

API-510 Examination Preparation Course
Practice Exam #3 – Closed Book

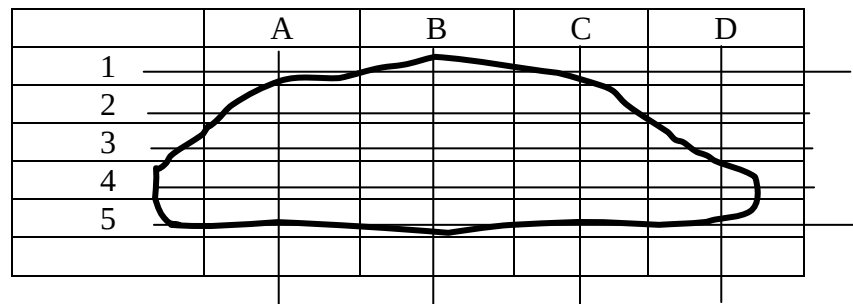
1. An inspector evaluating thickness measurements taken on a pressure vessel discovers indications of corrosion at only one of the corrosion monitoring locations. What should the inspector do?
 - a) Calculate a new corrosion rate for the vessel, based on the single location
 - b) Take more measurements in the corroded area, to define the extent of corrosion
 - c) Ask that another inspector re-take the measurement
 - d) Disregard the measurement because the rest did not indicate corrosion
2. Which of the following is responsible for maintaining the records of qualified WPSs and PQRs used during repairs and alterations?
 - a) The owner/operator inspection organization
 - b) The engineer
 - c) The Inspector
 - d) The repair organization
3. When four pressure relief valves on the fractionator of a fluid catalytic cracking unit are removed for testing while the unit is in service, the inspector notices that the inlets are heavily coked. There are two pressure relief valves with manual bypasses on an NPS 10 pipe header with block valves on their inlets and outlets. Which of the following should be performed?
 - a) Hammer test the inlet and outlet piping of the pressure relief valves to see if any thinning can be detected
 - b) Take radiographs of the header and related piping of the pressure relief valves and inspect the system at the next shutdown of the tower
 - c) Require that the tower be shut down immediately and all of the pressure relief valves and the related piping be removed for cleaning
 - d) The header and the inlet and outlet piping of the pressure relief valves should be thoroughly tested for thickness using ultrasonic examination
4. A pressure vessel has been in non-continuous service for 15 years. During this time, it has been filled three times, for two years at a time, and then internally inspected. The last internal inspection determined that the vessel had a remaining life of nine years. When is the next inspection due?
 - a) Before 4.5 years of actual service
 - b) Before 5 years of actual service
 - c) Before 9 years of actual service
 - d) Before a maximum of 10 years of actual service

API-510 Examination Preparation Course
Practice Exam #3 – Closed Book

5. In conducting an external visual inspection of an insulated pressure vessel, removal of insulation is not necessary if the temperature of the entire vessel shell is:
 - a) Maintained sufficiently high or sufficiently low to prevent condensation of moisture
 - b) Maintained sufficiently high or sufficiently low to allow condensation of moisture
 - c) Maintained relatively constant
 - d) Within $\pm$ ten percent of the ambient temperature
6. On a pressure vessel with a nozzle welded to external piping, where does the scope of ASME Section VIII terminate?
 - a) The face of the low-pressure side of the first block valve
 - b) The first circumferential weld past the first elbow in the pipe
 - c) Eight inches from the shell of the vessel
 - d) The first circumferential joint for welded connections
7. Where should an external inspection of a pressure vessel begin?
 - a) Anchor bolts, foundation, and supports
 - b) Ladders, stairways, platforms, or walkways
 - c) External paint and insulation
 - d) Nozzles and manways
8. What is the cause or rejection of a radiograph due to a “B” image on a film?
 - a) Any “B” image
 - b) No image
 - c) A light “B” image
 - d) A dark “B” image
9. Which of the following best defines “temper embrittlement”?
 - a) Increase in ductility and notch toughness due to postweld heat treatment (PWHT) or high-temperature service above 120°F (49°C)
 - b) Loss of ductility and notch toughness due to PWHT or low-temperature service below 120°F (49°C)
 - c) Loss of ductility and notch toughness due to PWHT or high-temperature service above 700°F (370°C)
 - d) Increase in ductility and notch toughness due to PWHT or high-temperature service above 700°F (370°C)

