Corrosion and Materials Professional

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

A. Graphitization

B. Softening

C. Temper Embrittlement

D. Creep

Answer(s): A

---

2. What structure is 304 stainless steel?

A. Martensitic

B. Austenitic

C. Duplex

D. Ferritic

Answer(s): B

---

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(s): B

---

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(s): C

---

5. What structure is 410 stainless steel?

A. Martensitic

B. Austenitic

C. Duplex

D. Ferritic

Answer(s): A

---

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. 885º F Embrittlement

B. Temper Embrittlement

C. Stress Corrosion Cracking

D. Brittle Fracture

Answer(s): D

---

7. What structure is 409 stainless steel?

A. Martensitic

B. Austenitic

C. Duplex

D. Ferritic

Answer(s): D

---

8. Low alloy steels contain a maximum of _____ chrome.

A. 5%

B. 6%

C. 7.5%

D. 9%

Answer(s): D

---

9. Which of the following can be affected by 885º F Embrittlement?

A. 410 SS

B. 430 SS

C. 308 SS

D. Alloy 2205

E. A, B and D

Answer(s): E

---

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

A. 500º F

B. 800º F

C. 600º F

D. 700º F

Answer(s): B

---

11. _____ has been a major problem on coke drum shells.

A. Thermal fatigue

B. Stress cracking

C. Erosion

D. Temper embrittlement

Answer(s): A

---

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(s): C

---

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(s): E

---

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(s): B

---

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(s): B

---

16. Which of the following metals is the most anodic?

A. Zinc

B. Carbon Steel

C. Nickel

D. Monel

Answer(s): A

---

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(s): B

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(s): E

---

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(s): E

---

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

A. Copper

B. Mercury

C. Zinc

D. Lead

Answer(s): C