

ALL QUESTIONS ARE CLOSED BOOK
ASME SECTION IX PRACTICE QUESTIONS

1. The purpose of the WPS and PQR is to determine that:
 - A. the welder is qualified
 - B. the base metals are strong enough
 - C. the weldment has the desired properties
 - D. the skill of the welder

2. The WPS lists:
 - A. nonessential variables
 - B. essential variables
 - C. ranges for 1 & 2 above
 - D. all of the above

3. The PQR must list:
 - A. essential variables
 - B. qualification test & examination results
 - C. supplementary essential variables (when notch toughness is required)
 - D. all of the above

4. What is the earliest Edition of Section IX recognized by the current edition?
 - A. 1958
 - B. 1992
 - C. 1987
 - D. 1962

5. New Welding Procedure Specifications must meet the _____ Edition and Addenda of Section IX.
 - A. 1962
 - B. current
 - C. 1986
 - D. 1995

6. Each _____ shall conduct the tests required by Section IX to qualify the WPS's used during the construction, alteration, or repair.
 - A. Welder or welding operator
 - B. Manufacturer or contractor
 - C. Inspector
 - D. All of the above

7. The records of procedure, welder and welding operator qualification must be available to the _____.
 - A. Manufacturer
 - B. Welder
 - C. Authorized Inspector
 - D. Foreman

8. A welder qualifying with a groove weld in plate in the 4G position is qualified to weld groove welds in plate and pipe over 24"O.D. in at least the _____ positions.
- A. Vertical
 - B. Flat & horizontal
 - C. Flat & overhead
 - D. Horizontal
9. A welder qualifying with plate fillet welds in the 3F and 4F positions is qualified to weld groove welds in plate in the _____ positions.
- A. Flat only
 - B. Flat and horizontal
 - C. Flat and vertical
 - D. None of the above
10. A welder qualifying by making a groove weld on pipe with an O.D. of 3/4" in the 5G position is qualified to weld groove welds in:
- A. 1/2" O.D. Pipe in the overhead position
 - B. 6" O.D. Pipe in the vertical position
 - C. 3/4" O.D. pipe in the horizontal position
 - D. None of the above
11. In general, qualification on groove welds also qualifies a welder to make:
- A. Stud welds
 - B. Overhand welds
 - C. Fillet welds
 - D. All of the above
12. Charpy V-notch tests are performed to determine a weldment's
- A. Tensile strength
 - B. Ductility
 - C. Notch toughness
 - D. All of above
13. A welder making a groove weld using the SAW process on P1 materials may be qualified using radiography.
- A. True
 - B. False
14. When a tensile specimen breaks in the base metal outside of the weld or fusion line, the strength recorded may be at most ___ below the specified tensile and be accepted.
- A. 3.5%
 - B. .5%
 - C. 5%
 - D. All of the above

15. Guided-bend specimens shall have no open defects in the weld or heat effected zone exceeding _____ measured in any direction on the convex surface of the specimen after bending.
- A. 1/16"
 - B. 3/32"
 - C. 1/8"
 - D. None of the above
16. When using radiographs to qualify *welders*, the acceptance standards used are found in
- A. ASME Section V
 - B. ASME Section IX
 - C. ASME Section VIII
 - D. The referencing code
17. A WPS must describe:
- A. Essential variables
 - B. Nonessential variables
 - C. Supplementary essential variables when required for notch toughness
 - D. All of the above
18. A PQR must describe
- A. Nonessential variables
 - B. Essential variables
 - C. Results of Welder Qualification tests
 - D. Project description & NDE methods
19. The _____ must certify the PQR as accurate.
- A. Inspector
 - B. Manufacturer or contractor
 - C. Welder
 - D. All of the above
20. For the SMAW process _____ is an essential variable for the WPS.
- A. Groove design
 - B. Post Weld Heat Treatment
 - C. Root spacing
 - D. Method of cleaning
21. For the SAW process _____ is an essential variable for the WPS.
- A. Supplemental powdered filler metal (if used)
 - B. Filler metal diameter
 - C. Preheat maintenance
 - D. Addition or deletion of peening
22. The basic purpose of testing a welder is to establish the welder's _____.
- A. Knowledge of welding requirements
 - B. Ability to deposit sound weld metal
 - C. mechanical ability to operate equipment
 - D. General attitude toward welding inspectors