API-510 Examination Preparation Course
Practice Exam #3 – Closed Book

10. What is the most appropriate action when a large vessel and its structural supports are designed inadequately for a hydrostatic test?
- Provide additional temporary supports and then conduct the hydrostatic test
 - Substitute a vacuum (negative pressure) test at 1.5 times the operating pressure
 - Consider substituting a pneumatic test for the hydrostatic test
 - Perform 100% volumetric examination of all welds in lieu of a hydrostatic test
11. When placing a new vessel in service, what would be a purpose of reviewing previous inspection reports of a vessel in similar service?
- Ensure estimated corrosion rates are accurate
 - Ensure pressure relief valves have been installed prior to placing the vessel in service
 - Ensure required pressure tests have been performed
 - Thickness reading have been taken every 1000 hours of service
12. A generally corroded area is found in the wall of a 96-inch-diameter pressure vessel. The corroded area is scanned and thicknesses are measured in the following grid pattern:



Thickness readings (inches) for the two thinnest areas are:

Line A		Line C
1 = 0.76		1 = 0.76
2 = 0.66		2 = 0.64
3 = 0.61		3 = 0.60
4 = 0.58		4 = 0.62
5 = 0.73		5 = 0.75

Which average thickness should be used in evaluating the vessel's pressure rating?

- 0.618 inch
- 0.668 inch
- 0.674 inch
- 0.554 inch

API-510 Examination Preparation Course
Practice Exam #3 – Closed Book

13. Which of the following is not suitable for determining the thickness of a part?
- a) Ultrasonic shear wave
 - b) Profile radiography
 - c) Ultrasonic straight beam
 - d) Ultrasonic “A” scan
14. In Magnetic Particle examination, the unit’s meter reading shall not deviate by more than ____ of full scale, relative to the actual current value as shown by the test meter.
- a) The unit’s meter reading shall not deviate more than $\pm 30\%$
 - b) The unit’s meter reading shall not deviate more than $\pm 20\%$
 - c) The unit’s meter reading shall not deviate more than $\pm 10\%$
 - d) The unit’s meter reading shall not deviate more than $\pm 00\%$
15. Which of the following is a true statement regarding vessels equipped with removable internals?
- a) Internals need not be removed provided reasonable assurance exists that there is no damage behind them
 - b) All internals must always be removed for thorough examination of the base material behind them
 - c) One fourth of the internals must be removed to determine probable damage behind them
 - d) One half of the internals must be removed to determine probable damage behind them
16. In ultrasonic examination, the maximum scanning speed shall be:
- a) Not more than six inches per minute
 - b) Stated in the procedure
 - c) Determined by the technician based on environmental conditions
 - d) Not more than six inches per second
17. Which of the following terms refers to breaks in nonmetallic linings or coatings?
- a) Laminations
 - b) Holidays
 - c) Bulges
 - d) Disbonding

API-510 Examination Preparation Course
Practice Exam #3 – Closed Book

18. Materials that are to be used for repairs or alterations of pressure vessels should be identified. What type of material requires a material test report (MTR)?
- a) Forged manway cover
 - b) Seamless pipe
 - c) Welded pipe
 - d) Plate
19. What is/are the major factor(s) for determining the degree of surface preparation for an internal visual inspection?
- a) The material of construction
 - b) The type and location of the deterioration expected
 - c) The process fluid
 - d) The normal operating temperature and pressure
20. A vessel has been in service for ten years, the original shell thickness was 1.437" and the vessel received 100% RT during fabrication. The required thickness is determined to be 1.175" and the measured thickness is 1.25", after ten years of operation. What is the remaining life of this vessel?
- a) Ten years
 - b) Five years
 - c) Four years
 - d) Two years
21. Which of the following tests would best determine the overall condition of the bolting when the external inspection of a vessel reveals that the anchor bolts are corroding?
- a) Hammer testing
 - b) Radiography
 - c) Visual inspection
 - d) Scrapping rust from a nut
22. Which of the following heads will normally require the greatest wall thickness for the same design conditions?
- a) Torispherical
 - b) 2:1 elliptical
 - c) Hemispherical
 - d) Flat head

