المستوى الثالث

علوم المواد

1969	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF PHYSICS			
	FINAL EXAMINATION FOR FRESHMEN (THIRD LEVEL) MATERIAL SCIENCE STUDENTS (SIMESTER 2) شعبةعلوم المواد طلاب المستوي الثالث			
	COURSE TITLE:	ANALOG ELECTRONICS الكترونيات تناظرية		COURSE CODE: MS3252
DATE:	JUNE 2017	TERM: SECOND	TOTAL ASSESSMENT MARKS: 150	TIME ALLOWED: 2 HOURS

Answer the following questions:-

1- Calculate the necessary capacitor to design a power supply 10 V, that can supply a resistor 100 Ω, if the ripples must not exceed 0.1 volt. Draw the circuit.

2- a- What we mean by saturated transistor and cutoff transistor.

b- A transistor circuit with the following $R_C = 5\ K\Omega$, $R_E = 500\ \Omega$, $V_{CC} = 15$ V, what is the ratio between divider resistors necessary to saturate the transistor ? Draw the circuit.

3- a- Compare between JFET, MOSFET, SCR and Triac.

b- Draw a circuit to control the power in heater.

4- a- Explain a circuit to protect a load against over voltage.

b- Draw a circuit to give positive pulses. Explain your drawing.

With my best wishes

Examiners	*Prof. Mostafa K. Elnimr*

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF PHYSICS			
	EXAMINATION OF (LEVEL THREE) STUDENTS OF PHYSICS			
	COURSE TITLE:	**Mathematical physics 3**		COURSE CODE: PH 3264
DATE:	8 \6\2017	FINAL SECOND TERM EXAM	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS

Answer the following questions:

First question:- (25 Marks)

(i) Show that the function $f(z) = x^2 - y^2 + 2ixy$ is differentiable for all values of z.

(ii) Find the transformer matrix L corresponding to a rotation of the coordinate axis through an angle θ about the e_3- axis.

Second question: - (25 Marks)

-The sample of five values for the weight of different student given as: 2, 3, 5, 8, 9.

(i) Fined ; the geometric mean, and harmonic mean.

(ii) Find ; the sample variance and sample standard deviation of the data.

Third question:- (25 Marks)

- The student of fourth year at physics department selected random and their height and weights are found as follows,

Height (m)	1.6	1.64	1.7	1.8	1.82	1.77
Weight (kg)	75	80	89	95	93	90

Calculate the sample correlation between the heights and weights.

Fourth question:-

(25 Marks)

Find the Fourier series expansion of the function $f(x) = x^2$ for, $0 < x \leq 2$.

EXAMINERS	DR. Atef Elbendary
	أطيب التمنيات بالتوفيق

Chemistry Department Faculty of Science Tanta University	**Final Examination** **For 3rd grade students** **(Double Major Students)** May 2017, Spring semester	Course title: Natural Products Course Code: CH3250 Exam time: 2 hours Assessment Mark: 100 M

Answer ALL the following questions

Q1. Discuss briefly the following.(Total 28 marks, each point 7 marks)

1- Properties and uses of Ephedrine.
2- One synthetic method of Piperine.(use chemical equations ONLY to describe your answer)
3- Synthesis of Caffeine from Urea.(use chemical equations ONLY to describe your answer)
4- Synthesis of Cocaine. (use chemical equations ONLY to describe your answer)

Q2. Write shortly about the following. (Total 28 marks, each point 7 marks)

1- Clinical significance, antioxidant activity, and synthesis of Vitamin E.
2- Synthesis of both Vitamin K_1 and Vitamin K_3(use chemical equations ONLY to describe your answer).
3- The different chemical structures and the synthesis of Vitamin B_6.
4- Synthesis of Vitamin C (Ascorbic acid).

Q3. Answer the following points. (Total 24 marks)

a- Mark the following statements as True or False, correcting the false statement. (10 marks, each point 2 marks)

1- Myrcene is cyclicmonoterpenoid with three conjugated double bonds, forming an adduct.
2- Formaldehyde, acetone, and ketodialdehyde arethe products of ozonolysis of ∝-Terpineol.
3- Hydration of Geraniol in the presence of sulphoric acid give Citral.
4- Geraniol is an optically active cyclic monoterpenoidalcohol.
5- The reduction of Citral in the presence of sodium ethoxide give Geraniol.

b- Convert the following by using chemical equations. (14 marks, each point 7 marks)

1- Pentane 1,3,5-tricarboxylic acid to Limonene
2- P-Toluic acid to ∝-Terpineol.

