

ع نزل

Kafrelsheikh University  
Faculty of Science  
Physics Department



Time: 2h  
Subject: Solid state spectroscopy  
Total Marks: 100 (70 W, 20 Ex, 10 Or)  
Date: 15 /01/2018  
Exam in one pages

**Answer the following questions:**

**Q1- (25 degree)** Detection of electromagnetic radiation explain:

- a) Signal and Noise, Photomultipliers as an EM detector.
- b) Fundamentals of photoelectric detectors and Photodiodes?

**Q2- (25 degree)**

- a) What is Dielectric Response Functions mean?
- b) From the Maxwell equations for the propagation of EM waves in homogeneous media, show how some important relationships can be derived for optical constants?

**Q3- (20 degree)**

- a) What is the Physical Origin of Contributions to the Dielectric Function?
- b) How Ellipsometry can be used as experimental of determination of dielectric functions?

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With my best wishes Dr. Abdel-Hamid El-Shaer