

510 examination sample items

SAMPLE API-510 Exam Items

The items below are examples of what an exam item might look like. If you have questions about an item or disagree with the answer, please email us at inspector@api.org and we will forward to one of our subject matter experts.

Correct Answer: 4

A. The nondestructive examination method to be used for a particular inspection should be determined by the:

1. availability of certified NDE examiners.
2. length of time since the last inspection.
3. age of the component to be inspected.
4. type, location, and orientation of the expected flaws.

Correct Answer: 3

B. In planning for an internal inspection of a vessel that has contained acidic corrodents, what type and location of corrosion would you expect to find on the vessel shell, away from the welds?

1. Hydrogen blistering in the vapor space
2. Hydrogen embrittlement in the vapor space
3. Hydrogen blistering near the liquid level
4. Hydrogen embrittlement below the liquid level

Correct Answer: 1

C. A pressure vessel is scheduled for pneumatic testing using the methodology of ASME Code, Section VIII, Division 1, with the maximum allowable working pressure = 635 psig at 375° F. The vessel is constructed of SA-516 Gr. 65 material and is neither enameled nor lined. The test metal temperature will be a minimum of 50° F, per the owner's specifications. How many pressurization steps are needed to achieve the minimum required test pressure, and at what minimum pressure will the visual examination be performed?

1. 6 steps; 635 psig
2. 6 steps; 793.75 psig
3. 9 steps; 635 psig
4. 9 steps; 793.75 psig

Correct Answer: 4

D. The principal reason for inspecting a pressure relief device is to determine:

1. the remaining life.
2. the spring coil diameter.
3. the body thickness.
4. if it is functioning properly.

Correct Answer: 1

E. A pressure vessel has been in service for 12 years and has a history of corrosion over its service life. The original thickness was 1.9375 inches; the current thickness is 1.405 inches. What is the corrosion rate for this vessel?

1. 0.044 inch per year
2. 0.089 inch per year
3. 0.266 inch per year
4. 0.532 inch per year

Correct Answer: 3

F. What can be done to extend the life of a vessel with a corroded area in the shell plate 6 inches from the weld, a joint efficiency of less than 1, and a corrosion thickness currently near the minimum required thickness?

1. Recalculate t minimum for current operating conditions using $E < 1$.
2. Recalculate t minimum for current operating conditions using $E = 1$.
3. Recalculate t minimum for design conditions using $E = 1$.
4. Monitor the thickness during the run.

Correct Answer: 2

G. Temporary repairs to pressure vessels:

1. must be replaced with permanent repairs during the next scheduled shutdown.
2. may remain in place for long periods if approved by the pressure vessel engineer.
3. may remain in place for long periods if approved by the API-authorized pressure vessel inspector.
4. may remain in place permanently if approved by the pressure vessel engineer and the API authorized pressure vessel inspector.

Correct Answer: 2

H. Who must be consulted before the repair of a crack at a discontinuity where stress concentrations may be serious?

1. The owner-user
2. The pressure vessel engineer
3. The National Board inspector
4. The vessel manufacturer

Correct Answer: 4

I. The WPS and the PQR are used to determine:

1. if the welder is able to deposit sound weld metal.
2. if the welder is able to operate welding equipment.
3. the welder's ability to produce welds that are radiographically free of defects.
4. if a weldment has the required properties for the intended application.

Correct Answer: 3

J. In a certain arc welding process, coalescence of metals is produced by an arc between a tungsten electrode and the work, and shielding is obtained from a gas or gas mixture. Both pressure and filler metal may or may not be used. This process is called:

1. FCAW.
2. GMAW.
3. GTAW.
4. SAW.