

Menoufia University  
Faculty of Engineering, Shebin El-Kom  
Basic Engineering Science Department  
Second Semester Examination, 2019-  
2020  
Date of Exam: 13 / 8 / 2020



Subject: Physics of Semiconductors  
Code: BES634  
Year: Postgraduate (Engineering Physics)  
Time Allowed : 3 hours  
Total Marks : 100 marks

**Answer the following questions:**

**Question 1**

**(20 marks)**

According to band theory of solid, distinguish between the types of solids with explaining the influence of the band energy diagram of each type in their electrical properties?

**Question 2**

**(20 marks)**

Write short notes on:

- i. Generation of charge carriers
- ii. Recombination of charge carriers
- iii. Intrinsic semiconductors.
- iv. Carriers movement in equilibrium through P-N junction diodes

**Question 3**

**(20 marks)**

Write briefly on two of the common preparation techniques of semiconductors with clarify their advantages and disadvantages.

**Question 4**

**(20 marks)**

Find the relation between the electrical conductivity of semiconductors and the electric charge mobility.

**Question 5**

**(20 marks)**

Clarify the structure and the working principle of photodiodes

*With my Best Wishes*