

API AUTHORIZED PIPING INSPECTOR
PREPARATION COURSE FOR CERTIFICATION EXAMINATION
FINAL EXAMINATION #3

NAME _____

DATE _____

COMPANY _____

AUTHORED BY:
T. SCHINDLER

API 570
FINAL EXAMINATION #3

OPEN BOOK QUESTIONS (1 - 45)

1. A welded repair will be made to a piping system operating at -20°F . The pipe is API 5L, X-46 and a "scab patch" will be applied over a thinned area. The "scab" patch is also API 5L X-46. The patch is $1/4$ " thick and the pipe is $1/2$ " thick. Both the scab patch material and welding procedure will be impact tested per B31.3. This patch is:
 - A. Unacceptable to API 570
 - B. Acceptable to API 570, without any further conditions.
 - C. Is acceptable with a hydrotest per API 570.
 - D. Is acceptable with full RT per API 570.

2. A repair weld is radiographed to normal fluid service. The longitudinal weld is in an NPS 6", Sch. 80 (6.625 " o.d.) groove weld made with GTAW. The radiograph shows 7 locations of incomplete penetration, each $1/16$ " long and $1/64$ " deep. The disposition of this repair weld should be:
 - A. Accept
 - B. Reject
 - C. Accept - provided porosity is not included with the inclusions.
 - D. Not enough information given.

3. After a valve has been reassembled, what should the Inspector require?
 - A. Full RT of the body
 - B. Full UT of the stem
 - C. A "s" test of the Seat and disk
 - D. A test per API 598

4. An MT yoke is used to find only _____ indications.
 - A. Crack-like
 - B. Linear
 - C. Rejectable
 - D. Surface

5. What is the minimum thickness of a pipe that is A 369 FP7 that is 6.97 " i.d. and installed in a system operating at 787 psi @ 1000°F ? the butt welds are all randomly radiographed per ASME B31.3, and impact tests have not been done.
 - A. $.375$ "
 - B. $.71$ "
 - C. $.60$ "
 - D. $.49$ "

6. When ultrasonically measuring a material with a new and cold thickness of $.750$ ", this thickness will show (approximately) _____" when measuring at 700°F .
 - A. $.772$ "
 - B. $.748$ "
 - C. $.710$ "
 - D. $.788$ "

7. Who establishes inspection intervals for piping, per API 570?
- A. The Inspector
 - B. The Engineer
 - C. Either A or D
 - D. The Owner/User
8. RBI assessments may be used:
- A. In lieu of inspection
 - B. As a supplement to inspections
 - C. At intervals exceeding Table 1 limits
 - D. To ensure failure of piping will not occur
9. A GTAW welder is qualified with ER 70-S6 (F-6, A-1) carbon steel welding rod. The welder will be using ER 308 stainless wire (F-6, A-8) to make a repair weld. Assuming a qualified WPS is used and all other performance essential variables (as qualified) are met, this welder would:
- A. Be allowed to make this weld, per ASME IX
 - B. Be disallowed from making this weld per ASME IX
 - C. Be allowed, only if a gas was used to prevent "sugaring"
 - D. Be allowed, only if bend tests were used in lieu of RT
10. A branch connection is added to a header. The branch pipe is NPS 6 SCH 160 and the header is NPS 12 Sch. 160. The pipe is inserted into the header with a full penetration weld and a 3/16" size fillet weld. Both the header and branch are A-426 CP12 material. This connection:
- A. Would require PWHT
 - B. Would not require PWHT
 - C. Would require full RT
 - D. Would require a 500° preheat be applied
11. An A-335 P5 pipe will be repaired using a welding procedure that was qualified using A335 P21 base material. Per ASME IX, this procedure will be:
- A. Disallowed
 - B. Allowed
 - C. Allowed with heat treatment
 - D. Allowed with full RT, per B31.3
12. A flanged fitting will be replaced in a line operating at 960 psi @ 1050°F. The engineering specification calls for a 5CR - 1/2 MO material. Of the following, which fitting would you allow for this replacement?
- A. A217 GR. WC9, Class 2500
 - B. A-182 F 304, Class 1500
 - C. A-217 GR WC6, Class 2500
 - D. A 217 GR. C5 (normalized/tempered) Class 2500
13. An A-351 cast material is to be penetrant tested per B31.3 to increase the allowable quality factor. the acceptance criteria for this test would come from:
- A. ASME V
 - B. Table 341.2.3.2 (severe cyclic)
 - C. MSS SP 53
 - D. ASME VIII

14. A P5A piping material (2.5% chrome and .10% C) has been repaired to API 570 using a GMAW-short arc groove weld that is .375" thick. This weld:
- A. Must be PWHT'd
 - B. Must be pre-heated
 - C. Must be bend-tested
 - D. Both A & B, above
15. A piping circuit was installed new and cold in 1954. The P&ID's reflect a pressure of 375 psi and 400°F. The pipe is Schedule 80, API 5L X42 ERW, and is NPS 4, in HF acid service. The piping is first inspected in 1991 and found to be .306" at the thinnest location on a bend. This same area is checked in 1995 and is 250" thick. Per API 570 when should the next thickness inspection of this piping be conducted if a corrosion allowance of 1/8" must be maintained?
- A. 5 years
 - B. 2.71 years
 - C. 5.42 years
 - D. 1.5 years
16. A welding operator qualifies in an automatic process using carbon steel A-106 pipe that is NPS 10. This operator is then qualified to weld which of the following diameters, per ASME IX?
- A. Over 2 7/8 o.d.
 - B. Under 2 7/8 o.d.
 - C. Down to NPS 1 o.d.
 - D. All of the above are acceptable
17. What is the calculated rated working pressure of a flanged fitting that is Class 900, material stress of 20 KSI and operating at 1400°F?
- A. 2,250 psi
 - B. 225 psi
 - C. 175 psi
 - D. 2057 psi
18. What is the required gamma density range of a weld that has a shimmed hole penetrameter that is measured at 2.4 H&D density through the body of the IQI?
- A. 2.0 - 4.0
 - B. 1.8 - 3.12
 - C. 2.04 - 4.0
 - D. 2.04 - 3.12
19. Selection of materials to resist deterioration in service:
- A. Is not within the Scope of B31.3
 - B. Is a decision that should be made by the Purchasing Agent
 - C. Is required to be made by a degreed Metallurgist
 - D. Is covered by API 570 for new construction materials
20. Underground piping that is not protected by cathodic protection may be assessed by RBI. If used, RBI assessments on Class I underground piping in soil that is 10,000 OHM/CM should be conducted at least every _____ years per API 570.
- A. 5
 - B. 10
 - C. 15
 - D. 2.5

