

NPTEL

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Courses » Fundamentals of Material Processing - I



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Unit 2 - Week 1



Course outline

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Week 1

- Lecture 01 -Introduction
- Lecture 02 -Solidification (Casting)
- Lecture 03 -Solidification (Welding)
- Lecture 04 Thermodynamics of Solidification
- Lecture 05 -Kinetics of Solidification (Homogeneous)
- Quiz : Assignment-1
- Assignment 1 Solution

Week 2

week 3

week 4

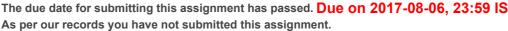
week 5

week 6

week 7

week 8

Assignment-1



- 9+
- 1) Powder metallurgy can be used for making simple two-dimensional parts but not those with 1 point
 - Uppercuts shapes
 - Undercuts or re-entrant shapes
 - Central cut shape
 - All of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

Undercuts or re-entrant shapes

2) In casting, molten metal flows generally by ______ 1 point

- Wind force
- Pressure
- Gravity
- Impact force

No, the answer is incorrect.

Score: 0

Accepted Answers:

Gravity

- 3) Advantages of Casting are: (I) Can create complex part geometries, 3-D shapes (II) Can **1 point** create both external and internal shapes and large hollow shapes (III) It is a near net shape process for small to large parts (IV) Very good mechanical strength can be obtained for as-cast component
 - III is true, but I, II and IV are not true
 - I and IV are true, but II and III are not true
 - I, II, III and IV are not true
 - I, II and III are true, but IV is not true

No, the answer is incorrect.

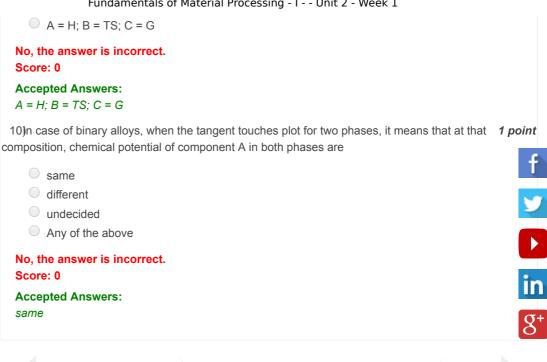
Score: 0

Accepted Answers:

I, II and III are true, but IV is not true

- 4) Cores in sand mold casting must possess these characteristics (I) Strength (II) Permeability 1 point (III) Thermal Stability (IV) Collapsibility (v) High Modulus
 - I and III is true
 - II and V is true

All are true	
○ V is not true	
No, the answer is incorrect. Score: 0	
Accepted Answers: V is not true	
5) Permanent mold casting are suitable only for	1 pc
Small scale production Prototyping	y
High volume production All types of industries	
No, the answer is incorrect. Score: 0	in
Accepted Answers: High volume production	8
6) The picture shows which type of casting	1 point
Continuous casting Investment casting	
Lost foam casting Sand mold casting	
No, the answer is incorrect. Score: 0	
Accepted Answers: Continuous casting	
7) Which of the following is not needed for atomization	1 point
 Melting of liquid Breaking of liquid droplet using gas or liquid High pressure in the chamber Collection chamber where solidified powder is collected 	
No, the answer is incorrect. Score: 0	
Accepted Answers: High pressure in the chamber	
8) Which of the following is not true regarding solidification and other first order solid state transformation	e 1 point
 Both are first order transformation Heat of transformation is very high for solidification while it is very small for SST Liquids cannot support any stresses other than hydrostatic stress, hence no strain contribution during solidification Strain energy contribution is very small for SST 	ı energy
No, the answer is incorrect. Score: 0	
Accepted Answers:	
Strain energy contribution is very small for SST	
9) In the plot shown below, which of the meaning for labels (A,B,C) is true	1 point
 A = H; B = -TS; C = G A = -H; B = TS; C = -G 	
A = -H; B = TS; C = -GA = -H; B = -TS; C = G	
, 5, 5	



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