	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF PHYSICS			
	EXAMINATION FOR JUNIORS (FORTH YEAR) STUDENTS OF BIOPHYSICS			
	COURSE TITLE:	BIOMATERIALS		COURSE CODE: BP4174
DATE:	21 JANUARY 2023	TERM: FIRST	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS

Answer the following questions

First question

(30 marks)

A- Choose the correct answer:

- 1- An example of a triple bond polymer is found in (ethylene – methane – acetylene)
- 2- Long chain linear polymers are (flexible – hard – brittle)
- 3- The highest applied stress on the material and can withstand without breaking is (hardness - ultimate strength – toughness)
- 4- The smaller atoms become trapped in the spaces between the atoms in the crystal matrix, this is called (grain boundary – dislocation - interstitial alloy).
- 5- In shear stress the direction of the applied force is (parallel – perpendicular- makes 120°) to the cross-sectional area.
- 6- is the main structural protein located in the body . (collagen – cellulose – DNA)
- 7- The tissue attachment mechanism in nearly inert porous bio-ceramic material is (bioactive fixation- biological fixation – biodegradation)
- 8- Ti-alloys are used in dentistry as (Stent - bone fixation - orthodontic wire)
- 9- When the ratios of CaO to P₂O₅ decreases, the bond strength between bones and bio-ceramics (decreases – increases – remains constant).
- 10- Cellulose is a type of (degradable polymer - natural polymer – synthetic polymer)
- 11- If carbon content exceeds 0.03% (corrosion - carbides – oxide film) are formed.
- 12- Polyethylene is a (synthetic – natural - degradable) polymer.
- 13- Plastic deformation occurs in (ductile – hard – brittle) material
- 14- In cobalt alloys, Below 450°C cobalt is (BCC – FCC - HCP)
- 15- Electron donor atoms transfer one or more electrons to an electron acceptor atom in (ionic - covalent – weak) bonding

Second question

(25 marks)

Correct the following sentences:

- 1- Synthetic polymers are very similar, often identical, to macromolecular substances of the biological environment.
- 2- The mineral phase of bone tissues consists primarily of potassium and phosphate ions.
- 3- The presence of copper in stainless steel alloys is to resist corrosion by forming a strongly adherent surface hydroxide layer.
- 4- Hardness is defined as the resistance to fracture of a material when stressed.

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- 5- Atoms arranged in an orderly, repeating, three-dimensional pattern, with the valence electrons migrating between the atoms like a gas in ionic crystals.
- 6- Poly (methyl methacrylate) is a hydrophobic, linear chain polymer that is transparent, amorphous, and glassy, so it can be used in orthopedics.
- 7- A nearly inert ceramic causes a specific biological response at the interface of the material, resulting in the formation of a bond between the tissues and the material.
- 8- Biodegradation is a process where interaction between two metallic surfaces within the working environment results in dimensional loss of one metal.
- 9- When a metallic implant device has high elastic modulus in the body, it will take most of the load. This process is called corrosion.
- 10- Ductile fracture takes place without any appreciable deformation, and by rapid crack propagation.
- 11- Irreversible degradation results when a molten thermosetting polymer is raised to too high of a temperature.
- 12- The elastic modulus of a biomaterial should be higher than that of bone.

.....

Third question

(25 marks)

A- What are the disadvantages of alloy casting process?

(10 marks)

B- Give the reason: 1- Titanium is used in dental implantation.

(15 marks)

2- Nickel is added to stainless steel alloys.

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

.....

Forth question

(20 marks)

A- What are the problems of nearly inert dense ceramic materials?

(10 marks)


B- What are the importance of biodegradation of polymers?

(10 marks)

Examiners	Dr. Enas Hassan El-Ghazzawy
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انتهت الأسئلة

☺☺ Best Wishes ☺☺

	FACULTY OF SCIENCE DEPARTMENT OF PHYSICS		
	EXAMINATION FOR SENIORS ((FOURTH-YEAR) STUDENTS OF BIOPHYSICS		
TANTA UNIVERSITY	COURSE TITLE:	ENVIRONMENTAL BIOPHYSICS I	COURSE CODE: BP4178
DATE:	11\01\2023	TERM: FIRST	TOTAL ASSESSMENT MARKS: 100 TIME ALLOWED: 2 H

ANSWER THE FOLLOWING QUESTIONS

Q1) (25 Marks)

- A) List the major outdoor air pollutants, and write briefly about one of them. (10 Marks)
- B) Define the dry adiabatic lapse rate and write briefly about the types of atmospheric stabilities. (15 Marks)

Q2) (20 Marks)

- A) India's Ganges River is an example of a highly polluted rivers. Explain how poverty, religious beliefs, and high population growth have contributed to the pollution of this river. (10 Marks)
- B) Discuss the benefits and bad consequences of greenhouse gases. (10 Marks)

Q3) (25 Marks)

- A) Write briefly about the thermal pollution of water and its effects. (15 Marks)
- B) What is Eutrophication? How does it affect water quality? (10 Marks)

Q4) (30 Marks, 2 Marks each)

- 1) The advantage of solar energy includes the fact that it is
(A) Absent at night (B) Non-renewable (C) Non-polluting (D) Expensive
- 2) Oil, natural gas, and coal are called.....resources because they are not easy to replace.
(A) Natural resources (B) Disappearing resource (C) Non-renewable (D) Conservation
- 3) What is NOT a sustainable practice?
(A) Buying (B) Reusing (C) Recycling (D) Reducing
- 4) Most energy used by humans comes from the
(A) Sun (B) Wind (C) Water (D) Earth
- 5) Renewable resources:
(A) Are all living resources (B) Can be replenished over months, year, or decades
(C) Include iron, gas, and copper (D) Have finite supplies that will one day be used up
- 6) Good weather is associated with
(A) cyclones (B) Anticyclones (C) Tornados (D) Hurricanes