API-510 Examination Preparation Course
Practice Exam #3 – Closed Book

23. A welder is trying to qualify for all positions by welding a six inch pipe coupon. Which of the following positions are required to accomplish this?
- a) 1G and 2G
 - b) 1G and 3G
 - c) 2G and 3G
 - d) 2G and 5G
24. When the probable corrosion rate cannot be determined, how is the corrosion rate determined for a vessel when the service conditions are changed?
- a) The owner/user's metallurgist
 - b) On-stream corrosion data gathered after one month of service
 - c) On-stream corrosion data gathered after six weeks of service
 - d) On-stream corrosion data gathered after six months of service
25. A vessel has been in service for five years and current thickness measurements reveal the shell thickness to be .82" and inspection records indicate the original thickness was .875". What is the corrosion rate based on the shell thickness provided?
- a) 0.011 inch per year
 - b) 0.011 mill per year
 - c) 0.055 inch per year
 - d) 0.055 mil per year
26. The minimum required thickness of a vessel is calculated to be .55", current inspections determine it to be 0.82" thick, and it has a corrosion rate of .015" per year. What is the remaining life of the vessel?
- a) 18 years
 - b) 21.6 years
 - c) 10 years
 - d) 9 years
27. Controlled deposition welding may be used in lieu of PWHT when notch toughness is not required and:
- a) When the original material is P-1 or P-3
 - b) Only when the MDMT of the material is -20°F
 - c) When the vessel has undergone PWHT
 - d) When electric resistance coils are not available

API-510 Examination Preparation Course
Practice Exam #3 – Closed Book

28. Which of the following types of corrosion best describes corrosion that takes place at the point of contact between a metal and nonmetal or between two pieces of metal?
- a) Conductivity corrosion
 - b) Environmental corrosion
 - c) Biological corrosion
 - d) Crevice corrosion
29. Internal inspection reveals a convex bulge on a seamless ellipsoidal head where the metal has pulled into the vessel between the head to shell weld and the knuckle of the head. Of the following, which would be the most likely recommendation?
- a) Determine the extent of the bulge or blister
 - b) Replace the head
 - c) Ventilate the bulged area
 - d) Pressure test the vessel
30. Which of the following is not required during an internal inspection of a horizontal pressure vessel?
- a) All personnel inside the vessel must be in a harness with a safety line to the manway
 - b) A safety person should be posted outside the vessel manway closest to where the work is going on in the vessel
 - c) All personnel working around the vessel should be informed of the work inside the vessel
 - d) All personnel inside the vessel should be informed before any work starts outside of the vessel
31. Based on the following, what is the remaining life of this pressure vessel?
- | | |
|----------------------------|-----------------|
| Original thickness | 0.6875" |
| Actual thickness | 0.638" |
| Minimum required thickness | 0.513" |
| Corrosion rate | 0.017" per year |
- a) 3.68 years
 - b) 5.13 years
 - c) 7.35 years
 - d) 10.26 years

API-510 Examination Preparation Course
Practice Exam #3 – Closed Book

32. A hydrostatic test is to be performed on the piping on the discharge side of a pressure relief device. Which of the following is correct regarding blinding/blanking?
- a) Blinds need not be installed
 - b) Blinds should be installed between the vessel nozzle and the pressure relief device
 - c) Blinds should be installed between the pressure relieving device discharge flange and the pipe flange
 - d) Blinds should be installed wherever it is most accessible or convenient
33. Which of the following tests are always required to qualify a groove weld WPS?
- a) Tension and Charpy
 - b) Tension and bend
 - c) Radiographic and bend
 - d) Radiographic and ultrasonic
34. What is the maximum permitted carbon content when welding carbon and low-alloy steels?
- a) 0.15%
 - b) 0.25%
 - c) 0.35%
 - d) 0.45%
35. Bulges and buckling in the metallic lining of a pressure vessel would normally indicate:
- a) A leak in the lining or attachment welds
 - b) Accelerated corrosion of the parent metal
 - c) The lining material is not compatible with the process
 - d) An oversized lining was installed
36. What does a pH of (1) indicate?
- a) Neutrality
 - b) Strong alkalinity
 - c) Strong acidity
 - d) Moderate acidity
37. What is the maximum interval of pressure relief device testing in typical process service?
- a) One year
 - b) Five years
 - c) Ten years
 - d) Fifteen years

