المستوى الثانى

فيزياء

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF PHYSICS			
	EXAMINATION OF (LEVEL TWO) STUDENTS OF PHYSICS			
	COURSE TITLE:	Mathematical physics 2		COURSE CODE: PH 2262
DATE:	5\6\2017	FINAL EXAM	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS

Answer the following questions:

First question:- (25 **Marks)**

(i) Observe that y = x is a solution of

$$y'' - [(x + 2)/x]y' + [(x + 2)/x^2]\, y = 0$$

And solve $y'' - [(x + 2)/x]y' + [(x + 2)/x^2]\, y = x\, e^{x}$

(ii) Solve $y'' - 5y' + 6y = x^2 e^{3x}$

Second question:- (25 **Marks)**

Solve (i) $y''+3y'+2y = e^{x} - 3$

(ii) $\Gamma(1/3)\,\Gamma(2/3) = ??$

(iii) $\beta(x,y)$ at x=4, y=7

Third question: - (25 **Marks)**

Prove that, $\Gamma(x+1) = x\,\Gamma(x)$

Find, $\int_0^1 x^7(1-x)^8\, dx$, $2\int_0^{\pi/2} sin^7(x)cos^8(x)\, dx$

Fourth question:- (25 **marks)**

(i) Write about Angular momentum operators

(ii) find, $x^2T'' + xT' + (x^2-1/4)T = 0$

EXAMINERS	DR. Atef Elbendary
	أطيب التمنيات بالتوفيق

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF PHYSICS		
	COURSE TITLE:	ENERGY PHYSICS EXAM	COURSE CODE: PH2232
DATE:	JUNE, 2017	TREM: SECOND · TOTAL ASSESSMENT MARK: 100	TIME ALLOWED: 2HOURS

- Answer the following questions:

1. a. Define the following physical terms:
"Perfect black body", "electric current", "binding nuclear energy", "efficiency", "critical mass in nuclear fission" and "mechanical energy".
[15 Marks]

b. Discuss the two laws of thermodynamics. [10 Marks]

2. a. Discuss the green house gases and the global warming issues.
[10 Marks]

b. Compare between nuclear fission and nuclear fusion reactions. Comment on the energy generated in both cases.
[10 Marks]

c. Explain briefly the energy balance equation. [5 Marks]

3. a. Describe the advantages and disadvantages of solar energy.
[10 Marks]

b. Draw a schematic diagram for the flat-plate solar collector. Describe its function. [10 Marks]

c. Draw a schematic diagram for a typical solar cell. [5 Marks]

4. a. Use schematic diagrams to describe how to obtain biogas from biomass. [10 Marks]

b. Draw a schematic diagram for a wind mill and explain its function.
[5 Marks]

c. Discuss the issues of energy conservation.
[10 Marks]

	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF PHYSICS			
	EXAMINATION FOR SECOND YEAR			
	COURSE TITLE:	Physical Optics		COURSE CODE: PH2222
DATE:	29/5/2017	TERM:SECOND	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS

ANSWER ALL QUESTIONS:

1-a)Find the superposition of two S.H.M. along the same line, have the same frequency and different amplitudes.

b)Describe Fresnel's biprism, Explain how the wave length of light can be determined with it's help.

2-a) How will you determine the wave length by using Michelson interferometer.

b) In Newton's ring experiment , if drop of water (n=1.33) be placed in between the lens and the plate , the diameter of 10^{th} ring is found to be 0.6 cm , obtain the radius of curvature of the face of the lens in contact with the plate. (λ of light used 6000A)

3- Derive an expression for the intensity at a point in the Fraunhofer type of diffraction produced by N nearby parallel narrow slits illuminated by monochromatic light.

4- a) Give three methods producing plane polarized light .

b)Calculate the least width of a plane diffraction grating having 500 line /cm which will just resolve in the second order the sodium lines of wavelength 5890 and 5896 A^0

Good luck .....

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