	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF PHYSICS			
	EXAMINATION FOR FRESHMEN (SECOND YEAR) STUDENTS OF PHYSICS, M. SCIENCS AND BIOPHYSICS			
	COURSE TITLE:	Vibration (موجات)		COURSE CODE: PH 2021
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 :

a) - The resonance frequency of the velocity.

b) - The maximum value of the velocity.

c) - 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 $x = (A + Bt)e^{-\frac{rt}{2m}}$ 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 $m\ddot{x} + r\dot{x} + sx = F_o e^{iwt}$. Find the steady state displacement and the velocity of the given oscillator.

EXAMINERS	PROF.DR. G.A.GABALLAH	

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

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF PHYSICS	
	FINAL EXAM. FOR BIOPHYSICS (LEVELTWO)	
	COURSE TITLE: Introduction For Thermodynamics / COURSE CODE: PH2181	PHYSICS DEPARTMENT
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]

.....

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]

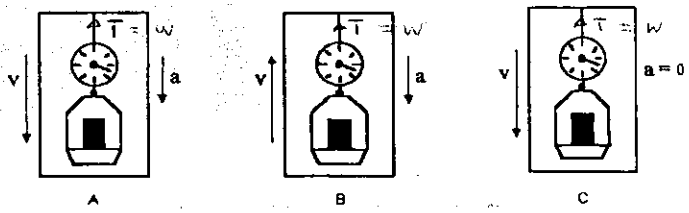
انظر الى خلف الورقة.....

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF PHYSICS			
	MATERIAL SCIENCE	LEVEL 2	EXAMINAR DR. AYMAN EL TAHAN	
	COURSE TITLE:	Mechanics		COURSE CODE: MS 2131
DATE:01	JAN, 2018	TERM: FIRST	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS

First question:

1- Choose the correct answer:

I Suppose a spring scale suspends a 10 Kg mass. In which of the following diagram will reed 98N.



A) A. b) B. c) C. d) All the previous

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 stay 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 A boy and a girl are riding on a rotating turntable that is turning at a constant rate. The boy is near the outer rim and the girl is closer to the center of rotation. How do their linear (that is, tangential) velocities compare?

a) The boy and the girl have the same linear velocity.
b) The girl has the greater linear velocity.
c) The boy has the greater linear velocity.
d) We need to know the radius of the merry-go-round to answer the question.

Continu

جامعة طنطا-كلية العلوم-قسم الجيولوجيا		
الامتحان النهائي لمقرر ثقافة الجودة طلاب الفرقة الثانية شعبة بترول وتعدين		
الزمن المتاح (ساعتان)	50 درجة	يناير 2018

السؤال الأول: قارن بين كلا من :-.....(20 درجة)

1- تحليل السوات (SWOT) وتحليل الفجوة (Gap).

2- المؤسسات الذكية (SMART) وتلك غير الذكية (not SMART) عند وضع أهدافها.

3- وحدة الارشاد الأكاديمي ووحدة متابعة الخريجين بمؤسسات التعليم العالي.

4- المخرجات/العوائد ومؤشرات النجاح

5- مبدأ (اربح وربح) ومبدأ (التعاون الخلاق) لستيفن كوفي.

السؤال الثاني: .....(10 درجات).

قم بإعداد خطة تنفيذية لقطاع الغازات السائلة بشركة تكرير البترول التي تعمل بها لتحقيق إحدى أهدافها بزيادة الانتاج من الغازات السائلة بنسبة 20% خلال ثلاث سنوات.

السؤال الثالث: أذكر العبارات الصحيحة والخاطئة مع تصحيح الخطأ وذكر سبب صحة العبارة من عدمها .....(20 درجة).

1- تعتبر الإنابة وتوزيع الأدوار لدى فريق العمل جزءا هاما من إدارة الوقت وتحقيقا لنظام إدارة الجودة الشاملة بالمؤسسة.

2- من الضروري ان تشتمل مخرجات التعليم المستهدفة (Intended Learning Outcomes-ILOs) لكل المقررات الدراسية على المهارات العملية والحرفية (Professional and Practical Skills).

3- تنظيم ملتقيات للتوظيف في مؤسسات التعليم العالي لا تعد من الممارسات الأساسية لتحقيق جودتها.

4- دخول منافسين جدد من جامعات خاصة للجامعات الحكومية تعد أحد الفرص التي يجب اقتناصها عند وضع الخطة الاستراتيجية للجامعات الحكومية.

5- استبيان المجتمع والجهات المستفيدة لمواصفات الخريج والبرامج التعليمية من الممارسات الهامة لتحقيق رسالة الكلية.