API-510 Examination Preparation Course
Practice Exam #3 – Closed Book

38. Pressure tests must be performed on pressure vessels that have been in service when:
- a) The vessels is opened for internal inspection
 - b) The inspector deems it necessary
 - c) Repairs or alterations have been performed
 - d) The vessel is rerated to a higher pressure
39. An internal inspection has been performed on a pressure vessel after five years of service and the remaining life is calculated to be twenty-four years. When should the next internal inspection be scheduled?
- a) Twenty-four years
 - b) Twelve years
 - c) Ten years
 - d) Five years
40. Which of the following is not an acceptable source of information for establishing the identification of vessel flange materials for an alteration?
- a) Shipping receipt from a certified supplier
 - b) Original MTRs
 - c) Flange markings
 - d) Chemical analysis and mechanical tests of physical specimens
41. The potential for galvanic corrosion increases when which of the following occurs?
- a) Dissimilar metals are insulated
 - b) A relatively large volume of anodic material is used
 - c) Both metals are coated
 - d) Metals from opposite ends of the galvanic series are combined
42. A 125 feet high pressure vessel is to be hydrostatically tested. What is the pressure at the top of the vessel if a pressure of 169.5psig is registered on a gage located 45 feet from the top and another gage, located 100 feet from the top registers 193.5psig? (1 foot of water = 0.433psi)
- a) 204psi
 - b) 189psi
 - c) 150psi
 - d) 140psi

API-510 Examination Preparation Course
Practice Exam #3 – Closed Book

43. Weep holes in reinforcement plates should remain open to provide visual evidence of leakage. What other purpose do they serve?
- a) Prevent pressure build up in the cavity
 - b) Allow for differential thermal growth
 - c) Provide thickness measurement locations under the plate
 - d) Provide visual access to the shell under the plate
44. A vessel has been in service for five years and current thickness measurements reveal the shell thickness to be .82" and inspection records indicate the required thickness is .545". When is the next required internal inspection due if the corrosion rate is 0.018" per year?
- a) 7.6 years
 - b) 9.1 years
 - c) 10 years
 - d) 15.2 years
45. When may a crack in a welded joint be repaired by welding?
- a) Only after nondestructive testing and inspection has been performed
 - b) Only after a fitness for service analysis has been conducted
 - c) Only after hydrogen bake out of the area is completed
 - d) Only after obtaining authorization by the inspector
46. Which of the following is referenced by ASME Section VIII for qualification of personnel performing radiography?
- a) ASNT SNT-TC-1A
 - b) Manufacturer's policies
 - c) ASME Section V
 - d) AWS QC-1
47. An external inspection of a pressure vessel shall at least:
- a) Measure the thickness coating under insulation
 - b) Determine the condition of the external insulation
 - c) Include results of the settlement survey
 - d) Report the corrosion rates determined during the inspection
48. Equipment not designed for entrance by personnel:
- a) Only receive external visual inspections
 - b) Only receive ultrasonic thickness measurements
 - c) Require no inspection at all
 - d) Inspection ports shall be opened

API-510 Examination Preparation Course
Practice Exam #3 – Closed Book

49. A vessel is inspected after four years of service and the thinnest part of the shell is 1.360" thick. The original thickness was 1.4375" and the calculated minimum thickness is 1.232". What is the remaining corrosion allowance?
- a) 0.077"
 - b) 0.128"
 - c) 0.064"
 - d) 0.205"
50. What should the inspector check for regarding the installation of a fillet welded patch plate on the exterior of a pressure vessel?
- a) Reinforcement plate is internally inspected at the API-510 recommended intervals
 - b) Re-rating nameplate is correctly stamped and attached
 - c) Patch is accepted by the jurisdiction and the design is approved by an engineer
 - d) Efficiency of the attachment is identical to that of the original fabrication
51. According to API-510, a pressure relief device repair concern must have which of the following?
- a) A quality control system
 - b) State certified repair personnel
 - c) A National Board VR Stamp
 - d) A state approved test facility
52. If the corrosion rate cannot be determined by calculation or experience, on-stream determination of a new vessel shall be made after what period of time?
- a) 1000 hours of service
 - b) 8800 hours of service
 - c) Five years
 - d) Ten years
53. When is re-rating of a pressure vessel considered complete?
- a) After the inspector witnesses the attachment of an additional nameplate
 - b) After calculations are reviewed and approved by the inspector
 - c) After the engineer witnesses the attachment of the re-rating nameplate
 - d) After an additional nameplate is attached to the vessel by welding, and the re-rating record is approved by vessel owner/user