23. The record of a welder's performance test is called a _____.
- A. PQR
 - B. WQR
 - C. WPS
 - D. WPQ
24. If a welder qualified with the SMAW process on Jan. 1, 1994 and last welded with SMAW on March 15, 1994, would he still be qualified on October 7, 1994?
- A. Yes
 - B. No
25. A welder qualifying with a groove weld welded from both sides is qualified to weld _____.
- A. Without backing
 - B. With all base metals
 - C. With backing only
 - D. With P1 backing only
26. Immediate retests of welders qualifications coupons
- A. Must use the same method
 - B. May use any method
 - C. Are not allowed
 - D. Require Inspector approval
27. Welder performance qualification records must describe all the _____ variables specified.
- A. Essential & nonessential
 - B. Nonessential
 - C. Essential
 - D. Brazing
28. A welder depositing 1/2" of weld metal with the SMAW process is qualified to deposit up to _____ of weld metal.
- A. 8"
 - B. Max to be welded
 - C. 1"
 - D. 1/2"
29. "P" numbers are used to designate groups of
- A. Electrodes
 - B. Flux
 - C. Base metals
 - D. Joints
30. A welder qualifying by welding P-No. 21 to P-No. 21 is qualified to weld
- A. P-1 - P-11 to P-1 - P-11
 - B. P-8 - P8
 - C. P-21 - P-25 to P-21 - P-25
 - D. P21 to P21 only

31. Welding electrodes are grouped in Section IX by
- A. AWS class
 - B. ASME specification
 - C. SFA
 - D. "F" number
32. Ferrous weld metal chemical composition may be designated using
- A. "P" number
 - B. Welder I.D.
 - C. "A" number
 - D. page number
33. For welder qualification with the SMAW process _____ is an essential variable.
- A. Base metal thickness
 - B. Peening
 - C. P-number
 - D. Electrode diameter
34. Each welder must be assigned a(n)
- A. P number
 - B. Unique identifier
 - C. Hood & gloves
 - D. Inspector
35. May a welder who qualified in the 2G position on 1/4 inch thick plate, weld a 1 inch outside diameter groove weld in pipe, 1/4 inch thick in the horizontal position without requalification?
- A. Yes
 - B. No
 - C. Not enough information provided
 - D. Yes, provided pipe is carbon steel, P#1
36. What is the basic difference between gas metal arc welding and gas tungsten arc welding processes?
- A. GMAW uses a continuously fed fillet metal and GTAW a tungsten electrode
 - B. The SFA specification of the filler metal
 - C. The F# of the filler metal
 - D. GTAW is run with gas; gas is optional with GMAW
37. A welder has been tested in the 6-G position, using an E-7018 F-4 electrode, on 6" sch 160 (.718" nom) SA 106B pipe. Is this welder qualified to weld a 2" 300# ANSI schedule 80 bore flange to a 2" schedule 80 SA 106 B nozzle neck?
- A. Yes
 - B. No
 - C. Not enough information provided
 - D. Yes, provided a backing strip is provided in the 2" weld.

38. May a welder who is qualified using a double-groove weld, make a single V-groove weld without backing?
- A. Yes
 - B. No
 - C. Not enough information provided
 - D. Yes, because backing is not an essential variable for a welder
39. May a GTAW welder be qualified by radiography, in lieu of bend tests? The test coupon will be P-22 material and the production welds will be P-22 also.
- A. Yes
 - B. No
 - C. Not enough information provided
 - D. Yes, provided the P-22 is welded with F-22 fillers
40. Who is responsible for qualification of welding procedures, welders and welding operators?
- A. The Inspector
 - B. The A.I.
 - C. The Shop Foreman
 - D. The Manufacturer of Contractor
41. A welding electrode has the marking E-6010. The "1" marking indicates:
- A. Flat position only
 - B. Horizontal position only
 - C. All positions
 - D. Only good for heat treated welds
42. May a FCAW welder qualified using UT, be used to weld in production?
- A. Yes, welder can be used
 - B. No welder cannot be used
 - C. Yes, if welder is using GMAW (Short Arc)
 - D. Yes, if welder is qualified with backing
43. A welder may deviate from the parameters specified in a WPS if they are a nonessential variable. (True or False)
- A. True
 - B. False
44. A repair organization has a WPS which states it is qualified for P-8 to P-8 material welded with either E308, E308L, E309, E316, electrodes (SMAW process). The PQR, supporting this WPS, states the weld test coupons were SA-240 Type 304L material, welded with E308 electrodes. Is the WPS properly qualified for the base material listed?
- A. Yes
 - B. No
 - C. Not enough information given
 - D. Yes, if properly heat treated