6- من اهم المنافع التي تعود على الافراد عند تحديد رسالتهم هو التقليل من فرص الجهود الضائعة ومنع استنزاف الموارد واستغلالها بطريقة رشيدة.

7- عند قيام الهيئة القومية لضمان جودة التعليم والاعتماد باعتماد المؤسسات التعليمية فأنها تمنحها شهادات الأيزو ISO

8- يعد كثرة العاملين في شركة الوادي للتعدين بمنطقة الشلاتين أحد نقاط قوتها.

9- تحليل PEST أحد الأنشطة اللازمة لتحديد نقاط القوة والضعف لاحد الجمعيات العاملة في مجال حماية البيئة بمحافظة الغربية.

10-يمكن ان يشترك أكثر من نشاط بالخطة التنفيذية في فترات التنفيذ.

مع أطيب التمنيات بالتوفيق

/ د. محمد حمدي

Tanta University Faculty of Science Department of Physics	Final First Term Examination Academic year 2017/2018 Mathematical Physics Course (1)	Course Code: PH 2161 Material Science 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 matrisies

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

Find AA^T, BC, B^TC

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)**

	Tanta University Faculty of Science Physics Department	
	Examination of Level 2 Physics and Material Science Programs	
	Course Title: Electromagnetic Theory I	Course Code: PH2151
	Date:16-1- 2018	1st Semester

The first question (40 marks): -

a) Define each of the following:

1) Electric field intensity

2) Potential difference between two points

3) The equipotential surfaces.

4) Conservative field

5) The conditions of Gauss's surface.

b) Find the length of the projection of the vectors $\bar{A}+\bar{C}$ on the vector $\bar{B}$, where, $\bar{A}=2\bar{a}_x+\bar{a}_y+\bar{a}_z$, $\bar{B}=\bar{a}_x-2\bar{a}_y+2\bar{a}_z$, $\bar{C}=3\bar{a}_x-4\bar{a}_y+2\bar{a}_z$

The second question(40 marks) :-

a) Rewrite these sentences, then complete them

1. The divergence theory relates ..... integration over ..... to ..... integration over .....
2. The relation between angle ϕ in spherical coordinate system and x, y, z in cartesian coordinate system is written as ..... .
3. If the vector $\bar{R}_{12}$ directed from two like signs charges q_1 to q_2 , the vector force $\bar{F}_2$ on q_2 is written as ..... .
4. The closed line integral of the electric field intensity equals..... .
5. The potential field V at the point (2,2,3) m due to a point charge 4.0 nc putting at (2,3,3) m equals .....
6. The operation on the electric flux density $\bar{D}$ by which the volume charge density is obtained is known as ..... .
7. Two-point charges of equal magnitude and opposite sign separated by a distance is known as ..... .

b) If the potential field $V=3x^3+4y^2$ (volt) ,find the energy stored in the volume $0\le x\le 1$ m , $0\le y\le 1$m , $0\le z\le 1$ m.

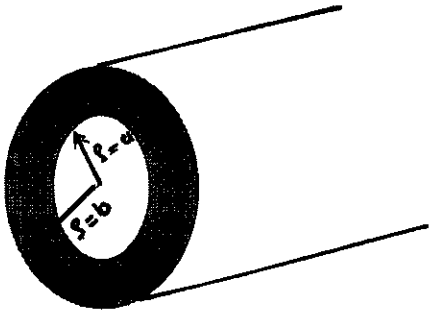
The Third question(30 marks):

a) If the $\bar{A}=r^2\,\bar{a}_r-r^2\cot\Theta\,\bar{a}_\Theta+4\sin\phi\,\bar{a}_\phi$, calculate div $\bar{A}$ at $(2,\pi/2,\pi)$.

b) Find the energy expended in moving a point charge q= -20 nc in electric field $\bar{E}=2(x+4y)\,\bar{a}_x+8x\,\bar{a}_y$ (v/m) from the origin to the point (4,4,0) m along the path $x^2=8y$.

The forth question(40 marks):

a) Prove that the energy stored per cubic meter in the electrostatic field of a section of a coaxial cable or capacitor of length L as shown in fig is $1/2\varepsilon_0\,(a\,\rho_s/\rho)^2$, where ρ_s is the surface charge density on the inner conductor.



b) Point charge q=5μc at the origin of a spherical coordinate system .Find the electric flux ψ crossing spherical shell $0\le\Theta\le\pi/3$

(ϵ_o is the permittivity of free space = $(1/36\,\pi)*10^{-9}$ F/m).

Beast wishes

لجنة الممتحنين

١- أ.د/ احمد عبد العظيم السباعي

٢- أ.د/ سلوي سعد محمد سعد

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