API-510 Examination Preparation Course
Practice Exam #3 – Closed Book

54. To comply with the requirements of API-510, how many thickness measurements should be taken on a pressure vessel during an internal or on-stream inspection?
- a) A representative number that will establish areas of corrosion
 - b) At least one on each nozzle and two on each head and shell section
 - c) At least one adjacent to each girth weld
 - d) Four points on the shell, one on each head, and one on all major nozzles
55. When can a welder be qualified for SMAW by using a production weld instead of a coupon weld?
- a) Never
 - b) When the coupon removed from one of the welder's production weld passes mechanical testing
 - c) When six inches of the welder's first production weld pass the specified radiographic examination
 - d) When the welder has welded on plate steel within the past twelve months
56. What type of pressure relief valve has a main relieving valve controlled by a self-actuated auxiliary pressure relief valve?
- a) Conventional safety-relief valve
 - b) Rupture disk
 - c) Pilot operated safety relief valve
 - d) Balanced safety relief valve
57. What is the short term corrosion rate for a vessel whose inspection records contain the following information for a TML?

Thickness	Year
0.375 inch (9.525mm)	0 (New)
0.325 inch (8.255mm)	5
0.300 inch (7.620mm)	10 (current

- a) 0.0025" (0.0635mm) per year
- b) 0.005" (0.127mm) per year
- c) 0.0075" (0.1905mm) per year
- d) 0.010" (0.254mm) per year

API-510 Examination Preparation Course
Practice Exam #3 – Closed Book

58. What does a low energy value for a notch toughness test indicate?
- a) The material is ductile
 - b) The material is elastic
 - c) The material is brittle
 - d) The material is low strength
59. Which of the following should be done when a vessel hydrostatic pressure test is being conducted and the test pressure exceeds the set pressure of the safety relief valve?
- a) Vent the safety relief valve in a safe direction (away from personnel), and test it at the same time as the pressure test of the vessel
 - b) A properly locked out block valve between the safety relief valve and vessel will sufficiently isolate the relief valve
 - c) The safety relief valve should be removed, or test clamp can be used to hold down the safety relief valve disk
 - d) Apply additional load to the valve spring by adjusting the compression screw
60. A pressure vessel is equipped with an NPS 10 reinforced nozzle. Which of the following would be considered an alteration to the vessel?
- a) Adding a twelve inch reinforced nozzle
 - b) Adding a ten inch reinforced nozzle
 - c) Adding a nozzle that does not require reinforcement
 - d) Adding a nozzle of any size less than NPS 10
61. What is/are the minimum API Code requirements for maintaining records of thickness measurements for pressure vessels?
- a) Keeping records of the last thickness measurements
 - b) Keeping records of the thickness measurement controlling the corrosion rate
 - c) Keeping progressive records of the thickness measurement of the thinnest component
 - d) Keeping progressive records of all thickness measurements
62. What should an inspector do when he/she notices the gage glass assembly, on an operating pressure vessel, is vibrating?
- a) Issue a detailed report of the location and recommendations for repairs
 - b) Research the inspection records of the vessel for previous corrosion
 - c) Determine the material used in the fabrication of the gage glass assembly
 - d) Consult with a pressure vessel engineer

API-510 Examination Preparation Course
Practice Exam #3 – Closed Book

63. The iron content of non-ferrous metals is less than which of the following?
- a) Twenty-five percent
 - b) Fifty percent
 - c) Sixty percent
 - d) Seventy-five percent
64. Hydrogen blistering is most likely to be found below the liquid level in vessels containing acidic corrodents. Which of the following can most easily detect blisters that are near the surface?
- a) A flashlight held parallel to the internal surface
 - b) Internal dye penetrant inspection
 - c) Internal dry magnetic particle inspection using a DC yoke
 - d) Ultrasonic shear wave inspection
65. When a conflict between the ASME Code and the API-510 exists, for inservice vessels, which code takes precedence?
- a) The applicable code determined by the authorized pressure vessel inspector
 - b) The applicable code determined by the owner/user
 - c) API-510
 - d) ASME Code
66. Which of the following is most important when performing weld repairs to a section of stainless steel weld overlay on a carbon steel vessel in hydrogen service?
- a) Magnetic particle examination of the overlay
 - b) Brinell hardness testing of the overlay
 - c) Out-gassing of the base metal
 - d) Impact testing of the base metal
67. Repairs of cracks in a vessel section are permitted with approval by the inspector provided which of the following is also done?
- a) The weld is fully radiographed (RT)
 - b) The weld is post weld heat treated (PWHT)
 - c) The weld is PWHT and fully examined using RT
 - d) An engineer is consulted

