c-12/6/21

Mansoura University
Faculty of Science
Physics Department

Second semester 2013-2014
Date: 31-5-2014

4th Year Biophysics Students
Full Mark: 70
Allowed time: 3 hours
Course title:
Biophysical measurements and membrane biophysics

Answer 5 questions only from the following questions: Marks

1- a- Write on quantitative ultraviolet to determine the concentration of an analyte in aqueous solution. 7

b- Discuss the main component of ultraviolet analyzers? 7

2- a- Discuss the main characteristics of different radiation sources? 7

b- Give the meaning of a monochromator? Illustrate your answer with a graph? 7

3- a- Draw a graph showing the basic structure spectrophotometers showing the function of each part inside it. 14

4- a- Write on the structure of human nervous system? Draw the basic structure of a neuron? 7

b- Differentiate between the myleniated and unmyleinated axons? 7

5- a- Explain the main differences between input or sensory neurons and motor neurons 7

b- Discuss the ionic distribution of cell membrane showing production of resting potential. 7

6- a- Define the depolarization and hyperpolarization? Illustrate your answer with a graph between membrane potential and time? 7

b- Write on types of membrane excitations showing the propagation of electrical impulse inside a nerve? 7

Best wishes:

Dr Hany Kamal

Mansoura University
Faculty of Science
Zoology Department
Courses: Immunology & Molecular Biology
Academic Year: 2013-2014

Second Term - Final Exam
4th Level Students
Date: 31 May, 2014
Time Allowed: 2 hrs
Full Mark: 60

Answer All Questions

Part I Immunology

Question 1 **(15 marks)**

Write short notes on:

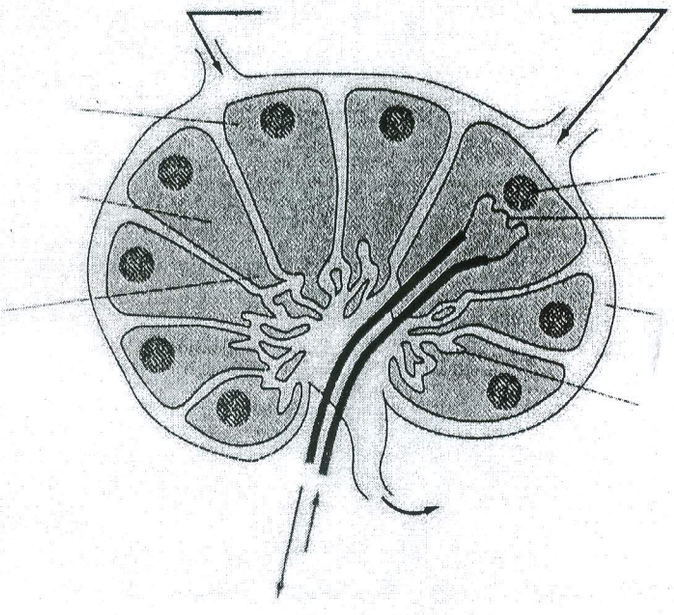
a) Clonal selection theory.
b) Complement activation pathways.

Question 2 **(15 marks)**

A- Complete:

a) ..... cells develop in the thymus, whereas, ... cells develop in the bone marrow.
b) ..... is the only antibody that can pass placenta.
c) Antibody roles include ....., ... and .....
d) Intact skin, mucous membranes and stomach HCl are among the components of ..... immunity.
e) ..... complement component creates a hole in the cell membrane of the pathogen's cell.

B- Identify, draw and put the labels for the following diagram:



Part II Molecular Biology

Q. 3: Write on the Following Statements: **(20 marks, 5 Marks each)**

A: *Introns and Exons.*

B: *Types of Restriction endonucleases enzymes.*

C: *Cloning Vectors.*

D: *Types of RNA.*

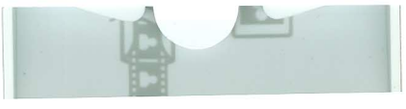
Q. 4: Discuss **(10 marks, 5 Marks each)**

A: *Gel electrophoresis separates DNA molecules.*

B: *Models for DNA Replication.*

Our best wishes

Prof. Dr. Sherif Helmy Abdeen
Dr. Sayed Kamel Areida
Prof. Dr. Nariman K Badr El Din
Dr. Mohamed F. Abo El Nour



المستوى الرابع - فيزياء حيوى - فيزياء للتصوير الطبى ف ع ٤٢٢

Mansoura University **Faculty of Science** **Physics Department**	**Second Semester 2013-2014**	**4th Level Biophysics Students** **Allowed Time:2 hours** **Course Code: Biophys 422** **Course title:** **Physics of Imaging Medicine**

Answer the following questions: **Marks**

[1] a- Write on the information obtained from electron microscope instrument. 10

b- Discuss briefly the physical principle of electron microscope. 10

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[2] a- What is the meaning of Conventional tomography? Early conventional tomography had some limitations, mention these limitations? 12

b- Write on reasons for using CT and mention the three steps of image formation? 8

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[3] a- Write are the components of Gamma Camera? 5

b- Explain the meaning of magnetic resonance spectroscopy [MRS], different types, physical principle and steps of an MRS examination. 15

