

Unit 4 - Week 2 - Introduction to casting process

Course outline

How does an NPTEL online course work?

Week 0

Week 1 - Basics of Manufacturing Processes

Week 2 - Introduction to casting process

Friction and Wear, Solid Solutions

Equilibrium Phase Diagram

Iron-Carbon Equilibrium Phase Diagram

Control of Mechanical Properties (Alloying and heat treatment)

Introduction To Casting Process

Pattern and Mold Design

Mold Making Procedures

Fundamentals of Melting and Furnaces & Pouring and Gating Design

Quiz : Assignment 2

Assignment 2 solution

Feedback For Week 02

Week 3 - Gating Systems and Rate of solidification

Week 4 - Estimation of solidification time with different conditions and Riser design

Week 5 - Machining Processes

Week 6 - Cutting tool life estimation

Week 7 - Introduction to Micro-Systems Fabrication Technology

Week 8 - Abrasive water jet machining and Ultrasonic Machining

Week 9 - Introduction to Electrochemical Machining

Week 10 - Electro-discharge Machining Process

Week 11 - Laser Beam and Electron Beam Machining Processes

Week 12 - Metal Forming Processes

Text Transcripts

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Assignment 2

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2020-02-12, 23:59 IST.

Assignment 2

1) Which of the following phenomenon is not correct with respect to the mechanism of wear? 1 point

- Abrasion → Hard particles dislodge material from the surface in contact by ploughing action.
- Diffusion → Concentration gradient-based movement of atoms.
- Adhesion → Dissimilar metals in contact break apart the surface in contact.
- All of the above are correct.

No, the answer is incorrect.

Score: 0

Accepted Answers:

Adhesion → Dissimilar metals in contact break apart the surface in contact.

2) Which of the following is not true for interstitial solid solutions? 1 point

- Some solvent molecules leave their regular site to help the solute atom fit within them.
- Solute molecules are very small.
- Solute occupies interstitial sites of the solvent matrix.
- All of the above are correct.

No, the answer is incorrect.

Score: 0

Accepted Answers:

Some solvent molecules leave their regular site to help the solute atom fit within them.

3) The transformation of phases is best governed by _____? 1 point

- Pressure, temperature, and crystal structure.
- Pressure, temperature, and composition.
- Temperature, composition, and crystal structure.
- Pressure, composition, and crystal structure.

No, the answer is incorrect.

Score: 0

Accepted Answers:

Pressure, temperature, and composition.

4) In the equilibrium phase diagram, the _____ line is the line above which there is only liquid composition present in the system. 1 point

- Solidus
- Liquidus
- Transformation
- Melting

No, the answer is incorrect.

Score: 0

Accepted Answers:

Liquidus

5) Which of the following is not true for the eutectic point in the equilibrium phase diagram? 1 point

- It's the specific composition of two metals, which has a specific (not range) freezing point.
- It's the point (temperature) where liquid instantaneously converts into two solid phases.
- It's also called an easy melting point.
- All of the above are correct.

No, the answer is incorrect.

Score: 0

Accepted Answers:

All of the above are correct.

6) How much iron does cementite contain? 1 point

- 6.67 %
- 24.23 %
- 93.3 %
- 73.4 %

No, the answer is incorrect.

Score: 0

Accepted Answers:

93.3 %

7) Which of the following is the incorrect combination of alloying element and its effect on steel? 1 point

- P → Increases hardenability
- Ni → Increase toughness and impact strength
- Mo → Enhance corrosion and corrosion resistance
- Mn → Increase ductility

No, the answer is incorrect.

Score: 0

Accepted Answers:

Mn → Increase ductility

8) Which of the following form of Fe-C composition is the hardest? 1 point

- Austenite
- Martensite
- Pearlite
- Bainite

No, the answer is incorrect.

Score: 0

Accepted Answers:

Martensite

9) Which of the following is the most important consideration in casting? 1 point

- Melting temperature of job and mold material.
- Solubility and chemical reaction between job and mold material.
- Thermal properties of job and mold material.
- All of the above.

No, the answer is incorrect.

Score: 0

Accepted Answers:

All of the above.

10) Which of the following contraction type is observed by shrinkage allowance? 1 point

- Contraction of solid casting from freezing temperature to the room temperature.
- Contraction of liquid from pouring temperature to freezing temperature.
- Contraction associated with the change of phase from liquid to solid.
- None of these.

No, the answer is incorrect.

Score: 0

Accepted Answers:

Contraction of solid casting from freezing temperature to the room temperature.

11) Which of the following is not a type of pattern in casting? 1 point

- Cope and drag pattern.
- Match plate pattern.
- Split frame pattern.
- Skeleton pattern.

No, the answer is incorrect.

Score: 0

Accepted Answers:

Split frame pattern.

12) Which of the following is not a type of gating system in casting? 1 point

- Vertical gating.
- Bottom gating.
- Horizontal gating.
- All of the above are correct.

No, the answer is incorrect.

Score: 0

Accepted Answers:

All of the above are correct.