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NPTEL

Courses » **Introduction to Materials Science and Engineering**

Announcements   **Course**   Ask a Question   Progress   FAQ

Unit 13 - Week 10 - Phase Transformations II + Mechanical Behaviour of Materials 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

Assignment 10

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

Due on 2019-04-10, 23:59 IST.

1) The lattice of martensite is _____.   **1 point**

- ○ body-centred cubic
- ○ face-centred cubic
- ○ simple tetragonal
- ○ body-centred tetragonal

No, the answer is incorrect.
Score: 0

Accepted Answers:
body-centred tetragonal

2) In the given TTT diagram for a eutectoid steel, which of the cooling curves is/are expected   **1 point**
to give tempered martensite as the final product?

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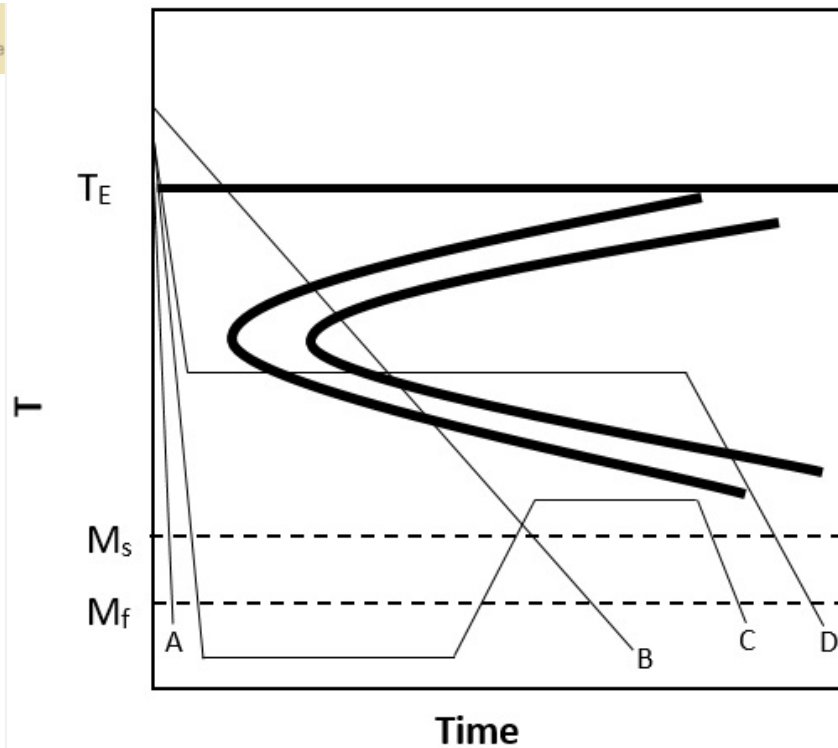
○ A, B and C

○ A, C and D

○ C alone

○ C and D

No, the answer is incorrect.
Score: 0

Accepted Answers:
C alone

3) Which of the following heat treatment processes gives bainite as the final product?   **1 point**

○ Martempering

○ Austempering

○ Normalising

○ Annealing

No, the answer is incorrect.
Score: 0

Accepted Answers:
Austempering

4) The ability of materials to resist plastic deformation is called _____.   **1 point**

○ hardness

○ stiffness

○ ductility

○ toughness

No, the answer is incorrect.
Score: 0

Accepted Answers:
hardness

Behaviour of Materials II

Week 12 - Mechanical Behaviour of Materials III + Fracture

Interactive Session

5) Which of the following describes the nature of residual stresses generated due to quenching?   *1 point*

- ○ Tensile stresses throughout the cross section
- ○ Compressive stresses throughout the cross section
- ○ Tensile stresses on the surface but compressive inside
- ○ Compressive stresses on the surface but tensile inside

No, the answer is incorrect.
Score: 0

Accepted Answers:
Tensile stresses on the surface but compressive inside

6) Which of the following properties of a single crystal is independent of the loading direction? *1 point*

- ○ Critical resolved shear stress
- ○ Young's modulus
- ○ Yield strength
- ○ Poisson's ratio

No, the answer is incorrect.
Score: 0

Accepted Answers:
Critical resolved shear stress

7) The close packed directions in a crystal of α-ferrite are _____.   *1 point*

- ○ directions of type <100>
- ○ directions of type <211>
- ○ directions of type <110>
- ○ directions of type <111>

No, the answer is incorrect.
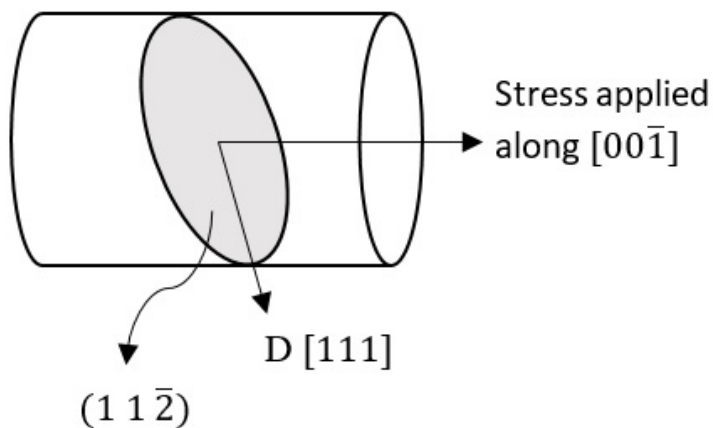**Score: 0**

Accepted Answers:
directions of type <111>

8) Calculate the Schmid factor along the direction D shown in figure.   *1 point*

- ○ $\sqrt{\dfrac{2}{3}}$
- ○

$$\frac{\sqrt{2}}{6}$$

○

$$\frac{\sqrt{2}}{3}$$

○

$$\frac{1}{\sqrt{3}}$$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$$\frac{\sqrt{2}}{3}$$

9) Area under the stress-strain curve gives _____.   *1 point*

○ hardness

○ ductility

○ critical resolved shear stress

○ toughness

No, the answer is incorrect.
Score: 0

Accepted Answers:
toughness

10) "Slipping and twinning are mechanisms for elastic deformation." True/False?   *1 point*

○ True

○ False

No, the answer is incorrect.
Score: 0

Accepted Answers:
False

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