45. What positions are necessary to qualify a welder for all position pipe welding?
- A. 3G and 4G
 - B. 2G and 5G
 - C. 3G and 1G
 - D. 4G and 5G
46. What ASME Code Section has welding electrode storage requirements?
- A. ASME IX
 - B. ASME VIII
 - C. ASME B31.1
 - D. ASME II Part C
47. What are the number of transverse guided bend tests required for Performance Qualification in a 6G position?
- A. 2
 - B. 4
 - C. 6
 - D. 3
48. May a GMAW, short circuit transfer, welding procedure be qualified using real-time ultrasonics?
- A. Yes
 - B. No
 - C. No t enough information given
 - D. Yes, provided bend tests are done
49. Three arc welding processes are:
- A. BMAW, SMAW, EFGAW
 - B. FCAW, SAW, ESW
 - C. SMAW, GTAW, PAW
 - D. PTAW, SLAW, PEAW
50. You are reviewing a WPQ (QW-484) for a welder testing in the 2-G position; on SA-53 grade B pipe (TS-60,000 psi). The test results indicate the following:
- #1 Tensile developed 51,000 psi, broke in the weld
 - #2 Tensile developed 56,900 psi, broke in base metal
 - #1 Transverse root bend satisfactory
 - #2 Transverse face bend satisfactory
- Will these test qualify the welder?
- A. Yes
 - B. No
 - C. Not enough information given
 - D. Tension test is acceptable but #1 is unacceptable

51. Is a welding procedure qualified under the 1965 ASME Code Section IX still applicable?
- A. Yes
 - B. No, must be requalified
 - C. Is only applicable for 1965 pressure vessels
 - D. Cannot be used for new construction - repairs only
52. A nonessential variable must be documented on:
- A. The WPQ
 - B. The PQR
 - C. The WPS
 - D. All of the above
53. What are the various positions in which a welder may qualify for plate groove welds?
- A. 1G
 - B. 3G
 - C. 4G
 - D. All of the above
54. A welder was qualified with a P-1 test coupon using SMAW E7018 electrodes. May the welder weld P-4 material using E8028 electrodes in production? (Assume the P-4 procedure using E8028 electrodes has been qualified.)
- A. Yes
 - B. No
 - C. Not enough information provided
 - D. None of the above
55. What are the primary classifications of guided-bend tests permitted by the Code?
- A. Side and Transverse
 - B. Face and Root
 - C. Transverse and Longitudinal
 - D. Side and Face
56. A welder qualified by welding in the 5G position is qualified for what position on plate?
- A. F, H, OH
 - B. F, V, OH
 - C. V, OH, SP
 - D. H, V, OH
57. Which of the following is a covered electrode?
- A. E6010
 - B. E 7018
 - C. E 9028
 - D. All of the above

58. Applicable essential variables must be documented on which of the following?
- A. The WPS
 - B. The PQR
 - C. The WPQ
 - D. All of the above
59. In performance qualification of pipe welds to ASME Section IX, which positions require more than two guided bend specimens for qualification?
- A. 5G and 6G
 - B. 2G and 4F
 - C. 4G and 5G
 - 4. None of the above
60. Name two defects that would cause visual rejection of a welder's test pipe or plate?
- A. Porosity, underfill
 - B. Lack of penetration/fusion
 - C. Slag, overlap
 - D. Any of the above
61. A variable that, when changed will cause a change in the mechanical properties of the weldment is called a:
- A. Essential variable
 - B. Non-essential variable
 - C. Supplementary essential variable
 - D. All of the above
62. The test that determines the ultimate strength of groove-weld joints is a:
- A. Notch Toughness Test
 - B. Tension Test
 - C. Fillet Weld Test
 - D. Guided-Bend Test
63. The procedure qualification test is used to determine:
- A. The skill of the welder
 - B. That the proposed production weldment is capable of having the required properties
 - C. The corrosion -resistance of the proposed weldment
 - D. None of the above
64. A change in a supplementary essential variable requires requalification, when notch-toughness is a consideration.
- True or False (circle one)
65. When using Macro-examination of fillet weld tests, the weld and the HAZ must not reveal cracks when magnified at:
- A. 5X
 - B. 2X
 - C. 10X
 - D. No magnification is required - visual examination is required, only.

