
True ( ) False ( )

drinking water quality one of the impact of nonpoint source pollution
True ( ) False ( )

(III) Complete the following statements: (22.5)

a.Environment: the total of our----------

b.Our survival depends on ----------

c.The substances that cause water pollution are called ----------

d.Any chemical, change in water quality makes water ----------

e. Impaired waters do not meet water quality ----------

f. Smog of words smoke and fog----------

g. Farmers spread or spray ---------- chemicals on their fields to produce better ----------.

h. Warm water released by factory into a nearby river or pond the temperature of the water, sometimes enough to the living things there

i. When coal, oil, and gasoline are burned, the gases and are released into the atmosphere.

j. , , and are three types of pollutants produced by factories, mines, and other industries

4) Carbon monoxide present in car exhaust (2.5)

5) Sulfur Dioxide in air due to (2.5)

6) Urban streets is nonpoint sources of water pollution (3)

TANTA UNIVERSITY
FACULTY OF SCIENCE
DEPARTMENT OF PHYSICS

EXAMINATION FOR SENIORS STUDENTS OF 4TH LEVEL BIOPHYSICS

	COURSE TITLE:	RADIOTHERAPY TREATMENT PLANING		COURSE CODE: BP 417
DATE: 11	JANUARY, 2015	TERM: 1ST TERM	TOTAL ASSESSMENT MARKS:	TIME ALLOWED: 3 HOURS

ANSWER THE FOLWING QUSIONS:

1 – **Explain** the components of irradiation room.

2- **Describe:**

'a- The isodose curves.

b- Central axis Depth Dose.

c- Standard level inside a PHANTOM.

3- **Compare between:**

a- The Iso-centric moving, and stationary treatment machine,

b- The advantage and disadvantage of each.

4- **Discuss:**

a- The most benefits of using electron radiotherapy machines.

b- The disadvantage of using x-ray deep radiotherapy machines.

والله ولي التوفيق

Examiners: Prof, Dr, G, Z. FARAG Prof, Dr, T. EL-NEMR

	TANTA UNIVERSITY- Faculty of Science -Department of Physics			
	EXAM FOR SENIORS STUDENTS OF BIO- PHYSICS			
	COURSE TITLE	Materials Science		COURSE CODE:PH4193
DATE:	4- 1 - 2014	TERM: FIRST	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS

First Question:

1. Cite the four components that are involved in the design, production, and utilization of materials, and briefly describe the interrelationships between these components. (Give example). [10marks]
2. Briefly describe ionic, metallic, and van der Waals bonds and note which materials exhibit each of these bonding types. [15marks]

Second Question:

1. State and explain Brag's law to determine the interplanar spacing for crystal structures that has cubic symmetry. [10marks]
2. List the four different Imperfections types in solids. [10marks]
3. Name two types of Impurity point defects are found in solid solutions, then Provide a brief written about the factors affect these defects in solid, and finally Given examples of these defects. [10marks]

Third Question:

1. Sketch/describe unit cells for sodium chloride, cesium chloride, zinc blende, diamond cubic, and graphite. [15marks]
2. Briefly write short notes about the structure and properties of Carbon nanotube.[10marks]

Fourth *Question:*

1. Name and describe the different Atomic Point Defects that are found in ceramic compounds. [10marks]
2. Distinguish between crystalline and noncrystalline ceramics in Mechanics of Plastic Deformation. [10marks]

EXAMINER	DR. REDA EL-SHATER

☺ **BEST WISHES** ☺

د/ ف

	TANTA UNIVERSITY- Faculty of Science -Department of Physics			
	EXAM FOR SENIORS STUDENTS OF BIOPHYSICS			
	COURSE TITLE:	**Physical Electronics**		COURSE CODE: **PH4113**
DATE:	31-12-2014	TERM: FIRST	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS

Answer the following questions:

1- A- How the metallurgical grade Si is refined further to yield "semiconductor-grade" or "electronic-grade" Si (EGS), in which the levels of impurities are reduced to parts per billion. **(20 Marks)**

B- Define cathodoluminescence and electroluminescence giving a practical example of each type. **(10 Marks)**

