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reviewer4@nptel.iitm.ac.in ▾

**NPTEL** (<https://swayam.gov.in/explorer?ncCode=NPTEL>) » **Fundamentals of Surface Engineering: Mechanisms, Processes and Characterizations (course)**

Announcements (announcements)

**About the Course** ([https://swayam.gov.in/nd1\\_noc19\\_me69/preview](https://swayam.gov.in/nd1_noc19_me69/preview)) Ask a Question (forum)

Progress (student/home) Mentor (student/mentor)

## Unit 3 - Week 2

### Course outline

#### How to access the portal

#### Week 1

#### Week 2

- Comparison of surface modification techniques and scope of surface engineering (unit? unit=12&lesson=13)
- Scope of surface engineering I (unit? unit=12&lesson=14)
- Surface properties for wear and friction resistance I (unit? unit=12&lesson=15)

## Assignment No. 2

The due date for submitting this assignment has passed. **Due on 2019-08-21, 23:59 IST.**  
As per our records you have not submitted this assignment.

- 1) Most suitable method for surface hardening of thin sheets of hardenable steels is **1 point**
- Flame hardening
  - Induction hardening
  - Plasma hardening
  - Laser beam hardening
- No, the answer is incorrect.  
Score: 0  
Accepted Answers:  
*Laser beam hardening*
- 2) The method that gives best surface finish after surface modification is **1 point**
- Roll bonding
  - Burnishing
  - Shot peening
  - Induction hardening
- No, the answer is incorrect.  
Score: 0  
Accepted Answers:  
*Induction hardening*
- 3) Surface modified technique involving melting of both the substrate & coating material is **1 point**

Surface properties for wear and friction resistance II (unit? unit=12&lesson=16)

Surface properties for wear and friction resistance III (unit? unit=12&lesson=17)

**Quiz : Assignment No. 2 (assessment? name=95)**

Solution for Assignment No. 2 (unit? unit=12&lesson=109)

**Week 3**

**Week 4**

**Week 5**

**Week 6**

**Week 7**

**Week 8**

**Week 9**

**Week 10**

**Week 11**

**Week 12**

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- Shot peening
- Flame hardening
- Laser cladding
- HVOF spraying

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*Laser cladding*

4) Properties mandatory for designing of gear teeth are **1 point**

- Hardness
- Fatigue resistance
- Toughness
- All of the above

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*All of the above*

5) Unit of surface energy is **1 point**

- $J/mm^3$
- $J/m^3$
- $J/m^2$
- $J-m^2$

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
 *$J/m^2$*

6) Choose the correct statement(s) **1 point**

- I. Surface energy required for covalent bond is 100 to 500 MJ/m<sup>2</sup>
- II. Surface energy required for ionic bond is 1000-3000 MJ/m<sup>2</sup>
- III. Surface energy required for molecular bond is < 100 MJ/m<sup>2</sup>

- I & II
- II & III
- III
- I, II & III

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*III*

7) Chemistry of the substrate is modified during **1 point**

- Thermal spraying
- Burnishing
- Nitriding
- Laser Hardening

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*Nitriding*

8) Choose the correct statement, regarding improvement of wear resistance in surface modification by changing the chemical composition

**1 point**

- I. Low stacking fault energy (SFE) results in low wear resistance.
- II. High SFE results in high wear resistance
- III. Low SFE results in high wear resistance
- IV. Presence of discrete hard micro constituents increases wear resistance

- I & IV
- II & IV
- III & IV
- Only IV

No, the answer is incorrect.

Score: 0

Accepted Answers:

*III & IV*

9) The mechanical properties/adhesive wear resistance affected by shape & size of grains are

**1 point**

- I. Surface energy
- II. Yield strength
- III. Hardness
- IV. Cracking tendency

- I & II
- I, II & III
- I & III
- I, II, III & IV

No, the answer is incorrect.

Score: 0

Accepted Answers:

*I, II, III & IV*

10) Surface roughness increases tendency of

**1 point**

- Stress Corrosion Cracking
- Wear
- Surface Fatigue
- All of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

*All of the above*