66. A non-essential variable may be changed without re-qualification because:
- A. Nobody cares about non-essential variables
 - B. The welder is allowed to change variables at his discretion
 - C. Non-essential variables do not affect the mechanical or notch-toughness properties
 - D. Non-essential variables cannot be changed without re-qualification
67. The data recorded on a PQR (non-editorial) may be changed provided:
- A. The AI approves
 - B. The test data on a PQR is a record of what occurred and should never be changed. Only editorial information can be changed on a PQR.
 - C. The API 510 Inspector approves
 - D. The date of the WPS is changed
68. A WPS must only address essential and, if applicable, supplementary essential variables.
- True or False (circle one)
69. Tension tests may be used in lieu of bend tests to qualify welders or welding operators.
- True or False (circle one)
70. A groove weld bend test reveals a linear indication on the face of the bend surface that measures exactly 1/8" long. No other indications are seen. Does this coupon pass or fail?
- A. Pass
 - B. Fail
71. Unless notch-toughness is a consideration, a qualification in any position qualifies a welding procedure for all positions.
- True or False (circle one)
72. The purpose of a WPS and PQR is to determine if a welder has the skill necessary to make sound production welds.
- True or False (circle one)
73. Welders can be qualified by radiograph when using P 6X materials?
- True or False (circle one)
74. It is permissible to sub-contract welding of coupons as well as other work to prepare coupons.
- True Or False (circle one)
75. Variable QW 402.4 for SMAW procedure qualification is a _____ variable
- A. Essential
 - B. Non-essential
 - C. Supplemental essential
 - D. None of the above

76. Variable QW 404.24 for SAW procedure qualification is an _____ variable
- A. Essential
 - B. Non-essential
 - C. Supplemental essential
 - D. None of the above
77. Each manufacturer must certify the PQR (by signature) indicating that the information given is true and correct.
- True Or False (circle one)
78. Welder variable QW- 405.1 (for welders qualifying with the SMAW process) is a _____ variable.
- A. Essential
 - B. Non-essential
 - C. Supplemental essential
 - D. None of the above
79. The purpose of a WPS and PQR is to determine if a proposed weldment to be used in construction is capable of providing the required properties for the intended application.
- True or False (circle one)
80. A qualification in a 4G position qualifies a welder for all groove weld positions.
- True or False (circle one)
81. A WPS must address all applicable non-essential variables.
- True or False (circle one)
82. Groove weld coupons shall be tested by macro-examination when qualifying a welding procedure.
- True or False (circle one)
83. A welding procedure must be qualified with impact tests only when required by the applicable construction code, such as ASME VIII Div. 1.
- True or False (circle one)
84. A welder qualified to weld in the 2G position on pipe would have to be qualified in which of the additional positions to qualify for all position groove welding on pipe?
- A. 1G
 - B. 2G
 - C. 5G
 - D. 6G
 - E. All of the above
85. The maximum preheat temperature decrease allowed without requalification of a GMAW groove weld procedure is:
- A. 50°F
 - B. 100°F
 - C. 125°F
 - D. 150°F
 - E. None of the above