API-510 Examination Preparation Course
Practice Exam #3 – Closed Book

68. Which of the following circumstances requires re-qualification of a welder?
- a) When there is reason to doubt the welder's ability to deposit sound weld metal
 - b) When the welder has not welded on a pressure vessel for six months
 - c) When the welder has been laid off for two months
 - d) When the welder has not welded a qualification coupon within the past twelve months
69. ASNT Recommended Practice SNT-TC-1A is what type of document?
- a) A manual for NDE safety
 - b) An NDE personnel qualification guideline
 - c) An NDE procedure qualification guideline
 - d) A UT shear wave examination procedure
70. When conducting a tension test for weld procedure qualification, the specimen breaks in the base metal outside the weld and weld interface, the test is acceptable provided:
- a) The strength is not more than five percent below the minimum specified tensile strength of the base metal
 - b) The strength is not more than ten percent below the minimum specified tensile strength of the base metal
 - c) The specimen is not acceptable because it must not fail
 - d) The specimen is not acceptable because the weld must fail before the base metal
71. Using local PWHT in lieu of 360° banding is permitted provided:
- a) The application is reviewed and a procedure is developed by engineers experienced in the appropriate engineering specialties
 - b) The reduction of thermal gradient during PWHT is less than 200°F per foot
 - c) A preheat of 350°F is maintained during the welding and the weld is examined by MT
 - d) The application is reviewed and a procedure is developed by an API authorized pressure vessel inspector
72. What should the inspector look for when inspecting a pressure vessel nozzle if solid particles are suspected in the process stream?
- a) Localized corrosion
 - b) General pitting
 - c) General metal loss
 - d) Localized pitting

API-510 Examination Preparation Course
Practice Exam #3 – Closed Book

73. A new vessel is to be installed in a system. The vessel is stamped with a MAWP of 150psi at 300°F. It was fabricated from a material that has the same allowable stress at design temperature as at test temperature. The vessel operating pressure is 140psi at a MDMT of 20°F. Which of the following is the correct post fabrication hydrostatic test pressure?
- a) 225psi
 - b) 210psi
 - c) 195psi
 - d) 182psi
74. A vessel nameplate indicates the MAWP to be 250psi at 650°F, the current operating temperature is 600°F and the owner intends to increase the operating temperature by 100°F. Which of the following is the first step in increasing the operating temperature?
- a) Perform an internal inspection of the pressure vessel
 - b) Re-calculate a new corrosion rate for the pressure vessel
 - c) Re-calculate the minimum required thickness of the pressure vessel
 - d) Ensure the pressure relief devices are suitable for the new temperature
75. An SMAW butt weld test coupon is 0.625" thick. What is the maximum permissible production weld qualified?
- a) 0.625"
 - b) 1.0"
 - c) 1.25"
 - d) 1.75"
76. According to API-510, corrosion under insulation (CUI) shall be considered for externally insulated vessels that are in intermittent service or operate between:
- a) 50°F (10°C) and 250°F (121°C) for carbon and low alloy steels; and between 140°F (60°C) and 750°F (399°C) for austenitic stainless steels
 - b) 50°F (10°C) and 125°F (52°C) for carbon and low alloy steels; and between 125°F (10°C) and 300°F (149°C) for austenitic stainless steels
 - c) 10°F (-12°C) and 350°F (177°C) for carbon and low alloy steels; and between 140°F (60°C) and 400°F (204°C) for austenitic stainless steels
 - d) 400°F (204°C) and 750°F (399°C) for carbon and low alloy steels; and between 350°F (177°C) and 600°F (315.5°C) for austenitic stainless steels
77. According to API-510, who is responsible for qualifying the welding procedures that will be used during a repair of a pressure vessel?
- a) Pressure vessel engineer
 - b) Pressure vessel inspector
 - c) Owner/operator of the vessel
 - d) Repair organization

