	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF PHYSICS		
	EXAMINATION FOR FRESHMEN (SECOND YEAR) STUDENTS OF PHYSICS, M. SCIENCES AND BIOPHYSICS		
COURSE TITLE:	Vibration (موجات)		COURSE CODE: PH201
DATE:	25/12/ 2017	TERM: FIRST	TOTAL ASSESSMENT MARKS:100
		TIME ALLOWED: 2 HOURS	

Answer The Following Questions

First Question: (25 mark)

In two LC electrical circuits which are inductively coupled with mutual inductance M, Find the resonate frequencies at which energy exchange between the two circuits

Second Question: (25 mark)

a) - Prove that the energy of a simple harmonic oscillator is constant.

b) - If the equation of motion of a forced oscillator is given by: $2\ddot{x} + 4\dot{x} + 32x = 20 \cos(4t)$ then find:

- The resonance frequency of the velocity.
- The maximum value of the velocity.
- The resonance frequency of the displacement.

Third Question: (25 mark)

a) Find the period of oscillation for a mass m fixed at a center of a light string of length 2L fixed at both ends under a constant tension T.

b) - Prove that the solution $x = (A + Bt)e^{-\frac{r}{2m}t}$ satisfies the equation $m\ddot{x} + r\dot{x} + sx = 0$ when

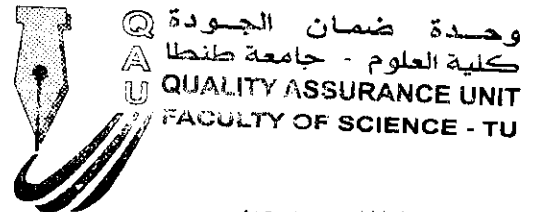
$$\frac{r^2}{4m^2} = \frac{s}{m}$$


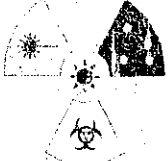
Fourth Question: (25 mark)

a) - Define the logarithmic decrement. If the normal frequency of an oscillator is 20 cycle/sec while the damping frequency is 16 cycle/sec, find the logarithmic decrement of this oscillator.

b) - The equation of motion of a forced oscillator is given by $m\ddot{x} + r\dot{x} + sx = F_0 e^{i\omega t}$. Find the steady state displacement and the velocity of the given oscillator.

EXAMINERS	PROF.DR. G.A.GABALLAH	



	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF PHYSICS		
	FINAL EXAM. FOR BIOPHYSICS (LEVELTWO)		
	COURSE TITLE: Introduction For Thermodynamics	COURSE CODE: PH2181	
DATE: 23/12/2017	SEMESTER:FIRST	TOTAL ASSESSMENT MARKS: 100	TIME: 2 HOURS

Answer the following questions:

Question [1]

[25Mark]

- (a)-Deduce the equation of state as a function of T , V of an ideal gas at reversible adiabatic process . [9Marks]
- (b)-Define: The zeroth law of thermodynamics , The mean heat capacity , The specific Enthalpy & The internal energy of the system. [8Marks]
- (c)-Draw projection of a number of isotherms of an ideal equation onto the P-T plane. [8Marks]
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Question [2]

[25Mark]


- (a)-Deduce the critical constants of a van der Waals gas. [9 Marks]
- (b)-Prove that $\left(\frac{\partial h}{\partial T}\right)_p = c_p$, [8Marks]
- (c)-Explain equation of state of real gases. [8Marks]
-

Question [3]

[25Mark]

- (a)Write short notes about the following : [14Mark]
- (i)-Work in a volume change ,and (ii)- Specific heat capacity at constant volume.
- (b)-Compare between the following Figures: [11Mark]

..... انظر الى خلف الورقة.....

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF PHYSICS		
	EXAMINATION FOR SECONDD YEAR STUDENTS OF PHYSICS ANDBIOPHYSICS		
	COURSE TITLE:	ACOUSTICS	COURSE CODE: PH2141
DATE: 27 DECEMBER 2017	TERM: FIRST	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS

Answer the following questions

First question (25 marks)

A- Complete (10 marks)

- 1- The general equation of the complex wave is
- 2- The back scattering is
- 3- Ultrasound waves in medicine are used in and
- 4- The blood flow velocity is given by
- 5- A hydrophone is a microphone used to measure

B-Talk about scattering phenomena and scattering of sound waves. (10 marks)

C- How to calibrate a hydrophone? (5 marks)

Second question (25 marks)

A- Prove that $f_o = f_s \left(\frac{v+v_o}{v-v_s} \right)$ (10 marks)

B-define: acoustic power – transducer – attenuation (15 marks)

Third question (25 marks)

A- Talk about interference of sound waves. (10 marks)

B- A sound wave has frequency 700Hz in air and a wavelength of 0.5 m. what is the temperature of air?(5 marks)

C-What is piezoelectricity? Are all materials suitable to be piezoelectric? (10 marks)

Forth question (25 marks)

A- Two sounds have measured intensity of $I_1 = 200 \text{ W/m}^2$ and $I_2 = 100 \text{ W/m}^2$. What is the difference between them in Decibel level? (7.5 marks)