86. A welder is qualified to weld all thicknesses of material when:
- A. The test is any thickness above 3/8 inch
 - B. The test thickness was 1/2 inch
 - C. The test thickness was 3/4 inch or over
 - D. The test pipe wall thickness was 5/8 inch and nominal pipe size was over 1/2 inches
 - E. None of the above
87. What is the maximum defect permitted on the convex surface of a welder qualification bend test after bending , except for corner cracks and corrosion resistant weld overlay?
- A. 1/4 inch
 - B. 1/8 inch
 - C. 1/16 inch
 - D. 3/16 inch
 - E. No defects are allowed
88. What period of inactivity from a given welding process requires the welder to requalify in that process?
- A. 3 months
 - B. 6 months
 - C. 9 months
 - D. 12 months
 - E. As stated by the AI
89. Notch-toughness requirements are mandatory
- A. For heat treated metals
 - B. For quenched and tempered metals
 - C. For hardened and tempered metals
 - D. For annealed and tempered metals
 - E. When specified as required by the referencing Code section
90. A welder qualified for SMAW using an E7018 electrode is also qualified to weld with:
- A. E7015
 - B. E6011
 - C. E6010
 - D. E7024
 - E. All of the above
91. Macro examination of an etched fillet weld section for performance qualification is acceptable if the examination shows:
- A. Complete fusion and freedom from cracks, excepting linear indications not exceeding 1/32 inch at the root.
 - B. Concavity or convexity no greater than 1/16 inch
 - C. Not more than 1/8 inch difference in leg lengths
 - D. All of the above
 - E. Both B and C above

92. Each manufacturer or contractor is responsible for the welding or brazing done by his organization. Whenever these words are used in Section IX, they shall include:
- A. Designer or architect
 - B. Designer or installer
 - C. Architect or installer
 - D. Installer or assembler
 - E. Assembler or designer
93. For P-11 materials, weld grooves for thicknesses _____ shall be prepared by thermal processes, when such processes are to be employed during fabrication.
- A. Less than 5/8 inch
 - B. 5/8 inch
 - C. 1 inch
 - D. 1-1/4 inches
 - E. None of the above
94. A stud welding procedure must be requalified if there is a deviation of plus or minus _____ seconds in the arc timing.
- A. .01
 - B. .05
 - C. 1/5
 - D. 1/10
 - E. 1/20
95. A change in a non-essential variable requires re-certification of the PQR.
True or False (circle one)
96. Reduced-section tensile test specimens conforming to QW-462.1 (b) may be used on all thicknesses of pipe having an outside diameter greater than:
- A. 2 inches
 - B. 2-1/2 inches
 - C. 3 inches
 - D. 3-1/2 inches
 - E. 4 inches
97. Groove weld tests may be used for qualification of welders. Which of the following shall be used for evaluation?
- A. Only bend tests
 - B. Only radiography
 - C. Both radiography and bend tests
 - D. Either bend tests or radiography
 - E. None of the above
98. Under which of the following conditions can a welder be qualified during production work?
- A. A 6" length of the first production groove weld may be qualified by radiography
 - B. A bend test coupon may be cut from the first 12" length of weld
 - C. A macro examination may be taken from the first 3" of weld length
 - D. None of the above

99. Two plate tensile test specimens have been tested and found to be acceptable. The characteristics of each specimen are as follows:

Specimen #1 has a width of .752", thickness of .875" and an ultimate tensile value of 78,524 psi.
Specimen #2 has a width of .702", thickness of .852" and an ultimate tensile value of 77,654 psi.
What is the ultimate load for each specimen that was reported on the laboratory report?

- A. 51,668 & 46,445
- B. 67,453 & 56,443
- C. 78,524 & 77,654
- D. None of the above

ANSWER KEY FOR PRACTICE WELDING QUESTIONS:

