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Courses » Introduction to Materials Science and Engineering

Announcements Course Ask a Question Progress FAQ

Unit 10 - Week 7 - Phase Diagrams I

Register for Certification exam

Course outline

How to access the portal

Supplementary Materials

Week 1 - Crystallography I

Week 2 - Crystallography II + Structure of Solids I

Week 3 - Structure of Solids II

Week 4 - Structure of Solids III

Week 5 - Defects in Crystalline Solids I

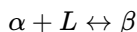
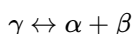
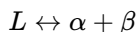
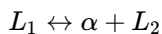
Week 6 - Defects in Crystalline Solids II

Week 7 - Phase Diagrams I

Assignment 7

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment. **Due on 2019-03-20, 23:59 IST.**

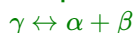
1) Identify the eutectoid reaction (forward arrow indicates cooling). **1 point**



No, the answer is incorrect.

Score: 0

Accepted Answers:



2) Which of the following microconstituents are not there in the Fe-C phase diagram? **1 point**

α -ferrite

martensite

austenite

pearlite

No, the answer is incorrect.

Score: 0

Accepted Answers:

martensite

3) Based on the phase diagram shown in Video 7.4 at 1 min 30s, what is the approximate **0 points**

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- 7.2 Phases and components
- 7.3 Uses of phase diagrams
- 7.4 Phases present in the system
- 7.5 Composition of phases present in the system
- 7.6 Proportion of phases present in the system
- 7.7 Microstructure evolution during solidification in isomorphous systems
- 7.8 Eutectic system
- 7.9 Eutectic reaction
- 7.10 Eutectic, hypoeutectic and hypereutectic alloys
- 7.11 Gibbs' phase rule
- 7.12 Fe-C phase diagram

○ Quiz :
Assignment 7

Week 8 - Phase Diagrams II + Diffusion

Week 9 - Phase Transformations I

Week 10 - Phase Transformations II + Mechanical Behaviour of Materials I

Week 11 - Mechanical Behaviour of Materials II

Week 12 - Mechanical Behaviour of Materials III +

ce De

No, the answer is incorrect.

Score: 0

Accepted Answers:

75 wt% Ni

4) Which of the following phase regions may be present across a liquidus boundary? **1 point**

- L and L+ α
- α and L+ α
- α and L+ β
- α and $\alpha+\beta$



No, the answer is incorrect.

Score: 0

Accepted Answers:

L and L+ α

5) What are the phases present in a hypereutectoid steel at room temperature? **1 point**

- α -ferrite and pearlite
- austenite and α -ferrite
- cementite and pearlite
- α -ferrite and cementite

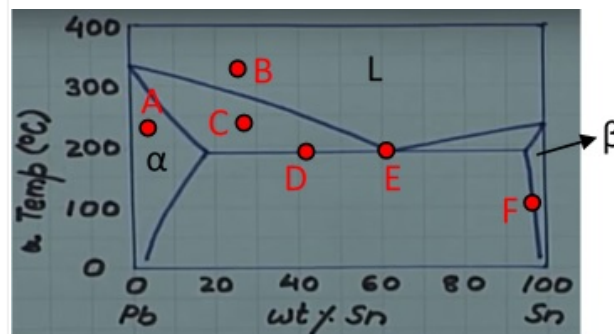
No, the answer is incorrect.

Score: 0

Accepted Answers:

α -ferrite and cementite

6) Which of the constitution points shown in the diagram have two degrees of freedom? **1 point**



- A, B and C
- D, E and F
- D and F
- A and B

No, the answer is incorrect.

Score: 0

Accepted Answers:

A and B

7) Find the phase fraction of α -ferrite (in %) in a plain carbon steel with 0.58 wt.% C at a temperature just above 727°C (eutectoid temperature). Take the eutectoid composition of steel as 0.8 wt% C. **1 point**

- 8.42

Fracture

Interactive Session

 28.2 71.8 91.58

No, the answer is incorrect.

Score: 0

Accepted Answers:

28.2

8) In the phase diagram shown in Q6, identify the phases present at constitution point C.

1 point

 L and α L and β α α and β

No, the answer is incorrect.

Score: 0

Accepted Answers:

L and α

9) The lever rule is based on _____.

1 point

 momentum balance heat balance energy balance mass balance

No, the answer is incorrect.

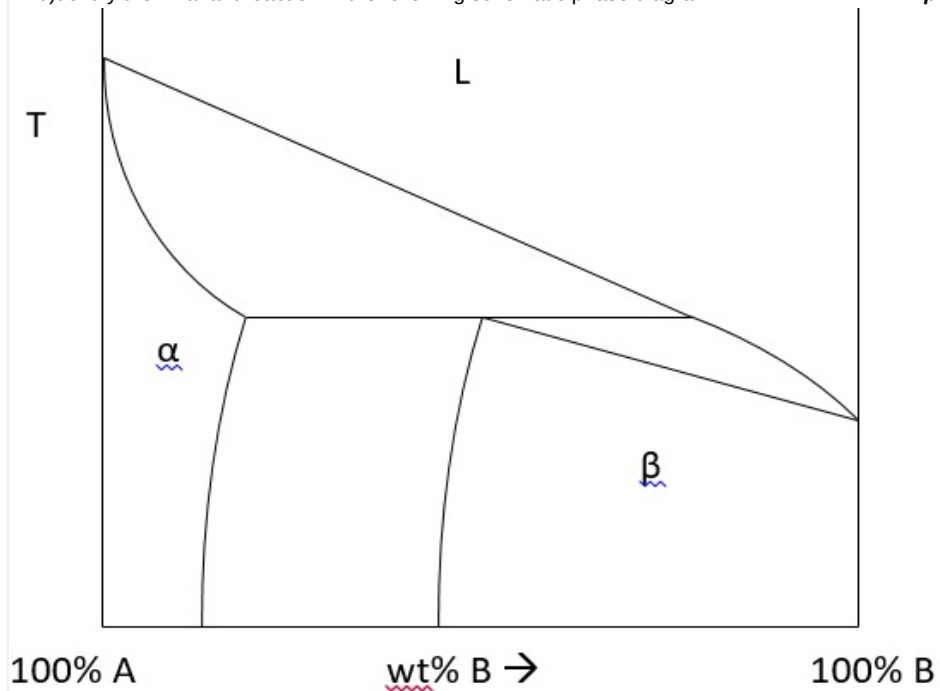
Score: 0

Accepted Answers:

mass balance

10) Identify the invariant reaction in the following schematic phase diagram:

1 point

 eutectic reaction

- eutectoid reaction
- peritectic reaction
- peritectoid reaction

No, the answer is incorrect.

Score: 0

Accepted Answers:

peritectic reaction



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