21. The Inspector should conduct CUI inspections at suspect areas, which does not include:
- A. Penetrations or breaches in the insulation jacket
 - B. Low points in piping systems that have damaged insulation
 - C. Damaged or missing insulation jacketing
 - D. All the above
22. An NPS 24 pipe is B337 Grade 1 (fusion welded, double butt seam). The pipe has been in-service since 1993 and was originally .730" thick. The pressure is 300 psi @ 400°F. If the piping is checked in 1998 and found to be .700" thick, what is the latest date should the piping should be retired from service?
- A. 3.33 years
 - B. 6.66 years
 - C. 9.99 years
 - D. Should be retired immediately
23. An ultrasonic thickness test on piping utilizes a "delay line" single element transducer. This means:
- A. The technician has to wait for the machine to warm up before taking readings
 - B. The equipment compensates for the time passing through the transducer
 - C. It corrects for material velocity
 - D. It corrects for payer-diameter transducers
24. The addition or deletion of backing gas in a carbon steel material using the GMAW process is a(n) _____ variable.
- A. Essential
 - B. Non-essential
 - C. Supplementary essential
 - D. Non-applicable
25. What is the correct gasket contact width for an NPS 24 slip-on raised face width gasket, without edges extending to the bolt?
- A. 1.62"
 - B. 1.50"
 - C. 24.00"
 - D. 20.00"
26. What is the difference between X and Gamma Rays?
- A. X is a longer ray than Gamma
 - B. Gamma is a harder ray than X
 - C. The origination of the ray (source vs. machine)
 - D. X is only used in alloy analysis
27. Tension tests may be used to:
- A. Qualify a welder
 - B. Qualify a welding operator
 - C. Prove the ductility of a proposed welding procedure
 - D. Qualify a welding procedure

28. When is a quench-cracked aluminum block used?
- A. For PT procedure qualification when temperatures are outside 60 - 125°F
 - B. For PT procedure qualification when temperatures are within 60 - 125°F
 - C. For MT procedure qualification when temperatures are above 500°F
 - D. For UT procedure qualification when aluminum will be checked in production.
29. A gate valve is installed in a SRU vapor condensing line with pressure at 375 psig @ 500°F. The valve is NPS 10, and is thinned between the seats to .569" thick. The Maintenance Manager asks you (as the 570 Inspector) if this valve should be replaced or if it will be safe for a 3 year run. If the valve material is unknown and a conservative quality factor of .80 is used, what would be the best answer to give the Maintenance Manager, per API 570 if a corrosion rate of .01" per year is assumed?
- A. Yes, the valve will meet the rules for a 3 year period.
 - B. No, the valve will not meet the rules for a 3 year period.
 - C. The valve can be used provided a hydrotest at 1.5 x design pressure is conducted.
 - D. The valve should not be used because gate valves are prohibited in this service.
30. An ASME B16.5, NPS 16, 600 Class blind flange is installed in a piping system. The blind is 16.75" i.d. (gasket surface) and is installed in a system operating at 550 psi @ 600°F. It is made from a 516-70 plate with no weld seam. What is the minimum thickness of this blind?
- A. 3.00"
 - B. 1.188"
 - C. 2.37"
 - D. .650"
31. An ASTM wire penetrometer with a "set B" designation has a large wire diameter of:
- A. .010"
 - B. .005"
 - C. .025"
 - D. .032"
32. Welders may qualify by radiography utilizing the SMAW process of which of the following materials:
- A. Nickel base alloys
 - B. Zirconium
 - C. Titanium (with SMAW)
 - D. Aluminum (with GMAW)
33. One type of environmental cracking commonly found in carbon steel is?
- A. Napthenic
 - B. Polythionic
 - C. Amine
 - D. Chloride
34. A portable X-ray fluorescence machine is normally used for what type of testing on piping systems?
- A. Profile RT
 - B. Materials identification
 - C. Flaw detection
 - D. Sorting different grades of carbon steel

35. A 4" square insert patch is used to repair an NPS 8 piping system. The material is API X-56, and the rules of API 570 for NDE will be met. A 1/8" diameter SMAW electrode will be used; and the corners will have a 1" radius. An Engineer will not be consulted (because he is in Hawaii, fishing or something). A full 1.5 x design pressure hydrotest will be completed. As the Inspector, you would _____.
- A. Allow this patch, provided all other rules of 570 are followed.
 - B. Disallow this patch, because the SMYS is greater than 40 PSI
 - C. Disallow this patch, because the Engineer must be consulted and the radius is too large.
 - D. Disallow this patch, because the patch is too large.