Q4. Complete the following equations by chemical structures, naming your answer. (Total 20 marks, each point 5 marks)

1- Cholesterol **A** $\xrightarrow[\text{(ii) reduction}]{\text{(i) dehydration}}$ **B**

2- Cholestanol **A** $\xrightarrow{\text{Oxidation / } CrO_3}$ **B** $\xrightarrow[\text{/ methyl-magnesium iodide}]{\text{Grignard reagent}}$

3- Cholesteryl acetate **A** $\xrightarrow[\text{byChromium trioxide}]{\text{Complete Oxidation}}$ **B**

4- Cholest-4-en-3-one **A** $\xrightarrow[\text{/ } KMnO_4]{\text{Potassium permanganate}}$ **B** $\xrightarrow[\text{Zn-Hg /HCl}]{\text{Reduction}}$

---------- انتهت الأسئلة ----------

Good Luck

Examiners: Prof. Dr. Mohamed Reda Berber, Prof.Dr. Yehia Hafez

	TANTA UNIVERSITY FACULTY OF SCIENCES *DEPARTMENT OF PHYSICS*			
	EXAMINER:	*PROF. DR. RIYAD A.M. GHALY*		
	COURSE TITLE:	*laser physics (Physics & Biophysics students)*		CODE:3222
DATE:	4 JUN, 2017	TERM: SECOND	TOTAL MARKS:200	PERIOD: 2 HOURS

Answer the following questhons :-

1- Derive the expression of the population inversion under steady-state oscillation ΔN_{th} as a function of transition probability $|\mu_{21}|$?

2- The laser beam has some special physical properties, write- down and give a short account about each of them?

3- Explain physically the laser action in terms of the rate equations theory?

4- Find the relationship between the gain coefficient G and the loss coefficient L_{eff} in the laser resonator?

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	TANTA UNIVERSITY FACULTY OF SCIENCE PHYSICS DEPATMENT			
	FINAL EXAMINATION FOR (THIRD LEVEL) STUDENTS OF SPECIAL BIOPHYSICS			
	COURSE TITLE: RADIATION PHYSICS		COURSE CODE: PH3292	
DATE:25	MAY., 2017	FINAL EXAME	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED:2 HOURS

First question (20 marks) write not more 40 words on one only of the following:

1- What is radon?
2- Elastic scattering of gamma radiation with matter.
3- Gravitational radiation
4- ALARA
5- Synchrotron radiation.
6- The difference between ionizing and nonionizing radiation
7- The manmade radiation.

Second question (20 marks) write the relation and units of each of the following expression:

1- Exposure, Dose, Equivalent dose and Activity.
2- Total mass stopping power.
3- The total electromagnetic power P radiated.
4- The linear attenuation coefficient
5- Conservation laws of scattering.
6- Threshold energy.
7- Range

Third question (20 marks) what we mean by?

1- Radioactivity.
2- Compound nucleus.
3- Types of directly ionizing radiation
4- Production of radiation
5- Cyclotrons.
6- Isodiapheres, and Isosters

Examiners : Pof. Khaled M. Omar + Prf. Mohsen M. Bearcat

Code table

Code	Sentences
1110	Radon which cannot see or feel
1120	Cosmic or space radiation
1130	Terrestrial radiation
1210	Absorbed dose
1202	Equivalent dose.
1203	Effective dose
1204	Dose limits
12121	Slightly deflected.
12122	Virtually stopped
12131	The fare distance it will travel and the density of ionization along its track.
01251	Gray or Rad
01112	Half- value layer which describes the thickness of the medium needed to attenuate the beam's. HVL=0.693/m
01182	Pair production occurs in photon ,beam. And the probability of this reaction increases with energy and its dependent on atomic number of the medium.
01193	Coherent scattering occurs invery low energy beam and high Z materials.
02022	For external beam exposure can be achieved by following the rules of time, distance, and shielding.
02042	The National Council on Radiation Protection and Measurement (NCRP) sets recommended dose limits.

Forth question (40 marks) rewrite the sentences and complete it using the following code table by writing the code only:

1- There are three principal area which make up natural sources of radiation. First area is --------. A second area of natural sources is ---- ------- or --------.
2- Absorbed dose is measured in
3- The term describes the relationship with beam intensity and distance from the source of a beam for photons as it travels through some medium is----
4- ----- describes the thickness of the medium needed to attenuate the beam's original intensity in half.
5- Pair production occurs in _____.
6- The three principles od ALARA include:
7- In the coherent scattering interaction , the energy of the ejected photon is----_____ than the incident photon.
8- The cu_____ tail is seen at the end of electron depth dose rves.
9- . what organization sets the recommended dose limit for radiation workers and the general public?
10- 2. Decay constant (λ) can be determined by dividing the element's half-life by
11- When ionizing radiation penetrates matter it deposits energy. Three different radiation doses are 1- -------- ,2------- ,3-----.
12- The energy of bremsstrahlung photons can range from nearly zero when particle is --------- up to a maximum equal to the full energy of incident then particle is ----------
13- The rate at which a charged particle loses energy determines -----