API-510 Examination Preparation Course
Practice Exam #3 – Closed Book

78. Pressure vessel repairs must be in accordance with the original code of construction. What additional inspection requirements must be considered?
- a) Jurisdictional requirements, if any, exceeding those of the construction code
 - b) The repair organization qualifications
 - c) The need for qualified welding procedures
 - d) The traceability of repair materials
79. A minimal number of CMLs is acceptable provided:
- a) The vessel is to be replaced within three months
 - b) An internal inspection is performed in lieu of an on-stream inspection
 - c) Insulation inhibits access to the vessel surface
 - d) The established corrosion rate is low and not localized
80. Which of the following is an alteration according to API-510?
- a) The addition of nozzles not requiring reinforcement or re-rating
 - b) Any comparable or duplicate replacement
 - c) Any design change affecting the pressure containing capability of a pressure vessel
 - d) The addition of a reinforced nozzle equal to or less than the size of an existing reinforced nozzle
81. A vessel is being changed from ethylene condensate service to steam condensate service. The corrosion rate of the vessel in ethylene service was 1 mil per year. What should the inspector do?
- a) Require re-rating the vessel
 - b) Require a pressure test on the vessel
 - c) Establish a new probable corrosion rate
 - d) Maintain the corrosion rate to determine if it was correct
82. Increasing the MAWP and/or the temperature of a pressure vessel, or decreasing the temperature such that Charpy impact testing will be required is considered which of the following?
- a) A modification
 - b) A re-work
 - c) An alteration
 - d) A repair

API-510 Examination Preparation Course
Practice Exam #3 – Closed Book

83. With regard to categorizing grades of steel into P numbers; which of the following is the most correct statement?
- a) These materials can be substituted for each other as long as the thickness is within 10%
 - b) Are of the same thickness, same carbon content, comparable strength and hardness
 - c) These materials have comparable yield strength but different tensile strength and hardness
 - d) These materials have comparable base metal characteristics, weldability, and mechanical properties
84. A pressure vessel, with a current corrosion rate of 0.001 inch per year and no history of localized corrosion, has one CML on each head and one nozzle in the bottom head. The vessel will be changed to a service that promotes localized corrosion in the bottom third of the vessel and will have an expected corrosion rate of 0.010 inch per year. What should the inspector do regarding the adjustment of the number and location of CMLs?
- a) Nothing, the current number of CMLs satisfies the requirements of API-510
 - b) Increase the number of CMLs only in the spot where localized corrosion is expected
 - c) Increase the number of CMLs at the next scheduled internal inspection based on the new service conditions
 - d) Increase the number of CMLs for the bottom head, shell, and nozzles in the area where localized corrosion is expected to occur
85. Which of the following pressure vessels is excluded from the specific requirements of API-510?
- a) Thirty foot diameter off-site normal butane sphere operating at 220psi
 - b) Ten foot long, one foot diameter truck mounted propane bullet operating at 280psi
 - c) Eight inch diameter, one foot long cylinder operating at 660psi
 - d) Four foot long, one and a half foot diameter crude unit compressor gland condenser shell operating at 300psi
86. What is the interval for the next internal inspection of a vessel with a measured head thickness of 0.875", a required thickness of 0.563", and a corrosion rate of 0.019" per year?
- a) 4.1 years
 - b) 8.2 years
 - c) 10.0 years
 - d) 16.4 years
87. Which of the following NDE methods is most likely to detect deep subsurface flaws?
- a) Ultrasonic UT
 - b) Magnetic Particle MT
 - c) Liquid Penetrant PT
 - d) Eddy Current EC