WELDING PROCEDURE QUESTIONS

Questions #36 - 45 apply to WPS and PQR # GMAW-SP-1 (attached)

36. The P# range shown on the WPS is:
- A. correct as shown
 - B. should be P5A to P5A only
 - C. should be P5A to P5A, P4, P3, or P1
 - D. should be P5A to P5A, 5B, 5C
37. The D.W.M. thickness range shown on the WPS is:
- A. acceptable
 - B. unacceptable - should be .116" - .499"
 - C. unacceptable - should be .547" max.
 - D. unacceptable - should be 1/16" - .500"
38. The base metal thickness range shown on the WPS:
- A. is acceptable
 - B. should be 3/16" - .547"
 - C. should be 1/16" - .500"
 - D. should be 3/16" - 2"
39. The preheat temperature shown on the WPS:
- A. is acceptable
 - B. should be increased to 250°F
 - C. should be decreased to 50°F
 - D. should be increased to 150°F
40. The tension tests shown on the PQR:
- A. are acceptable as shown
 - B. are dimensionally unacceptable to the Code
 - C. must be "dog-bone" specimens
 - D. need to be changed to full size specimens
41. The bend tests shown on the PQR:
- A. are acceptable as shown
 - B. should be all side bends
 - C. are unacceptable because the root bend has a corner crack
 - D. none of the above

42. The ultimate stress shown on the PQR:
- A. is unacceptable for T-2
 - B. is unacceptable for T-1
 - C. is too high for both specimens
 - D. should be at least 75,000 PSI for both specimens
43. The joint design specified on the WPS is:
- A. acceptable as shown
 - B. should show only a single vee groove weld
 - C. should not address backing
 - D. should be drawn on the WPS as a sketch
44. The PQR is unacceptable because:
- A. the position of welding does not match the test coupon welded
 - B. the gas backing mixture does not match the WPS
 - C. the joint design is not shown as a sketch on the PQR
 - D. the travel speed is too fast
45. The A# shown on the WPS and PQR:
- a. is acceptable as shown
 - b. is unacceptable because it does not correlate to chrome filler metal
 - c. is unacceptable because air should have been used
 - d. is unacceptable because A-1 filler metal requires PWHT per ASME IX

QW-482 SUGGESTED FORMAT FOR WELDING PROCEDURE SPECIFICATION (WPS)
 (See QW-200.1, Section IX, ASME Boiler & Pressure Vessel Code)

Company Name: XYZ COMPANY By: JOE BLOW SR
 Welding Procedure Spec. No.: GMAW-SP-1 Date: 2-29-92 Supporting PQR No. (s): GMAW-SP-1
 Revision No.: 0 Date: 2-29-92
 Welding Process(s): GMAW-SHORT ARC Type(s): SEMI-AUTO
 (Automatic, Manual, Machine, or Semi-Auto)

JOINTS (QW-402) Details

Joint Design: SEE PRODUCTION DRAWINGS
 Backing: (Yes) X (No) X
 Backing Material: (Type): WELD METAL, IF USED
 (Refer to both backing & retainers)

- X Metal
- Nonmetallic
- Nonfusing Metal
- Other

Sketches, Production Drawings, Weld Symbols or Written Description should show the general arrangement of the parts to be welded. Where applicable, the root spacing and the details of weld groove may be specified.

(At the option of the Mgr., Sketches may be attached to illustrate joint design, weld layers, and the bead sequence, e.g. for notch toughness procedures, for multiple process procedures, etc.)

***BASE METALS (QW-403)**

P-No. 5A Group No. 1 to P-No. 5, 4, 3, OR 1 Group No. _____
 OR
 Specification type and grade SA 387 CL 1 GR 22
 to Specification type and grade ANY P 5, 4, 3, OR 1 MATERIAL
 OR
 Chem. Analysis and Mech. Prop. _____
 to Chem. Analysis and Mech. Prop. _____

Thickness range:
 Base Metal: Groove: 1/16" - .998" Fillet: ALL
 Pipe Dia. Range: Groove: ALL Fillet: ALL
 Other: NO PASS GREATER THAN 1/2" IN THICKNESS

*** FILLER METALS (QW-404)**

Spec. No. (SFA):	<u>5.9</u>	_____	_____
AWS No. (Class):	<u>ER 90 S B2</u>	_____	_____
Filler Metal F-No.:	<u>6</u>	_____	_____
Chem. Comp. - A No.:	<u>1</u>	_____	_____
Size of Filler Metals:	_____	_____	_____

Weld Metal
 Thickness range:
 Groove: .998" MAX
 Fillet: ALL
 Electrode-Flux (Class): _____
 Flux Trade Name: _____
 Consumable Insert: _____
 Other: SOLID WIRE ONLY, NO SUPPLEMENTAL POWDER, FILLERS, OR FLUX WILL BE USED

* Each base metal-filler metal combination should be recorded individually.

QW-482 (Back)

WPS No.: _____ Rev. No.: _____

POSITIONS (QW-405) Position(s) of Groove: <u>ALL</u> Welding Progression: Up <u>X</u> Down <u>X</u> Positions(s) of Fillet _____	POSTWELD HEAT TREATMENT (QW-407) Temperature Range <u>NONE</u> Time Range _____																
PREHEAT (QW-406) Preheat Temp. Min.: <u>100° MINIMUM</u> Interpass Temp. Max.: <u>650° MAXIMUM</u> Preheat Maint.: _____ _____ (Continuous or special heating where applicable should be recorded.)	GAS ((QW-408) Percent Composition <table style="width:100%; border-collapse: collapse;"> <tr> <td></td> <td align="center">Gas(es)</td> <td align="center">(Mixture)</td> <td align="center">Flow Rate</td> </tr> <tr> <td>Shielding:</td> <td align="center"><u>YES</u></td> <td align="center"><u>100% AR</u></td> <td align="center"><u>10-15 CFH</u></td> </tr> <tr> <td>Trailing:</td> <td align="center"><u>NONE</u></td> <td></td> <td></td> </tr> <tr> <td>Backing:</td> <td align="center"><u>YES</u></td> <td align="center"><u>75AR/25CO2</u></td> <td align="center"><u>2 CFH</u></td> </tr> </table>		Gas(es)	(Mixture)	Flow Rate	Shielding:	<u>YES</u>	<u>100% AR</u>	<u>10-15 CFH</u>	Trailing:	<u>NONE</u>			Backing:	<u>YES</u>	<u>75AR/25CO2</u>	<u>2 CFH</u>
	Gas(es)	(Mixture)	Flow Rate														
Shielding:	<u>YES</u>	<u>100% AR</u>	<u>10-15 CFH</u>														
Trailing:	<u>NONE</u>																
Backing:	<u>YES</u>	<u>75AR/25CO2</u>	<u>2 CFH</u>														

