

# 

**Philadelphia University**

**Department of Mechanical Engineering**

**Material Engineering Properties**

**Dr. Hasan AL Dabbas**

**Dr Zaid Hikmat**

**Student Name:**

**Exam 2, Second Semester: 2014/2015**

|  |
| --- |
| Course Title **Material Engineering Properties** Date: 12/05/2015Course No: (620373) Time Allowed 1 Hrs |

**Q1:**

**(1)** Show difference between the following: **5Mark**

1. Imperfections and diffusion
2. Vacancy and interstitial diffusion
3. Substitutional and interstitial impurities defects
4. The Solvent and Solute
5. Case Hardening and silicon with phosphorus

Q 2 **5Mark**

1. Explain the application of microscope examination?

Draw how optical microscope scanning grain boundaries?

b) Explain the defects in Solids?

Q3:  **5Mark**

a) What is the type of imperfections and explain one of them in detail?

b) What are variables which the diffusion value is depending on?

Q4:  **5Mark**

1. Explain with drawing types of diffusion mechanism?
2. What is the Interdiffusion in the alloy and draw the concentration profile.

Good Luck

Good Luck