B- How ultrasound waves used in welding process? (7.5 marks)

C- Show how Doppler Effect is used in imaging technique? (10 marks)


Examiners | Dr. Enas Hassan El-Ghazzawy

انتهت الأسئلة

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وحدة ضمان الجودة
كلية العلوم - جامعة طنطا
QUALITY ASSURANCE UNIT
FACULTY OF SCIENCE - TU

	TANTA UNIVERSITY FACULTY OF SCIENCE ZOOLOGY DEPARTMENT			<i>M/ 2018</i> <i>2018</i>
	FINAL EXAM OF MAJOR ZOOLOGY, Chemistry / Zoology, Biophysics, BIOCHEMISTRY, CHEM/BIOCHEMISTRY Divisions			
COURSE TITLE:	Cell Biology and Genetics		COURSE CODE:	ZO 2101
TERM:	DATE OF EXAM:	ASSESSMENT MARKS:	TIME ALLOWED:	
1 st SEMESTER	JAN, 2018	150	2 HOURS	

First Question: (75 marks)

Q1-a: What is different between four only of the following: 30 marks

1. Apoptosis and necrosis.
2. Atrophy and hypertrophy.
3. Histology and histopathology.
4. Hyperplasia and metaplasia.
4. Contrast and resolution.

Q1-b: Write on two only of the following: 15 marks

1. Causes of cell injury.
2. Importance's of apoptosis.
3. Biochemical and physiological responses to cell signaling.

Q1-C: Identifid only four of the following: 20 marks

1. Infarction
2. Depth of Field
3. Cell
4. Centrifugation
5. Oedema
4. Postmortem change

Q1-D: With full labeled drawing illustrate one only of the following: 10 marks

- 1) The morphology of apoptosis and necrosis.
- 2) Cell fractionation to separate the major organelles of the cells.

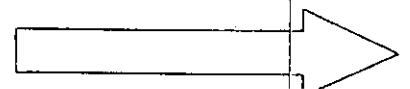
Second Question: (75 marks)

Q2-A: Explain the following briefly using illustrations when necessary (20 Marks):

1. Explain the differences between studying genetics in Biochemistry, Biophysics and Zoology branch of your specialties.
2. Explain the role of the three types of RNA during the formation of a protein.
3. What happens when the ability to repair damage caused by UV light is deficient in a family.
4. Explain briefly the early mechanisms by which how cells decide to start BER.

Q2-B. True (✓) or False (X) (if false, write the correct answer) (20 marks):

1. DNA exists only in nuclei, while RNA exists only in cytoplasm.
2. All DNA in eukaryotic cells comes from both parental and maternal origins.
3. The origin of replication exists at the beginning of each chromosome.
4. Splicing process in DNA repair starts due to activation by the UV light.
5. The mechanism of P-factor depends on hair pin.
6. Initiation of transcription in eukaryotes involves recognition of promoter by transcription factors.
7. Prokaryotic transcripts must not be processed to produce mature mRNAs.
8. The leading strand reading from 5' to 3' is the template strand.
9. Linker histone consists of about 146 bp of DNA wrapped in 1.67 left-handed superhelical turns around the histone octamer.
10. The genetic code is redundant: this means it has multiple codes amounting to the same amino acid.



Tanta University
Faculty of Science
 Department of Physics

Final First Term Examination
 Academic year 2017/2018
 Mathematical Physics Course (1)

Course Code: PH 2161
 Physics
 Date: 3 /1/2018
 Time allowed: 2 hours



Solve the Following Questions:

First Question:

(a) By variables separation, solve the following differential equation

$$\frac{dy}{dx} = e^{(2x+2y)}$$

(b) Prove that

$$\begin{vmatrix} x^2 & x & 1 \\ y^2 & y & 1 \\ z^2 & z & 1 \end{vmatrix} = (x-y)(y-z)(z-x)$$

Second Question:

(a) Make sure that the next differential equation is homogeneous, then find its general solution

$$x \frac{dy}{dx} = y + \sqrt{x^2 - y^2}$$

(b) If the matrices

$$A = \begin{bmatrix} -1 & 3 & 1 \\ -2 & 2 & 4 \end{bmatrix}, \quad B = \begin{bmatrix} 2 & -1 \\ 3 & 4 \end{bmatrix}, \quad C = \begin{bmatrix} 2 \\ -3 \end{bmatrix}$$

Find $AA^T, BC, B^T C$

Third Question:

(a) Find the differential equation of the equation:


$$(x-a)^2 + y^2 = a^2$$

where a is an arbitrary constant.

(b) According to Newton's law of cooling, which states that "The rate of heat loss of a body is proportional to the difference in temperatures between the body and its surroundings". If a ball of Copper of temperature 100°C, is putted into water of temperature 30° C. After 3 minutes the temperature of the ball became 70° C. After what time the temperature of the ball will be 31°C.