ELECTRICAL CHARACTERISTICS (QW-409)

Current AC or DC DC Polarity REVERSE
 Amps Range 100-120 Volts (Range) 24-27
 (Amps and volts range should be recorded for each electrode size, position, and thickness, etc. This information may be listed in a tabular form similar to that shown below.)

Tungsten Electrode Size and Type _____
(Pure Tungsten, 2% Thoriated, etc.)
 Mode of metal Transfer for GMAW SPRAY OR SHORT ARC
(Spray arc, short circuiting arc, etc.)
 Electrode Wire feed speed range _____

TECHNIQUE (QW-410)

String or Weave Bead STRING
 Orifice or Gas Cup Size 1/2"
 Initial and Interpass Cleaning (Brushing, Grinding, etc.) BRUSHING AND GRINDING
 Method of Back Gouging AIR ARC
 Oscillation REVERSE
 Contact Tube to Work Distance 1/4" - 1/2"
 Multiple or Single Pass (per side) MULTIPLE
 Multiple or Single Electrodes SINGLE
 Travel Speed (Range) 15 IPM - 30 IPM
 Peening NONE
 Other 2 1/4% Chrome filler metal, only

Weld Layer(s)	Process	Class	Filler Metal		Current		Travel Speed Range	Other (e.g., Remarks, Comments, Hot Wire Addition, Technique, Torch Angle, Etc.)
			Dia.	Type Polar.	Amp Range	Volt Range		
ALL	GMAW SPRAY	ER90S B2	1/16 - 3/32	DCRP	100-120	24-27	15-30 IPM	

QW-483 SUGGESTED FORMAT FOR PROCEDURE QUALIFICATION RECORDS (PQR)
 (See QW-200.2, Section IX, ASME Boiler and Pressure vessel Code)
 Record Actual Conditions Used to Weld Test Coupon

Company Name: XYZ COMPANY
 Procedure Qualification Record No.: GMAW-SP-1 Date: 2-29-92
 WPS No.: GMAW-SP-1
 Welding Process(s): GMAW (SHORT ARC)
 Types (Manual, Automatic, Semi-Auto.): SEMI-AUTO

JOINTS (QW-402)

Groove Design of Test Coupon

(For combination qualifications, the deposited weld metal thickness shall be recorded for each filler metal or process used.)

<p>BASE METALS (QW-403) Material Spec.: <u>SA 387 CL 1</u> Type or Grade: <u>GR 22</u> P-No.: <u>5 A</u> to P-No.: <u>5A</u> Thickness of Test Coupon: <u>.499"</u> Diameter of Test Coupon: <u>N/A</u> Other: <u>COMPOSITION - 2 1/4% CHROME, 1% MOLY</u> <u>PASS THICKNESS 1/8"</u></p>	<p>POSTWELD HEAT TREATMENT (QW-407) Temperature: _____ Time: <u>NONE</u> Other: _____ _____ _____</p>																				
<p>FILLER METALS (QW-404) SFA Specification: <u>5.9</u> AWS Classification: <u>ER 90SB2</u> Filler Metal F No.: <u>6</u> Weld metal Analysis No.: <u>1</u> Size of Filler metal: <u>1/8</u> Other: <u>2 1/4% CHROME</u> <u>FILLER METAL</u> Weld Metal Thickness: <u>.499"</u></p>	<p>GAS (QW-408)</p> <table border="0"> <tr> <td></td> <td align="center" colspan="3">Percent Composition</td> </tr> <tr> <td></td> <td align="center">Gas(es)</td> <td align="center">(Mixture)</td> <td align="center">Flow Rate</td> </tr> <tr> <td>Shielding:</td> <td><u>YES</u></td> <td><u>100% ARGON</u></td> <td><u>20-30 CFH</u></td> </tr> <tr> <td>Trailing:</td> <td><u>NONE</u></td> <td></td> <td></td> </tr> <tr> <td>Backing:</td> <td><u>YES</u></td> <td><u>100% ARGON</u></td> <td><u>10-15 CFH</u></td> </tr> </table>		Percent Composition				Gas(es)	(Mixture)	Flow Rate	Shielding:	<u>YES</u>	<u>100% ARGON</u>	<u>20-30 CFH</u>	Trailing:	<u>NONE</u>			Backing:	<u>YES</u>	<u>100% ARGON</u>	<u>10-15 CFH</u>
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<p>POSITION (QW-405) Position of Groove: <u>6 G</u> Weld Progression (Uphill, Downhill): <u>UPHILL</u> Other: _____</p>	<p>ELECTRICAL CHARACTERISTICS (QW-409) Current: <u>DC</u> Polarity: <u>REVERSE</u> Amps.: <u>125</u> Volts: <u>24</u> Tungsten Electrode Size: <u>N/A</u> Other: _____</p>																				
<p>PREHEAT (QW-406) Preheat Temp.: <u>250°</u> Interpass temp.: <u>650° MAX</u> Other: <u>SOLID WIRE ONLY, NO SUPPLEMENTAL</u> <u>POWDER, FILLER, OR FLUX USED</u></p>	<p>TECHNIQUE (QW-410) Travel Speed: <u>12 IPM</u> String or Weave Bead: <u>STRING</u> Oscillation: <u>REVERSE</u> Multipass or Single Pass (per side): <u>MULTIPASS</u> Single or Multiple Electrodes: <u>SINGLE</u> Other: _____</p>																				