2- **Choose the correct statement from between brackets:** **(20 Marks)**

1. (**GaAs - Silicon**) is used for the majority of rectifiers, transistors, and integrated circuits, whereas (**Silicon - GaAs**) is common in fabrication of light-emitting diodes (LEDs).
2. In the fabrication of Si integrated circuits it is economical to use very (**small - large**) Si wafers.
3. One of the important characteristics of a semiconductor, which distinguishes it from metals and insulators, is its energy band gap. For example, the band gap of GaAs is about (**1.43 - 4.31**) electron volts (eV).
4. In a Si crystal when we bring individual atoms very close together, the s- and p-orbitals overlap so that they lose their distinct character, and lead to (**three - four**) mixed sp^3 orbitals.
5. To convert the high purity polycrystalline electronic grade Si to single crystal Si ingots, a process commonly called (**Czochralski method - fractional distillation**) is used.
6. The column IV semiconductor Ge (Z = 32) has an electronic structure similar to Si, except that the four valence electrons are outside a closed n = 3 shell. Thus the Ge configuration is ([Ar] $3d^{10}4s^24p^2$ - [Ne] $3d^{10}4s^24p^2$).
7. When two atoms are brought close to each other, the coulombic potential energy V(r) in the region between the two nuclei is (**raised - lowered**) compared to isolated atoms.
8. In the valence band, hole energy increases (**oppositely to - similarly to**) electron energy.
9. Adding the electron and hole drift currents at (**low - high**) electric fields gives the following equation $\mathbf{J} = \mathbf{J}_p|_{Drift} + \mathbf{J}_n|_{Drift} = q(\mu_n n + \mu_p p)\, \boldsymbol{E}$.

3- **a-** Write short notes about: Three different bonding types in solids. **(10 Marks)**

b- Draw schematic diagrams showing the coulombic potential wells of two atoms close to each other, along with the wave functions of two electrons centered on the two nuclei. Show how for such an interacting system two-electron wave functions are probable and what happens if many atoms that are brought together? **(20 Marks)**

4- In a PN junction, define: the depletion region - the reverse bias - the forward bias - the diode breakdown. **(20 Marks)**

EXAMINER	PROF. DR. SAMIA AHMED SAAFAN

☺ **BEST WISHES** ☺

Tanta UNIVERSITY
FACULTY OF SCIENCE
DEPARTMENT OF PHYSICS

EXAMINATION FOR SENIORS (FOURTH YEAR) STUDENTS OF BIOPHYSICS

COURSE TITLE:	BIOINFORMATICS		COURSE CODE: BP4284
DATE: 4/6 APRIL: 2014	TERM: 2 nd	TOTAL ASSESSMENT MARKS:60	TIME ALLOWED:

(Answer the following question)

(I) Choose the correct answer (8)

1. Two ways of performing biological experiments were available
   (1) in vivo (2) in vitro

2. Fields related to bioinformatics:
   (1) Physics (2) Biophysics (3) Medical informatics

(II) True or false (10)

1. Things you must have in bioinformatic a background in molecular biology
   True ( ) False ( )

2. Things you must have in bioinformatic you have an Internet connection
   True ( ) False ( )

3. classical" bioinformatics, dealing primarily with sequence analysis.
   True ( ) False ( )

4. New" bioinformatics includes comparative genomics and DNA
   True ( ) False ( )

5. Roughly Bioinformatics describes any use of computers To handle biological information
   True ( ) False ( )

(III) Match the means: (8)

1. Genomics is	a. genomic approaches to the identification of drug targets
2. Pharmacogenomics is the application of	b. mathematical models
3. bioinformatics builds	c. approach using computers in biological processes
4. computational biology is	d. any attempt to analyze

(V) Give reason

Why big alignments is difficults? (8)

What are the types of sequences that look out for? (6)

Tanta University
Faculty of science
Physics department

امتحان الفرقه الرابعة

فى الفيزياء (فيزياء حيوية)

رقم المقرر PH 4264

تاريخ الامتحان ٢٠١٤/١٦/٤

زمن الامتحان: ساعتان

جامعة طنطا

كلية العـــلوم

قسم الفيزياء

Answer the following questions:

1-a Classify the nuclear detectors and mention the properties required for a semiconductor detector material.

1-b "Nuclear analytical techniques still suitable for study samples in all fields of life", discuss.

2-a Write down the method of analysis based on Rutherford backscattering spectroscopy.

2-b Define: Neutron activation analysis, compound nucleus, Mossbauer spectroscopy, thermal and fast neutrons.

3-a True or false:

1- NAA is a useful method for the simultaneous determination of about 25-30 major, minor and trace elements present in geological, environmental and biological samples.
2- RBS is far more useful to distinguish between two light elements.

3-b discuss in details neutron activation analysis.

4-a Gamma ray knife radiotherapy is a sophisticated tool to cure the tumor brain, how?

4-b What are the applications of Mossbauer spectroscopy?

WITH MY BEST WISHES

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF PHYSICS			
	EXAMINATION OF (FOURTH YEAR) BIOPHYSICS STUDENTS			
	COURSE TITLE:	**Astrobiology**		COURSE CODE: PH 4204
DATE:	9/6/2014	TERM: SECOND	TOTAL ASSESSMENT MARKS:50	TIME ALLOWED: 2HOURS

Answer the following questions.

First question:- (15 Marks)

a. Discuss the characteristics of a habitable planet?
b. Kepler couldn't explain physically what forces were responsible for the planetary motion. Explain how Isaac Newton explained these forces.

