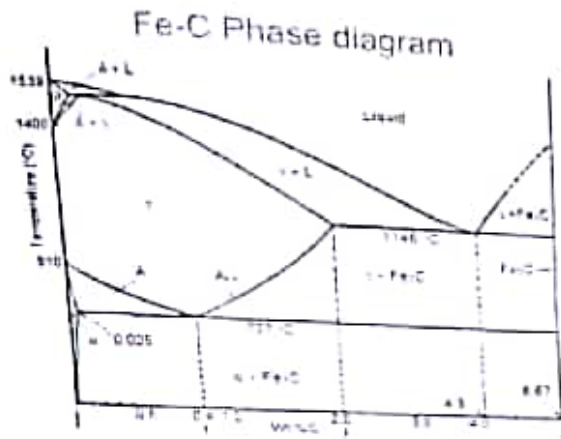


FEDERAL UNIVERSITY OYE EKITI
FACULTY OF ENGINEERING
DEPARTMENT OF MATERIALS AND METALLURGICAL ENGINEERING

MME 201- Materials Science (2 Units)
 1st Semester Examination (2018/2019)
 Instruction: Answer four questions

Time allowed: 2hrs

1. Eutectoid steel is slowly cooled from a temperature of 780°C to a temperature just below 727°C as shown in figure below.



Determine:

- a. The percentage of ferrite
 - b. The percentage of cementite
 - c. Wt% of C
2. Determine the number of atoms in a:
 - a. Simple cubic (SC) unit cell
 - b. Face-centered cubic cell
 - c. Body-centered cubic unit cell
 3. Mention two:
 - a. types of point defects
 - b. types of nucleation
 - c. phase transformation phenomena
 4. List two:
 - a. types of solid solutions
 - b. types of strengthening mechanisms
 - c. factors affecting diffusion
 - 5a. Outline two non-ferrous alloys
 - b. List two types of advanced materials
 - c. List one example each of a p-type and n-type semiconductor dopant
 - 6a. Enumerate the type of chemical bonding in Bronze and Polyethylene
 - b. List two types of bulk defect
 - c. List two types of magnetism

Federal University Oye-Ekiti
Faculty of Engineering and Technology
Department of Materials and Metallurgical Engineering
2012/2013 Academic Session
First Semester Examination.

Course Title: Materials Science
Date : June 20, 2013.

Course Code: MME201
Time allowed: 2hours

INSTRUCTION: ANSWER ONE QUESTION IN SECTION ONE AND ANY THREE QUESTIONS IN SECTION TWO.

SECTION ONE: ANSWER ONE QUESTION

1. (a).
i. Solid materials have been conveniently grouped into three basic classification: crystalline, amorphous, and polymeric (3mks)
ii. A molecule is the smallest structure that repeats itself by translation through the crystal. (True or False) (1mk)
iii. The shortest distance between two like atoms is atomic diameter. (1mk)
- (b).
i. Marble and limestone have the same physical property (composition) but different physical property. (2mks)
ii. Atoms are composed of Proton, neutron, and electron. (3mks)
- (c).
i. Elements are categorized by placing them in the Periodic table. (1mk)
ii. Ionic bonding is the bond between one positive ion and another negative atom. (2mks)
iii. In covalent bonding, electrons are shared between the atoms, to saturate the valency. (2mks)