QW-483 (Back)				PQR No.: <u>GMAW-SP-1</u>		
Tensile Test (QW-150)						
Specimen No.	Width	Thickness	Area	Ultimate Total Load Lb.	Ultimate Unit Stress psi	Type of Failure & Location
T-1	N/A	.498 DIA.	.194	11,200	57,731	DF-WM
T-2	N/A	.498 DIA.	.194	12,000	61,855	DF-HAZ

Guided Bend Tests (QW-160)	
Type and Figure No.	Result
FACE	1/16" CRACK OK
ROOT	CORNER CRACK OK
FACE	NO INDICATION OK
ROOT	1/4" CRACK OK

Toughness Tests (QW-170)							
Specimen No.	Notch Location	Specimen Size	Test Temp.	Impact Values			Drop Weight Break (Y/N)
				Ft. Lbs.	% Shear	Mils	

Comments: _____

Fillet Weld Test (QW-180)

Result — Satisfactory: Yes: _____ No: _____ Penetration Into Parent Metal: Yes: _____ No: _____

Macro — Results: _____

Other Tests

Type of Test: _____

Deposit Analysis: _____

Other: _____

Welder's Name: JOE BLOW JR Clock No.: _____ Stamp No.: _____

Tests conducted by: XYZ COMPANY Laboratory Test No.: 1234

We certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in accordance with the requirements of Section IX of the ASME Code.

Manufacturer: XYZ COMPANY

Date: _____ By: JOE BLOW SR.

CLOSED BOOK QUESTIONS # 46 - 150

46. Buried pipe should be excavated to a depth of _____ when corrosion is suspected at soil-to-air interfaces.
- A. 6"
 - B. 8 - 12"
 - C. 12"
 - D. 18"
47. Essential variables must be addressed on:
- A. WPS
 - B. PQR
 - C. WPQ
 - D. All of the above
48. What NDE method or methods do not require a written procedure, per ASME B31.3.
- A. RT
 - B. MT
 - C. UT
 - D. None of the above
49. Intelligent pigging may be used on NPS 6 piping that has bends that are normally greater than approximately _____, because less bend radii may not "pass a pig" (ouch).
- A. 24"
 - B. 30"
 - C. 48"
 - D. 60"
50. Piping in soil with a resistivity of 2,000 ohm/cm should be leak tested at which of the following intervals, if no other testing/inspection is performed and no cathodic protection is applied?
- A. 2.5
 - B. 7.5
 - C. 10
 - D. 5
51. When joining new pipe to existing pipe and a pressure test of the existing piping will not be performed, a socket-weld connection may be used. Which of the following is not a requirement of API 570 when using this attachment?
- A. NPS 2 or less in size
 - B. Class 150 or less and 500°F or less
 - C. 1/16" gap and two weld passes, minimum
 - D. None of the above
52. A pressure test with steam will be completed on a Class 3 piping system that has been altered. The system design pressure is 600 psi. What should the pneumatic test pressure be on this piping?
- A. 660 psi
 - B. 900 psi
 - C. Cannot be determined because stress values are not given
 - D. Steam testing is only permitted for Cat. D fluid service

53. What is the test position for plate groove welds in the overhead position?
- A. 1G
 - B. 6G
 - C. 4G
 - D. 5G
54. A #35 penetrameter has a 2T hole diameter of:
- A. .035"
 - B. .070"
 - C. .130"
 - D. .007"
55. The "1" in 7018 means that?
- A. The electrode has a yield strength of 70 KSI
 - B. The electrode has an elastic load strength of 70 KSI
 - C. The electrode has been qualified at low temperature
 - D. None of the above
56. An individual without a high school education must have a minimum of _____ years of experience in inspecting the installation of piping to quality as an Inspector.
- A. 2
 - B. 3
 - C. 5
 - D. None of the above
57. The recommended downstream limit of an injection point circuit on an NPS 4 pipe will be _____.
- A. 12"
 - B. 25' past the 1st flow change or 2nd flow change whichever is less
 - C. 25' past the 1st flow change or 2nd flow change whichever is greater
 - D. 13.5"
58. Leaks can be safety or fire hazards, but they often result in _____.
- A. Shutdowns
 - B. Explosions
 - C. Economic loss
 - D. Serious pollution
59. Piping systems operating at which of the following temperatures are not susceptible to CUI?
- A. Carbon steel @ -4 to -10° C
 - B. Carbon steel @ 25°F to 250°F
 - C. Stainless steel @ 65°C to 240°C
 - D. Carbon steel @ 450°F in intermittent service
60. Excavation of buried piping at soil-to-air interfaces is only required if?
- A. Cathodic protection is adequate
 - B. Erosion is suspected
 - C. Coating or wrapping damage is evident
 - D. The piping is in hazardous service