Turn the page over (بقية الاسئلة في الصفحة التالية)

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	TANTA UNIVERSITY- Faculty of Science - Department of Physics			
	EXAM FOR 2 ND YEAR BIOPHYSICS STUDENTS			
COURSE TITLE:	General Biophysics		COURSE CODE: BP 2110	
DATE:	6 JAN 2017	TERM: FIRST	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS


Answer the following questions

Question one (25 points)

- A- Write about one of the presentations.
- B- Calculate the image at the retina of an object 220 cm tall standing 3m from the eye.
- C- Explain and draw the confocal microscope

Question two (25 points)

- A- Explain the voltage clamp
- B- Compare between the types of levers
- C- Complete the following:
 - 1- The speed of propagation (V) of any wave is given by
 - 2- Sound waves can be classified into, and
 - 3- The process of focusing in the human eye is called
 - 4- The depth of field is
 - 5- Fovea is in diameter and it consists of.....
 - 6- The molar extinction coefficient is
 - 7- X-ray crystallography operates on the principle ofwhich occurs when light waves
 - 8- In NMR, nuclei that shielded by electrons will experience so the energy difference between their spin

	TANTA UNIVERSITY- Faculty of Science -Department of Physics			
	EXAM FOR LEVEL TWO STUDENTS OF BIO- AND GEOPHYSICS			
COURSE TITLE	Electromagnetism 1		COURSE CODE: 2184	
DATE:	- 1 - 2018	TERM: FIRST	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS

First Question:

- I) The three vertices of regular tetrahedron are located at O (0, 0, 0), A (0, 1, 0), B ($0.5\sqrt{3}, 0.5, 0$), and C ($\frac{\sqrt{3}}{6}, 0.5, \sqrt{2/3}$). **Find**. [10marks]
- a) A unit vector perpendicular (outward) to face ABC;
b) The area of face ABC.
- II) **Define:** Coulomb's law, potential difference, potential at a point, Faraday's law. [15marks]

Second Question:

- I) Point charges of 50nC each are located at A (1, 0, 0), B (-1, 0, 0), C (0, 1, 0) and D (0, -1, 0) in free space. **Find**. [15marks]
- a) The electric field at point P (0, 0, 1).
b) The electric potential at point P (0, 0, 1).
- II) **Deduce** the electric field of near infinite charged conducting sheet having a uniform electric density ρ_s C/m². If a second infinite sheet charged conducting sheet, having a negative charge density $-\rho_s$ C/m², is located at distance $x = a$ from the first, **find the total** field in the region inside and outside the two conducting sheets. [10marks]

Third Question:

- I) Using Gauss's law, **find** the electric field (\vec{E}) of a point charge (Q), and then find the potential difference between two points A and B around the point charge. [10marks]
- II) **State** first Maxwell Equation. [10marks]
- III) **Find** the divergence of electric field density ($\vec{\nabla} \cdot \vec{D}$) in the region about a point charge (Q) located at the origin. [10marks]

Fourth Question:

- I) **Find** the required electric work (W) to move electric charge (Q) between two points A and B in a uniform electric field (E). [10marks]
- II) **Prove** that the electric field vector equals exactly the gradient of electric potential ($E = -\nabla V$). [10marks]

EXAMINER

DR. REDA EL-SHATER

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COURSE TITLE:	Classical Mechanics		COURSE CODE: PH 2125
DATE:16	JAN, 2018	TERM: FIRST	TOTAL ASSESSMENT MARKS: 100
			TIME ALLOWED: 2 HOURS

First question:

1- Choose the correct answer:

- I If two different masses moved in contact, then
- a) They will have moved with a different acceleration and same force
 - b) They will have moved with the same acceleration and different forces
 - c) They will have moved with a different acceleration and different forces
 - d) They will have moved with the same acceleration and same force
-
- II A ball is thrown up in the air. It goes up and then eventually comes down again. On its way up (after being let go), which is correct?
- a) Its acceleration decreases
 - b) Its acceleration increases
 - c) Its accelerations stay pretty much the same
 - d) Impossible to say unless its direction relative to the horizontal is known.
-
- III A projectile is fired at an angle of 30° to the horizontal. An identical projectile with the same initial velocity is fired at an angle of 60° to the horizontal. Which projectile has the greater range (ignore air resistance)?
- a) The projectile fired at an angle of 60° .
 - b) The projectile fired at an angle of 30°
 - c) Without knowing the mass, it is impossible to say.
 - d) They both have the same range.
-
- IV A woman exerts the constant horizontal force on a large box. As a result, the box moves across a horizontal floor at a constant speed " v_0 ". The constant horizontal force applied by the woman:
- a) Has the same magnitude as the weight of the box.
 - b) Is greater than the weight of the box.
 - c) Has the same magnitude as the total force which resists the motion of the box.
 - d) Is greater than either the weight of the box or the total force which resists its motion.
-
- V Which of the following is an accurate statement?
- a) The vector sum of the tangential acceleration and the centripetal acceleration can be zero for a point on a rotating disk.
 - b) All points on a rotating disk experience the same radial acceleration.
 - c) All points on a car tire have zero acceleration if the car is moving with constant linear velocity.
 - d) All points on a rotating disk have the same linear speed.
 - e) All points on a rotating disk have the same angular velocity.

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