- | | |
|--------------------------|-----------|
| 1. C QW-100.1 | 57. D |
| 2. D QW-100.1 | 58. D |
| 3. D QW-100.1, QW-200.2 | 59. A |
| 4. D QW-100.3 | 60. B |
| 5. B QW-100.3 | 61. A |
| 6. B QW-103 | 62. B |
| 7. C QW-103 | 63. B |
| 8. C QW-461.9 | 64. True |
| 9. D QW-461.9 | 65. D |
| 10. B QW-461.9, QW-452.3 | 66. C |
| 11. C QW-303 | 67. B |
| 12. C QW-171 | 68. False |
| 13. A QW-304 | 69. False |
| 14. C QW-153 | 70. Pass |
| 15. C QW-163 | 71. True |
| 16. B QW-191 | 72. False |
| 17. D QW-200.1 | 73. False |
| 18. B QW-200.2 | 74. False |
| 19. B QW-200.2 | 75. B |
| 20. B QW-253 | 76. A |
| 21. A QW-254 | 77 True |
| 22. B QW-100.2, QW-301.1 | 78. A |
| 23. D QW-301.4 | 79. True |
| 24. B QW-322.1 | 80. False |
| 25. C QW-310.2 | 81. True |
| 26. A QW-321 | 82. False |
| 27. C QW-301.4 | 83. True |
| 28. C QW-452.1 | 84. C |
| 29. C QW-421 | 85. B |
| 30. C QW-423.1 | 86. C |
| 31. D QW-431 | 87. B |
| 32. C QW-442 | 88. B |
| 33. C QW-353 | 89. E |
| 34. B QW-301.3 | 90. E |
| 35. B | 91. D |
| 36. A | 92. D |
| 37. B | 93. A |
| 38. B | 94. D |
| 39. A | 95. False |
| 40. D | 96. C |
| 41. C | 97. D |
| 42. B | 98. A |
| 43. B | 99. A |
| 44. A | |
| 45. B | |
| 46. D | |
| 47. B | |
| 48. B | |
| 49. C | |
| 50. A | |
| 51. A | |
| 52. C | |
| 53. D | |
| 54. A | |
| 55. C | |
| 56. B | |

WPS # GTAW - 1 REV. 0 and PQR # GTAW-2

1. The proper base metal thickness range shown on the WPS is:
 - a. Correct as shown
 - b. 1/16" - 1"
 - c. 3/16" - 1/2"
 - d. 3/16" - 1/4"

2. The shielding gas shown on the WPS is:
 - a. Correct as shown
 - b. Should be 75% AR 25% CO2
 - c. Should be shown as 20-30 CFH
 - d. Both B & C above

3. The proper preheat temperature range that should be shown on the WPS is:
 - a. Correct as shown
 - b. 100°F minimum
 - c. 250° maximum
 - d. 150° minimum

4. The PQR supporting this WPS:
 - a. is properly identified and traceable to the WPS
 - b. is not properly identified and is not traceable to the WPS
 - c. is not traceable to the WPS
 - d. must be PWHT'd per ASME requirements

5. A drawing or sketch of the weld joint:
 - a. must be shown on the PQR
 - b. must be shown on the WPS and PQR
 - c. must be shown on the WPS but not the PQR
 - d. none of the above

6. The tension tests shown on the PQR:
 - a. are acceptable as shown
 - b. are unacceptable because of mathematical error
 - c. are unacceptable due to the size of the specimen shown
 - d. are unacceptable due to the strength of the specimens; shown

7. The tension tests shown on the PQR:
 - a. are full size pipe specimens
 - b. are full size reduced section specimens
 - c. are reduced section turned specimens
 - d. are not required for this PQR

8. The bend tests shown on the PQR:
 - a. are acceptable as shown
 - b. are insufficient in number
 - c. are incorrect as to the type of bend test performed (i.e., side, face, root)
 - d. Both B and C above

9. The bend tests shown on the PQR:
- are acceptable as shown
 - do not meet the acceptance criteria of ASME IX
 - should be listed with the length of each specimen
 - need to be PWHT'd after bending
10. PQR #GTAW-2 is:
- unacceptable because it was run in the 1G position and the WPS states all positions are acceptable.
 - unacceptable because it is not certified.
 - unacceptable because it was run with backing gas and the WPS does not require backing gas.
 - all of the above
11. The filler metal shown on the WPS:
- has been properly qualified by the PQR
 - has not been properly qualified by the PQR
 - is not necessary because GTAW can be run without filler metal
 - will need to be peened after deposition, per the WPS
12. The amperage and voltage ranges shown on the WPS:
- are acceptable as shown
 - are unacceptable as qualified on the PQR
 - must be higher to properly run this size of electrode
 - none of the above
13. The most correct SFA # for the ER 70S-2 filler metal is:
- SFA 5.18
 - SFA 5.29
 - SFA 5.10
 - SFA 5.1