61. A new piping system was installed in January 1993 using carbon steel in hydrogen chloride service. A corrosion rate is not known and cannot be estimated. The initial thickness readings are taken in January 1998. The next thickness readings are scheduled for January 2003. As the API 570 Inspector, the best course of action would be to:
- A. Accept this situation as meeting the Code.
 - B. Accept this situation, but require the next thickness readings to be done in 2001
 - C. Calculate the corrosion rate based on the original nominal thickness of the piping and note that the initial thickness readings were not done within 570 time frames.
 - D. Note that the situation is unacceptable, and require immediate removal from service.
62. Insulation holes are cut for access to take thickness readings. The size of the hole will be the test point. Which of the following hole diameters should not be used for an NPS 10 pipe?
- A. 3"
 - B. 4"
 - C. 2"
 - D. Both A & B above
63. If a pipe for a repair must be impact tested per B31.3, what is the applicable testing specification that should be used to conduct the tests?
- A. ASTM A-106
 - B. ASTM A-307
 - C. ASTM A-370
 - D. ASME IX
64. Per ASME V, what ASTM Class of radiography film is not permitted to be used on piping repair welds?
- A. ASTM Type I
 - B. ASTM Type II
 - C. ASTM Type III
 - D. None of the above
65. Which of the following is not a non-essential variable for the SMAW process?
- A. A change in PWHT
 - B. A decrease in preheat temperature by more than 100 degrees from that qualified
 - C. A change in F #s from that qualified
 - D. All of the above
66. What is the remaining life of a Class 1 piping circuit that was originally inspected in 1990 and was .627" thick. The circuit was inspected again in 1994 and was found to be .602" thick. The piping was originally installed in 1980, and was .750" nominal thickness. The calculated minimum thickness is .531" thick.
- A. 14.2 years
 - B. 7.1 years
 - C. 5 years
 - D. 3.1 years
67. When should a pressure gage used for leak testing be calibrated?
- A. Semi-annually
 - B. Bi-annually
 - C. Annually
 - D. When required by the Inspector

68. Which one of the following specifies a legitimate reason why a welding operators qualifications may be questioned by the Inspector?
- A. Qualified by production RT and not bend testing
 - B. No evidence to show he used the process within the last 4 months
 - C. Was originally qualified on pipe in 6G - is now welding plate in 2G
 - D. None of the above are legitimate reasons to question the operator's qualifications
69. Radiography profile is used on an NPS 6 carbon steel pipe. The pipe is measured to be .333" thick at ambient temperature. The pipe is then heated to approximately 700 degrees F. If all other conditions remain the same, what thickness should the pipe show if radiography profile is done at this elevated temperature?
- A. .349"
 - B. .333"
 - C. .339"
 - D. .291"
70. Low soil resistivity will normally cause :
- A. Higher potential corrosivity
 - B. Lower potential corrosivity
 - C. Indeterminate potential corrosivity
 - D. Higher cathodic reactions at the pipe surface
71. An NPS 24 pipe is classified as a Class 3 and is underground without cathodic protection in soil with resistivity of 12,000 ohms/cm. The pipe is excavated in 1998 and found to be .150" thick due to external corrosion. The calculated minimum thickness is .093". The pipe was installed in 1959, but was pigged in 1978 and found to be .238" thick (average). Based on this information, when should the next inspection of this pipe be conducted.
- A. 12.95 years
 - B. 10 years
 - C. 15 years
 - D. 5 years
72. Which of the following is not a minimum defined area of a preheat zone, per B31.3?
- A. 25 mm beyond each edge of the weld
 - B. 1" beyond each edge of the weld
 - C. 36 centimeters beyond the toe of the weld
 - D. None of the above
73. What types of materials are more susceptible to inadvertent substitution than others, unless a detailed verification program is applied to ensure proper identification prior to use?
- A. Low alloy materials
 - B. High alloy materials
 - C. Carbon steel materials
 - D. Both A & B, above
74. What examination is recommended for gate valves that are susceptible to corrosive or erosive service?
- A. Hydrotest to API 598
 - B. Thickness readings between the seats
 - C. RT profile
 - D. Heat treatment after repairs

75. Why is steam sometimes preferred as a test medium when conducting a pressure test?
- A. It may loosen tightly held flux from welds that could otherwise mask a hidden leak.
 - B. It is safer than conducting a hydrostatic test
 - C. It is easier to introduce steam into pipe than water
 - D. NDE can be waived on piping that has been steam tested
76. Polythionic cracking would probably be more prevalent in which of the following conditions:
- A. Ferritic stainless steel in a hydrocracker at 900 degrees F.
 - B. Carbon steel in an FCCU at 800 degrees F.
 - C. Austenitic stainless steel in a cumene service at 400 degrees F.
 - D. Austenitic stainless steel in sulfur recovery service at 1000 degrees F.
77. NPS 2 piping in Class 1 secondary service should be visually inspected at _____ intervals.
- a. 10 year
 - b. 5 year
 - c. 3 year
 - d. no specific intervals - Class 1 secondary piping is inspected at the owners option
78. What specific defects can MT be used to find on austenitic stainless steel welds:
- A. surface defects, only
 - B. surface and slightly sub-surface defects , only
 - C. no defects can be detected
 - D. only linear indications can be detected that are parallel to stress
79. What considerations are not issues on threaded connections to determine if they should be renewed or replaced?
- A. Classification of piping
 - B. Corrosion rate
 - C. Size of connection
 - D. Intermittent service
80. Identifying and evaluating degradation methods is an assessment if _____.
- A. Likelihood of failure
 - B. Consequence of failure
 - C. Total risk
 - D. Owner's commitment
81. The individual responsible for the functions of an Authorized Piping Inspection Agency is:
- A. The Inspector
 - B. The Lead Inspector
 - C. The Piping Engineer
 - D. An "individual" is not responsible - the owner/user is responsible
82. Which of the following is not considered to be a form of corrosion or cracking, per API 570?
- A. CUI
 - B. Fatigue
 - C. Creep
 - D. None of the above

