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NPTEL

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Courses » Surface Engineering for Corrosion and Wear Resistance Application

Announcements **Course** Ask a Question Progress FAQ

Unit 4 - Week 2 :

Register for
Certification exam

Course outline

How to access
the portal

Week 0 :

Week 1 :

Week 2 :

● Lecture 07 :
Surface
Dependent
Properties and
Surface
initiated
Degradation

● Lecture 08 :
Fatigue

● Lecture 09 :
Wear Part-I

● Lecture 10 :
Wear Part-II

● Lecture 11 :
Wear Part-III

● Lecture
Materials

○ Quiz :
Assignment 2

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Week 2

Week 3 :

Assignment 2

The due date for submitting this assignment has passed.

As per our records you have not submitted this assignment. **Due on 2019-02-13, 23:59 IST.**

1) Which of the surface plane is having lowest energy in copper: **1 point**

- a. (111)
 b. (110)
 c. (100)
 d. (200)

No, the answer is incorrect.

Score: 0

Accepted Answers:

a. (111)

2) Which of the following phenomenon is not surface energy driven ? **1 point**

- a. Adsorption
 b. Reconstruction
 c. Relaxation
 d. Surface roughness

No, the answer is incorrect.

Score: 0

Accepted Answers:

d. Surface roughness

3) Beilby layer is basically: **1 point**

- a. A worked layer with a thickness of 1-100 micrometer
 b. An oxide layer with a thickness of 10-100 nm
 c. The thin adsorbed layer on the surface
 d. An amorphous layer on top of severely cold worked layer with a thickness of 1-100 nm

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Week 7 :
Week 8 :
Week 9 :
Week 10 :
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Week 12 :
Supplementary Lecture Slides
DOWNLOAD VIDEOS
Solution
Interaction Session

a. Talc, Magnesium, Copper, Diamond

b. Magnesium, Copper, Talc, Diamond

c. Copper, Talc, Diamond, Magnesium

d. Talc, Copper, Magnesium, Diamond

No, the answer is incorrect.
Score: 0

Accepted Answers:
a. Talc, Magnesium, Copper, Diamond

5) Fatigue failure may be minimized by: **1 point**

a. Introducing surface roughness

b. Introducing residual compressive stress on the surface

c. Applying a thin and hard coating by physical vapor deposition

d. Electropolishing the surface

No, the answer is incorrect.
Score: 0

Accepted Answers:
b. Introducing residual compressive stress on the surface

6) Wear may be defined as _____ damage of material from the surface by the action of relative motion with another surface: **1 point**

a. Brittle

b. Catastrophic

c. Bulk Initiated.

d. Surface initiated

No, the answer is incorrect.
Score: 0

Accepted Answers:
d. Surface initiated

7) Archards equation relates wear rate with: **1 point**

a. Materials parameters

b. Hardness, sliding distance, and load

c. Magnitude and vector of stress

d. Toughness of material

No, the answer is incorrect.
Score: 0

Accepted Answers:
b. Hardness, sliding distance, and load

8) The wear suffered by structural components experiencing hypersonic rate of fluid interaction is called: **1 point**

a. Impingement erosion

b. Fretting wear

c. Low stress wear

d. Abrasive wear

No, the answer is incorrect.

Score: 0

Accepted Answers:

a. Impingement erosion

9) In abrasive wear, the wear rate increases with increase in:

1 point

- a. Sharpness and hardness of the abradant
- b. Increase in hardness of the substrate surface
- c. Decrease in sliding distance
- d. Decrease in normal load



No, the answer is incorrect.

Score: 0

Accepted Answers:

a. Sharpness and hardness of the abradant



10) Mechanism of high stress abrasion is by:

1 point

- a. Plastic deformation, subsurface cracking and pitting
- b. Scratching
- c. Compressive failure
- d. Combined action of stress and corrosion



No, the answer is incorrect.

Score: 0

Accepted Answers:

a. Plastic deformation, subsurface cracking and pitting

11) The probability of gouging wear of a hammer made of tool steel may be reduced by:

1 point

- a. Chromium plating
- b. Galvanizing
- c. Thin film of titanium nitride coating
- d. Applying a thick manganese steel cladding or hard facing

No, the answer is incorrect.

