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Exam: Corrosion and Materials

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QUESTIONS & ANSWERS

DEMO VERSION

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(LIMITED CONTENT)

Version: 6.0

Question: 1

_____ is a change in the microstructure of certain carbon steels and 0.5 Mo steels after long term operation in the 800° F to 1100° F range.

- A. Graphitization
- B. Softening
- C. Temper Embrittlement
- D. Creep

Answer: A

Question: 2

What structure is 304 stainless steel?

- A. Martensitic
- B. Austenitic
- C. Duplex
- D. Ferritic

Answer: B

Question: 3

_____ is the result of cyclic stress caused by variations in temperature.

- A. Creep
- B. Thermal Fatigue
- C. Cyclic Cracking
- D. Stress Corrosion Cracking

Answer: B

Question: 4

General or localized corrosion of carbon steels and other metals caused by dissolved salts, gases, organic compounds or microbiological activities is called _____.

- A. Flue Gas Corrosion
- B. Atmospheric Corrosion
- C. Cooling Water Corrosion
- D. None of the Above

E. All of the Above

Answer: C

Question: 5

What structure is 410 stainless steel?

- A. Martensitic
- B. Austenitic
- C. Duplex
- D. Ferritic

Answer: A

Question: 6

The sudden rapid fracture under stress (residual or applied) where the material exhibits little or no evidence of ductility or plastic deformation is called _____.

- A. 885° F Embrittlement
- B. Temper Embrittlement
- C. Stress Corrosion Cracking
- D. Brittle Fracture

Answer: D

Question: 7

What structure is 409 stainless steel?

- A. Martensitic
- B. Austenitic
- C. Duplex
- D. Ferritic

Answer: D

Question: 8

Low alloy steels contain a maximum of _____ chrome.

- A. 5%
- B. 6%
- C. 7.5%
- D. 9%

Answer: D

Question: 9

Which of the following can be affected by 885° F Embrittlement?

- A. 410 SS
- B. 430 SS
- C. 308 SS
- D. Alloy 2205
- E. A, B and D

Answer: E

Question: 10

For 5Cr-0.5Mo, what is the threshold temperature for creep?

- A. 500° F
- B. 800° F
- C. 600° F
- D. 700° F

Answer: B

Question: 11

_____ has been a major problem on coke drum shells.

- A. Thermal fatigue
- B. Stress cracking
- C. Erosion
- D. Temper embrittlement

Answer: A

Question: 12

Thermal fatigue cracks propagate _____ to the stress and are usually dagger shaped, transgranular and oxide-filled.

- A. Axial
- B. Diagonal
- C. Transverse
- D. Angular

Answer: C

Question: 13

Inspection for wet H₂S damage generally focuses on _____ and _____.

- A. Weld seams
- B. Nozzles
- C. Trays
- D. Down comers
- E. A and B

Answer: E

Question: 14

_____ is a form of erosion caused by the formation and instantaneous collapse of innumerable tiny vapor bubbles.

- A. Condensate corrosion
- B. Cavitation
- C. Dew-Point corrosion
- D. Atmospheric corrosion

Answer: B

Question: 15

With CUI, corrosion rates _____ with increasing metal temperatures up to the point where the water evaporates quickly.

- A. Decrease
- B. Increase
- C. Stay the same
- D. None of the above

Answer: B

Question: 16

Which of the following metals is the most anodic?

- A. Zinc
- B. Carbon Steel
- C. Nickel

D. Monel

Answer: A

Question: 17

Cracking of dissimilar weld metals occurs on the _____ side of a weld between an austenitic and a Ferritic material operating at high temperatures.

- A. Austenitic
- B. Ferritic
- C. Anodic
- D. Cathodic

Answer: B

Question: 18

Soil to Air interface areas are usually more susceptible to corrosion than the rest of the structure because of _____ and _____ availability.

- A. Moisture
- B. Bacteria
- C. Oxygen
- D. B and C
- E. A and C

Answer: E

Question: 19

Carburization can be confirmed by substantial increases in _____ and loss of _____.

- A. Hardness
- B. Tensile Strength
- C. Ductility
- D. A and B
- E. A and C

Answer: E

Question: 20

Liquid metal embrittlement can occur if 300 Series SS comes in contact with molten _____.

- A. Copper

- B. Mercury
- C. Zinc
- D. Lead

Answer: C

Question: 21

Cracks that are typically straight, non-branching, and devoid of any associated plastic deformation are likely associated with which type of failure?

- A. Stress corrosion cracking
- B. Brittle fracture
- C. Thermal fatigue
- D. Temper embrittlement

Answer: B

Question: 22

At high temperatures, metal components can slowly and continuously deform under load below the yield strength. This time dependent deformation of stressed components is known as _____?

- A. Creep
- B. Ductility
- C. Softening
- D. Hardening

Answer: A

Question: 23

Permanent deformation occurring at relatively low stress levels as a result of localized overheating is called _____.

- A. Stress cracking
- B. Brittle fracture
- C. Temper embrittlement
- D. Stress rupture

Answer: D

Question: 24

_____ usually occurs when a colder liquid contacts a warmer metal surface.

- A. Brittle fracture
- B. Thermal fatigue
- C. Thermal shock
- D. Stress rupture

Answer: C

Question: 25

Nickel based alloys usually contain _____ nickel.

- A. $\geq 30\%$
- B. $\geq 20\%$
- C. $\geq 10\%$
- D. $\geq 12\%$

Answer: A

Question: 26

_____ is a change in the microstructure of certain carbon steels and 0.5Mo steels after long-term operation in the 800° F to 1100° F range that may cause a loss in strength, ductility and/or creep resistance.

- A. Embrittlement
- B. Carburization
- C. Graphitization
- D. Sensitization

Answer: C



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