83. Austenitic stainless steel piping systems are susceptible to _____ when they operate between 150° and 400°F.
- A. CUI
 - B. Chloride stress corrosion cracking
 - C. Polythionic acid cracking
 - D. Caustic embrittlement
84. Per ASME V, a radiograph that exhibits a density of 3.0 through the body of a shimless hole penetrometer must exhibit a maximum density range of _____ through the weld.
- A. 2.55 - 3.9
 - B. 2.0 - 4.0
 - C. 1.8 - 4.0
 - D. 2.55 - 4.0
85. Per API 570, after removal of insulation plugs to permit ultrasonic thickness readings, the plugs should be _____.
- A. Replaced
 - B. Welded in
 - C. Replaced and sealed
 - D. Caulked
86. Fatigue cracking may result from all of the below, except:
- A. Stress reversals from operating equipment (fans, blowers, etc.)
 - B. Cyclic stresses from compressors/pumps
 - C. Flow induced vibration
 - D. None of the above
87. A piping hot tap is to be performed on 9% chrome material. The maintenance department wants to install the hot tap utilizing austenitic stainless steel weld metal so that post-weld heat treatment can be waived. As the API 570 Inspector, this condition should be _____.
- A. Allowed
 - B. Dis-allowed
 - C. Allowed, if radiography is performed
 - D. Allowed, if hardness tests are completed after welding
88. When welding with ER 90S-B3 filler metal, the welding process will probably be _____.
- A. GTAW
 - B. FCAW
 - C. SMAW
 - D. Stud welding
89. A piping system is made from Type 347 stainless steel and is re-rated. A hydro-test will be performed using potable water with an analyzed chloride content of 245 ppm. This test should be _____.
- A. Allowed
 - B. Dis-allowed
 - C. Changed to a hydrocarbon testing medium
 - D. Changed to a pneumatic test per B31.3 rules

90. A Class 3 system is UT inspected in 1991 and is found to be .378" thick. The pipe is then checked in 1995 and is found to be .309" thick. The pipe is checked again in 1998 and is found to be .280" thick. If the minimum thickness is .236" and the pipe was originally .432" in nominal thickness (new and cold) in 1980, when should the next UT inspection be conducted?
- A. 2.44 years
 - B. 4.88 years
 - C. 5 years
 - D. 10 years
91. Which surface NDE method is the most ideal for locating SCC in austenitic stainless steel?
- A. WFMT
 - B. UT Shear Wave
 - C. Fluorescent PT
 - D. DFMT
92. Per ASME V, eye examinations must be administered on a routine basis. Which of the following represents the frequency required?
- A. Every 6 months
 - B. Annually
 - C. Semi-annually
 - D. Bi-annually
93. Normalizing is defined as:
- A. Heating above the transformation temperature and cooling in still air.
 - B. Heating below the transformation temperature and cooling in still air.
 - C. Heating above the transformation temperature and cooling in a furnace.
 - D. Heating above the transformation temperature, quenching, and then reheating in a furnace.
94. A radiograph of a benzene piping longitudinal groove weld shows a line of slag inclusions that are 1/16" in length. This radiograph should be interpreted to the rules of _____, unless noted otherwise by the owner/user.
- A. B31.3 Cat. M
 - B. B31.3 100%
 - C. B31.3 Severe Cyclic Service
 - D. B31.3 Normal Fluid Service
95. When remote visual examination of piping is conducted using fiber-optics, ASME V requires that the resolution be equivalent to:
- A. ASME III
 - B. Direct visual observation
 - C. A J-2 standard
 - D. A 1/32" wide line on an 18% neutral-gray background
96. All on-stream welding repairs shall be conducted to the rules of _____.
- A. B31.3
 - B. API 570
 - C. API Publication 2201
 - D. ASME IX

97. Per definition, an injection point would not include which of the following?
- A. Reformer chlorine lines
 - B. Anti-foam injectors
 - C. Mixing tees
 - D. Polysulfide in cat cracking wet gas
98. A close interval soil "Hot Spot" survey shows an area of -.500 volts which climbs to a maximum of .600 volts. the anodic area of this pipe will be:
- A. Closer to the -.500 volt area
 - B. Closer to the .600 volt area
 - C. Directly centered over the .600 volt area
 - D. Determined by a holiday test, and not this test
99. The single most frequent reason that plants replace piping is:
- A. Corrosion thinning
 - B. Environmental cracking
 - C. Stress-corrosion cracking
 - D. Flange leaks
100. When it is not practical to perform a pressure test on a final closure weld that joins a replacement section to a new section of pipe, API 570 requires all of the following be met, except:
- A. The replacement piping can be fully radiographed in lieu of pressure testing.
 - B. The closure is a miter joint between two pieces of pipe.
 - C. Socket welds must be one pass, minimum.
 - D. All of the above
101. Which of the following would not cause an increase in operating pressure in a piping system?
- A. Hydraulic hammer
 - B. Increase in ambient temperature
 - C. Failure of control devices
 - D. None of the above
102. A circuit was originally inspected in 1980 and was found to be .306" thick. The pipe was again inspected in 1990 and found to be .197" thick. It was last inspected in 1994 and found to be .190" thick. Per API 570, at what latest date should the next thickness inspection of this Class 3 piping be scheduled, if the calculated t_{min} is .187"?
- A. 3 years
 - B. 10 years
 - C. Approximately 2.25 months
 - D. Approximately 3 months
103. The service classes of piping (1, 2, 3) are based on _____?
- A. Operating experience and history
 - B. Consequence of failure
 - C. Likelihood of failure
 - D. Process Hazard Analysis (PHA's)