Score: 0

Accepted Answers:

d. Applying a thick manganese steel cladding or hard facing

12) Which of the following consists of at least one dissimilar property in the group?

1 point

- a. Mass of particle impinged on the surface
- b. Inversely proportional to velocity of particle
- c. Inversely proportional to mass of particle
- d. Proportional to hardness of the substrate surface

No, the answer is incorrect.

Score: 0

Accepted Answers:

a. Mass of particle impinged on the surface

13) The probability of slurry erosion of cast iron pipeline may be minimized by:

1 point

- a. Plastic lining
- b. Galvanizing
- c. Anodizing

d. Carburizing

No, the answer is incorrect.

Score: 0

Accepted Answers:

a. Plastic lining

14) Seizure is a kind of:

1 point

- a. Abrasive wear
 b. Erosive wear
 c. Fatigue wear
 d. Adhesive wear



No, the answer is incorrect.

Score: 0

Accepted Answers:

d. Adhesive wear



15) State the kind of wear usually encountered by hammer heads:

1 point

- a. Impact wear
 b. Pitting wear
 c. Galling wear
 d. Impingement erosion

No, the answer is incorrect.

Score: 0

Accepted Answers:

a. Impact wear

16) The mechanism of low stress abrasion involves:

1 point

- a. Ploughing action
 b. Deformation
 c. Deformation and subsurface crack formation
 d. Pitting

No, the answer is incorrect.

Score: 0

Accepted Answers:

a. Ploughing action

17) The mechanism of solid particle impingement is:

1 point

- a. Continuous impact of solid particle on the surface associated plastic deformation, craters formation, and removal of material in the form of microchip
 b. Cold welding
 c. Scratching
 d. Impacting

No, the answer is incorrect.

Score: 0

Accepted Answers:

a. Continuous impact of solid particle on the surface associated plastic deformation, craters formation, a removal of material in the form of microchip

18) Fretting motion may be defined as:

1 point

- a. Motion under fluctuating load
- b. Sliding motion
- c. Oscillatory motion of very small magnitude
- d. Linear motion associated along with impact loading

No, the answer is incorrect.

Score: 0

Accepted Answers:

c. Oscillatory motion of very small magnitude



19) Lubrication is easiest way of mitigation of the following wear:

1 point

- a. Adhesive wear
- b. Erosive wear
- c. Fatigue wear
- d. Abrasive wear



No, the answer is incorrect.

Score: 0

Accepted Answers:

a. Adhesive wear

20) Which of the following wear falls under abrasive category?

1 point

- a. Pitting wear
- b. Galling wear
- c. Gouging wear
- d. Erosion

No, the answer is incorrect.

Score: 0

Accepted Answers:

c. Gouging wear

21) Which of the following wear does not cause loss of materials?

1 point

- a. Spalling
- b. Fretting
- c. Seizure
- d. Oxidative

No, the answer is incorrect.

Score: 0

Accepted Answers:

c. Seizure

22) Which of the following component usually encounters cavitation wear?

1 point

- a. Abrasive Blasting
- b. Mineral handling equipment
- c. Marine ship propeller
- d. Slurry Pipelines

No, the answer is incorrect.

Score: 0

Accepted Answers:

c. Marine ship propeller

23) Which kind of wear is usually experienced by mild steel sheets transported in railway track? **1 point**

- a. Fretting wear
- b. Abrasive wear
- c. Gouging wear
- d. Spalling



No, the answer is incorrect.

Score: 0

Accepted Answers:

a. Fretting wear



24) Which of the following wear is usually experienced by hard chromium plated camshaft? **1 point**

- a. Spalling
- b. High Stress Abrasion
- c. Impact wear
- d. Brinelling



No, the answer is incorrect.

Score: 0

Accepted Answers:

a. Spalling

25) Which kind of wear causes smoothening of surface? **1 point**

- a. Polishing wear
- b. Gouging wear
- c. Slurry erosion
- d. Low stress abrasion

No, the answer is incorrect.

Score: 0

Accepted Answers:

a. Polishing wear

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