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[4] a- Difference between spatial and temporal resolution in ultrasound imaging? 10

b- Define Duty factor and Pulse repetition frequency (PRF)? 10

Best Wishes,
Examiners: Prof. Dr.M .AbdelRazek & Dr. Afaf Sarhan

المستوى الرابع فترة صيف - فسيولوجيا آدمي ع ٤٢٣

Mansoura University
Faculty of Science
Zoology Department
Subject: Zoology (Z 423)
Courses' Human Physiology

Second Term
4th Level: Biophysics
Date: 7-6-2014
Time Allowed: 2hr
Full Mark: (60)

Answer all Questions: Each Question [20] Mark

First Question:

a- Discuss briefly four only of the following: **(12 marks)**

1- Fate of erythrocytes. 2-Mechanism of hemostasis.
3- Factors affecting erythropoiesis 4- Polycythemia
5- Sources of plasma proteins

b-Choose the correct answer of the following: **(8 marks)**

1- ADH affected by ----------
a- decrease urine volume. b- increase blood osmolarity.
c- decrease blood volume. d- all of these

2- Which of these hormones regulate calcium?
a- growth hormone b-insulin c- prolactin d-calcitonine

C- Mention the physiological function of:

1- Oxytocin 2- plasma protein 3- TSH 4- White blood cells

Second Question:

a- Mention the result from the following cases **(4 Marks)**

1- Decreasing in platelets 2- Decreasing hemoglobin
3- High level of Leukocyte 4- Increasing erythrocyte

b-Write short notes on **(6 Marks)**

1-Hormones 2- changes during muscle contraction
3-Role of oxygen in respiration

C- Write short notes on THREE only of the following: **(10 marks)**

1- Functions of the kidney. 2- Physiological significance of lipids
3- Hormonal control of digestive secretion. 4- Components of gastric juice and saliva.

Third Question:

a-Choose the correct answer: (10 marks)

1- The first product of fatty acid catabolism is ----------
a- Glycerol b- Pyruvate c- Acetyl CoA d- Triglycerides

2- The formation of glycogen from glucose in liver is ----------
a- Glycogenesis b- Glycogenolysis c- Glycolysis d- gluconeogenesis

3- The digestion of protein is completed in the ----------
a- stomach b- small intestine c- large intestine d- mouth

4- The chemical digestion of ---------- begins in the stomach through the action of the enzyme ----------
a- Fat – lipase b- Fat – bile
c- Carbohydrates – salivary amylase d- Protein – pepsin.

5- Sucrose contains which of the following monosaccharides ?
a- Glucose and galactose b- Glucose and fructose
c- Glucose only d- None of the above

6- The end product of lipid digestion are ----------
a- Peptones b- amino acids
c- Monosaccharides d- Fatty acids and glycerol

7- Secretin produced by the mucosa of the duodenum is stimulated by --
a- Fatty chime b- lncreased bile c- acidity of the chyme d- Gastrin

8- ADH stimulates tubular reabsorption of ----------
a- Water b- Na+ ions c- K+ ions d- all of the above

9- The functional unit of the kidney is called ----------
a- glomerulus b- nephron c- corpuscle d- ureter

10- Most glucose molecules are reabsorbed in the ----------
a- Proximal convoluted tubule b- Collecting duct
c- Distal. convoluted tubule d- Loop of Henle

b- Complete the following: **(5 marks)**

a- …… b- …….. c- ……
2- Two functions of HCl are:
a-…… b- ……..……..
3- Three factors affecting the enzyme activity are:
a- …….. b- …….. c- ……
4- Two types of dietary proteins are:
a- …….. b- ……
5- Urine is formed as a result of three processes which are:
a- …… b- …… c- ……

c-Define five only of the following: **(5 marks)**
a- Phospholipids b- Lactose c- Transamination d- Bile
e- Cholesterol f- Carboxypolypeptidase g- Gluconeogenesis

المستوى الرابع - فيزياء حيوى - وقاية اشعاعية ضع ٤٢١

Mansoura University Faculty of Science Physics Department El- Mansoura , Egypt		جامعة المنصورة كلية العلوم قسم الفيزياء المنصورة – مصر

Final Exam Second Semester ; 2014

Time : Two hours | **Educational Year : level four**

Date : 3/6/2014 | **Subjects : Radiation protection**

Mark: 80 Mark | **Course Code : Bio-phys.421**

Answer All the Following Questions:-

1. Discuss The Following:- **`[28 Marks]**

(a) Direct and indirect effect of radiation upon biological target.
(b) The three basic methods for reducing exposure to radiation ?
(c) Interaction of charged particles with matter.
(d) Radiation exposure limits.

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2. I Write short account on the following:- **[21 Marks]**

(a) The portable survey instruments
(b) The types of late effect of radiation.
(c) Naturally occurring radiation.

2.II Solve the following :- **[10 Marks]**

A carbon-14 has a disintegration rate 85,000dpm. your GM counter measures a count rate of 4,500cpm.If the background is 250cpm, what is the efficiency of the counter ?

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3. I- **Differentiate between** Acute lethal response and chronic exposure response. **[10 Marks]**

3. II- Solve the following problem:- **[11 Marks]**

If the HVL for iron is 1.47 cm for 1 MeV photons and the exposure rate from a source is 800mR/h, calculate
(a) the linear absorption coefficient .
(b) the thickness of iron required to reduce it to 150 mR/h .
(c) The thickness of iron required to reduce the exposure rate to 200 mR/h .

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Good Luck