API-510 Examination Preparation Course
Practice Exam #3 – Closed Book

88. The rate of metal loss caused by corrosion or erosion can typically be determined by:
- a) Referring to corrosion tables
 - b) Evaluating the operating conditions of the component
 - c) Comparing consecutive thickness measurements
 - d) Taking a thickness measurement of the component
89. A change in design temperature that requires additional mechanical tests is:
- a) Considered a test procedure
 - b) Not permitted
 - c) Considered a repair
 - d) Considered an alteration
90. Of the following, what is the most common cause of spring failure in pressure relief valves?
- a) Corrosion
 - b) Creep
 - c) Erosion
 - d) Tensile overload
91. Welders who qualify on the required tests for plate groove welds:
- a) May weld on groove welds only
 - b) Are also qualified on all pipe groove welds
 - c) Are also qualified on some fillet welds
 - d) Must additionally pass the fillet weld test
92. In addition to being of known weldable quality, materials used for making repairs shall:
- a) Be compatible with the original material
 - b) Be of known toughness
 - c) Have a minimum tensile strength of 50,000psi
 - d) Have an ASTM specification number
93. Which of the following is not an acceptable API-510 repair organization?
- a) ASME “S” Stamp holder
 - b) Contractor chosen by the owner/operator
 - c) ASME “U” Stamp holder
 - d) Owner/user shop

API-510 Examination Preparation Course
Practice Exam #3 – Closed Book

94. Magnetic particle examination may be used to examine weldments in which of the following?
- a) Ferrous and non-ferrous materials
 - b) Ferrous materials exceeding 0.35 carbon content only
 - c) Ferromagnetic materials
 - d) Non-ferrous materials only
95. To minimize the risk of brittle fracture during the hydrostatic test, after an alteration of a 2.5 inch thick vessel, the metal temperature should be at least what temperature during the test?
- a) 10°F above the MDMT
 - b) 30°F above the MDMT
 - c) 60°F
 - d) 70°F
96. Re-rating calculations shall be performed by the manufacturer or which of the following?
- a) Owner/user engineer experienced in pressure vessel design
 - b) Registered professional engineer only
 - c) API-510 inspector
 - d) ASME credited repair organization
97. Proper PWHT can:
- a) Reduce tensile strength
 - b) Increase residual stress
 - c) Increase weld hardness
 - d) Reduce resistance to environmental cracking
98. A welder's performance qualification will expire if he/she has not welded with a specific process for more than which of the following?
- a) One month
 - b) Four months
 - c) Three months
 - d) Six months
99. Acceptance criteria for welded repairs should include NDE techniques that are in accordance with which of the following?
- a) AWS
 - b) ASTM
 - c) ASNT
 - d) ASME

API-510 Examination Preparation Course
Practice Exam #3 – Closed Book

100. A change in a non-essential variable in a WPS will require:
- a) A new procedure PQR
 - b) That the WPS be re-qualified
 - c) The supporting PQR be updated
 - d) That the WPS be updated
101. If a welder is qualified in the 1G position with a groove weld in plate, what positions is he/she qualified to weld in?
- a) Vertical
 - b) Flat
 - c) Horizontal
 - d) Overhead
102. What should the frequency of inspection for pressure relief devices be based on?
- a) The ASME code as it applies to relief devices
 - b) The manufacturer's instructions
 - c) A frequency that verifies the device performs reliably
 - d) A five year frequency set by API-510
103. Temporary repairs to pressure vessels:
- a) Must be replaced with permanent repairs during the next scheduled shutdown
 - b) May remain in place for longer periods if approved by the pressure vessel engineer
 - c) May remain in place for longer periods if approved by the API pressure vessel inspector
 - d) May remain in place if approved by the pressure vessel engineer and the API pressure vessel inspector
104. Calculations by the original manufacturer or an engineer shall be completed before:
- a) Thickness measurements are taken
 - b) Re-rating the vessel
 - c) Acceptance of welding procedures and welder qualifications
 - d) Repairing a portion of the vessel due to corrosion
105. What are the three most effective methods of detecting caustic embrittlement during the external inspection of equipment?
- a) Visual inspection, magnetic particle, angle beam UT
 - b) Eddy current, boat sample, magnetic particle
 - c) Visual inspection, hammer test, acoustic emission
 - d) Angle beam UT, pressure test, dye penetrant

API-510 Examination Preparation Course
Practice Exam #3 – Closed Book

106. Above what pressure is a vessel considered to be in the scope of the API-510 Code?
- a) 2.5psi
 - b) 5psi
 - c) 10psi
 - d) 15psi
107. When notch toughness is performed as part of the qualification of a welding procedure, the test is performed using the:
- a) Brinell test
 - b) Impact test
 - c) Bend test
 - d) Tension test