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- 7) Using normally renewable resources faster than nature can renew them is called
 (A) Sustainability (B) Nutrient deficit (C) Trade-offs (D) Degrading natural capital
- 8) The real prices of goods and services do not include the
 (A) Cost of distribution (B) Cost of raw materials
 (C) Cost of manufacturing (D) Environmental costs of resource use
- 9) Using resources in such a way that we continue living in a developed world, but at the same time we protect the environment. This is the definition of
 (A) Suspendingibility (B) Ecology (C) Sustainability (D) Ecological precautions
- 10) What does sustainability mean?
 (A) Excessive use of natural resources (B) Using only non-renewable resources
 (C) Avoiding the depletion of natural resources in order to maintain ecological balance (D) Using only fossil fuels
- 11) All non-renewable resources can theoretically be
 (A) Converted to renewable ones (B) Exhausted or depleted
 (C) Recycled or reused (D) Converted to non-metallic minerals
- 12) When an air parcel has a tendency to move upward in the atmosphere, we expect the temperature inside the parcel to be..... the atmospheric temperature outside and the pressure inside the parcel to bethe atmospheric pressure outside
 A) Greater than; less than B) Greater than; equal to
 C) Less than; greater than D) Less than; less than
- 13) A can act as both a source and a sink of air pollutants:
 A) Direct emission B) Re-suspension
 C) Deposition D) Chemical reaction
- 14) When the atmosphere has a lapse rate of -11 C/km and an air parcel has a temperature that is 5 C higher than the surrounding air, the air parcel will.....
 A) Stay in its current location B) Sink until it reaches the ground
 C) Rise indefinitely D) Rise for a while, then stop
- 15) One of the physical constraints on air parcels as defined in class is that:
 A) The pressure inside the parcel must be less than the pressure outside at all times.
 B) The density inside the parcel must be equal to the air density outside at all times.
 C) The air inside the parcel cannot mix with the air outside the parcel.
 D) The parcels must expand when they are forced to sink into the Earth's atmosphere.

EXAMINER	PROF. MOHAMED SHAHEEN
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أطيب التمنيات بالتوفيق و النجاح

Tanta University Faculty of Sciences Physis Department	Second year-Level-4	Time allowed 2 Hours
	Examination of Radiobiology (BP4180)	
Date: 31/12/2022	Final Exam (Biophysics)	

Answer the following questions (Each question 12.5 Marks)

1. Explain the mechanisms of effect of radiosensitization effect of oxygen?

2. Write short notes on:


2.1 Radiosensitivity and Cell Age in the Mitotic Cycle

2.2 the molecular mechanisms of DNA and chromosome damage and repair

3. Describe the different types of radiation induced cell death and Linear Energy Transfer and Relative Biologic Effectiveness?

4. Derive and discuss a biophysical model for cell survival curves?

**With best regards
Associate Prof. Reda Morsy**

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF PHYSICS		
	EXAMINATION OF 4 TH YEAR BIOPHYSICS STUDENTS		
COURSE TITLE:	Astrobiology I		COURSE CODE: PH4103
4/1/2022	TERM: FINAL	TOTAL ASSESSMENT MARKS:50	TIME ALLOWED: 2 HOURS

Answer the following questions:-

Question One: (15 MARKS)

1. Explain how Earth's magnetic field exist and protect our life.
2. Explain how to determine the age of a rock?

Question Two: (15 MARKS)

1. What is Urey-Miller experiment? Did it make life?
2. What are the physical conditions that make our planet habitable?


Question Three: (10 MARKS)

1. Life on Earth has at least three key features that are likely to be shared by any life, Explain these features.
2. Could extraterrestrial life exist? Explain your answer.

Question Four: (10 MARKS)

Earth and Moon lie at the same distance from the Sun. Explain how Earth is warm while Moon's daytime temperatures range is -175°C to 125°C .

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

	جامعة طنطا كلية العلوم قسم الفيزياء	
	المستوى الرابع	PH4113
	Date: 14/1/2023	Final exam – First semester
	شعبة الفيزياء - شعبة الفيزياء الحيوية	Total mark =100
	د/فاطمة الزهراء فخري فهمي د/ماجدة نكي سعيد	Physical electronics

Answer the following questions:

First question:

- 1- Talk about the periodic structures (drawing the shape). [10 marks]
- 2- What happened when the photon with energy $h\nu$ enters a semiconductor mater? [5 marks]
- 3- A Si crystal is to be grown by the Czochralski method, and it is desired that the ingot contain 10^{16} Phosphorus. What concentration of Phosphorus atoms should the melt contain to give this impurity concentration in the crystal during the initial growth ? for P in Si, $k_d=0.35$. [5 marks]

Second question:

- 1- Discuss the energy band bending under the application of an electric field. [10 marks]
- 2- What is the meaning of: [20 marks]
 - a- MBE.
 - b- EHP.
 - c- n-type.
 - d- LCAO.
 - e- LPE.

Third question:

- 1- Define: drift current, diffusion current, and mobility. [10 marks]
- 2- Find the difference between metal, semiconductor, and insulator. [15 marks]

Fourth question:

- 3- What are the absorption coefficient and its equation? [10 marks]
- 4- Explain the PN junction, forward, and reverse bias. [15 marks]

Good luck