Second question: - (15 Marks)

a. A habitable planet should have plate tectonics, Discuss how life on Earth was evolved with it.
b. Drive the single-staged rocket speed equation.

Third question:- (10 Marks)

Give short notes about:

a. Mars is thought to be a possible place to search for life.
b. Miller-Urey experiment and the origin of life.

Fourth question:- (10 Marks)

a. What can we learn about Mars from Martian meteorites?
b. Explain briefly the theories of early life.

EXAMINERS	***Dr. Yasser Abdou***

☺ أطيب التمنيات بالتوفيق ☺

	Tanta University- Faculty of Science-Department of Physics			
	Examination for postgraduate Students of Physics			
	Course title	Communication and control of biophysics		course code: BP4285
Date:	7/6/ 2014	term: 2nd	Total assessment marks:	Time allowed: 3hours

(Answer the following question)

First question

A. Discuss simple spring as Linear Systems of Constant Coefficients?

B. Solve the following problems:-

1- Find the solution of $f''(t) + 3f'(t) + 2f(t) = 4t$ where $f(0) = f'(0) = 0$.

2- find Laplace transform for e^{at} ?

Second question

A. Show with drawing how to model resistance and capacitance for mechanical, fluidic, thermal, and chemical systems?

B. Describe with drawing linear modeling of lung mechanics

C. Write short notes on convolution integral?

Third question

Compare between the following

1- Engineering and physiological control systems?

2- Open loop system and closed loop system, characteristics, diagrams, mathematical formula and examples?

Fourth question

Write short notes on:

1- Chemical signals and electrical signals communication in living systems?

2- Control of blood flow through the skeletal muscles?

3- Respiratory regulation of acid base?

4- Regulation of heart pumping?

Good luck.....Dr. Reda Morsy

	Tanta University- Faculty of Science-Department of Physics			
	Examination for postgraduate Students of Physics			
	Course title	Communication and control of biophysics		course code: BP4285
Date:	7/6/2014	term: 2nd	Total assessment marks:	Time allowed: 3hours

(Answer the following question)

First question

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B. Solve the following problems:-

1- Find the solution of $f''(t) + 3f'(t) + 2f(t) = 4t$ where $f(0) = f'(0) = 0$.

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2- Control of blood flow through the skeletal muscles?

3- Respiratory regulation of acid base?

4- Regulation of heart pumping?

Good luck.....Dr. Reda Morsy

	Tanta UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF PHYSICS			
	EXAMINATION FOR SENIORS (FOURTH YEAR) STUDENTS OF BIOPHYSICS			
	COURSE TITLE:	MEDICAL AND BIOLOGICAL MEASUREMENT		COURSE CODE:BP 4282
DATE:	JUNE. , 2014	TERM: 2 nd	TOTAL ASSESSMENT MARKS:60	TIME ALLOWED:

(Answer one the following question)

Q1

a. Discuss the principle of atomic absorption spectrophotometer?

b.What is the relation between light absorption and density?

c.What is the application of atomic absorption spectrophotometer?

Q2

a.What are the possible factors that can affect the performance of ICP-MS?

b.What do you know about stable isotopes and their uses?

c. Compare between AAS, ICP-OES, and ICP-MS

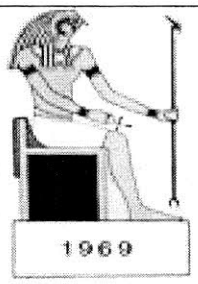
Q3

a.Discuss the principle of UV/VIS spectrophotometer?

b. What is the application of UV/VIS spectrophotometer?

Q4 What is spectroscopy?

Q5 What do you know about gamma camera?



Tanta University
Faculty of Science
Physics Department

Examination for Biophysics Students

COURSE TITLE:	**Radiobiology II**	**COURSE CODE:**	**BP 4281**
DATE:	**TERM: SECOND**	**TOTAL ASSESSMENT MARKS:50**	**TIME ALLOWED: 2 HOURS**

QUESTION	*ANSWER THE FOLLOWING QUESTIONS:*	*Marks*
1.	a- Explain in details the physical and prechemical chances in irradiated water. b- What do you know about the Dose-Response relationships?	
2.	a- Define the acute radiation syndrome and describe in details its four sequential stages. b- Draw a schematic plan view of x-ray room and the different radiation components that must be considered for designing of structural shielding.	
3.	a- Discuss in details the influence of irradiation on mammalian embryo and fetus. b- Explain in details the factors that affecting the dose response.	
4.	a- Give short notes about neutron shielding and protection from beta radiation. b- Mention and explain in details the factors that should be taken into account to design a primary protective barriers from x-ray.	
EXAMINER	Dr. Hassan El Gohary	