104. On a typical isometric sketch, a circled number will normally indicate:
- A. Points where thicknesses should be monitored
 - B. Areas of suspect corrosion
 - C. The identification of the assigned Inspector or examiner
 - D. The number of thickness readings to be taken at that TML
105. During a Wenner (or Werner) test, the API 570 Inspector notices that the pins are inserted into the soil approximately 4". The pins are all spaced evenly 40" apart. The Inspector should:
- A. Question the test setup regarding the ratio of depth-to-spacing
 - B. Accept the test setup regarding the ratio of depth-to-spacing
 - C. Ignore the test setup - no criteria is provided
 - D. Disallow the test because the required ohm/cm factor of 191.5 has not been applied
106. A WFMT is conducted on E309 piping system welds looking for possible sub-surface cracking. Because this is an internal test, DC yokes are used to conduct the test. The yokes were last calibrated 3 years ago. Which of the following is not a reason that you, as the Inspector, would disallow this test?
- A. E309 cannot be effectively WFMT tested
 - B. Yokes can only be used for surface examination
 - C. MT equipment must be calibrated annually
 - D. None of the above
107. When looking for CUI on a Class 1 piping system, the approximate amount of follow-up examination with NDE or insulation removal at areas of damaged insulation should be:
- A. 50%
 - B. 35%
 - C. 75%
 - D. 10%
108. A pneumatic leak test will be applied to a repaired piping system, per API 570. The design pressure is 100 PSI, and the operating stress value of the material is 16,200. The test will be run at ambient, with the stress of the material listed at 17,000. What is the test pressure of this piping system?
- A. 115 PSI
 - B. 110 PSI
 - C. 157 PSI
 - D. 150 PSI
109. Piping systems normally subject to pressure testing include all of the following, except:
- A. Water and non-hazardous utility lines
 - B. Underground piping
 - C. Small piping and tubing
 - D. Simple manifold systems
110. An imperfection is the same as a:
- A. Flaw
 - B. Defect
 - C. Discontinuity
 - D. Either A or C, above

111. SNT-TC-1A is _____?
- A. A required minimum standard for qualification/certification of NDE personnel.
 - B. A recommended practice for qualification/certification of NDE procedures and personnel.
 - C. A recommended practice for qualification/certification of NDE personnel.
 - D. A mandatory document required by B31.3 and 570 to establish an NDE written practice.
112. A welder is qualified by a repair contractor in SMAW using NPS 2 pipe in January of a given year. The welder does not weld with SMAW until a piping repair job in October of the same year. This welder _____?
- A. Must be requalified with small diameter pipe prior to the October job.
 - B. Must be requalified by bend tests prior to the October job.
 - C. May be requalified by RT or bend tests on plate prior to the October job.
 - D. None of the above.
113. The external visual inspection for CUI on bare pipe includes all of the following, except:
- A. Condition of the paint or coating.
 - B. Check for external corrosion.
 - C. Check for other forms of deterioration.
 - D. None of the above.
114. When completing a longitudinal weld on a full encirclement sleeve repair on NPS 12 pipe, the maximum welding rod diameter recommended by API 570 is:
- A. 5/32
 - B. 3/16
 - C. 1/4
 - D. 3/8
115. Per API 570, external visual inspection of insulated piping systems for CUI must include at least _____% of Class 2 piping?
- A. 50%
 - B. 33%
 - C. 10%
 - D. None of the above
116. When conducting an ultrasonic examination of a piping butt weld on a NPS 10 pipe, the basic calibration block shall be:
- A. Flat
 - B. Curved
 - C. Flat or curved
 - D. NPS 10 pipe
117. The allowable thickness tolerance for A358 welded piping is:
- A. -12.5%
 - B. -.01"
 - C. -.018"
 - D. 0"

118. Inspection records should contain all of the following, except:
- A. Calculated retirement thickness
 - B. Original date of installation
 - C. Change in service
 - D. Original NDE records and reports
119. Per ASME B16.5, when the term "nominal" is used it means:
- A. Average size
 - B. A little bigger than "normal"
 - C. Approximate o.d., i.d. and thickness
 - D. Stated size is for designation, not for measurement
120. One of the duties of a Piping Inspector include:
- A. Maintaining a record of piping process fluids handled
 - B. Performing design review or analysis of piping re-rating calculations
 - C. Overall responsibility for compliance with API 570
 - D. None of the above
121. Which of the following is not commonly used as a pressure testing medium?
- A. Hydrogen
 - B. Steam
 - C. Nitrogen
 - D. Water
122. The effective throat of a fillet weld is:
- A. The distance from the face to the root.
 - B. The distance from the root to any penetration into the base metal.
 - C. The distance from the face to the root, minus any convexity.
 - D. The distance from the face to the root, minus any concavity.
123. The term "imperfection" is associated with all of the following terms except:
- A. "Flaws"
 - B. "Discontinuities"
 - C. "Defects"
 - D. None of the above
124. A .650" thick (measured thickness) NPS 14 pipe is longitudinal seam-welded. The pipe has a locally corroded area that is .270" thick, and the edge of this corroded area is 1.200" away from the toe of the longitudinal weld. If a calculation was to be performed to determine the minimum thickness of the corroded area, what weld joint efficiency should be used?
- A. The original efficiency pertaining to the circumferential weld
 - B. The original efficiency pertaining to the longitudinal weld
 - C. .7, because a default must be used
 - D. 1.00, because the area is far enough away from the weld

125. Valve wall thickness shown on Table 3 of ASME B16.34 are approximately _____ thicker than calculated values?
- A. 12.5%
 - B. .1"
 - C. .01"
 - D. 1.5 times
126. Which of the following pipe joints are normally not used for cast iron?
- A. Threaded
 - B. Flanged
 - C. Packed
 - D. Hub-and-plain-end
127. On a 400°F (constant operating temperature) NPS 16 carbon steel piping circuit that is installed in Class 3 Service, _____% of suspect areas should be inspected by NDE for CUI.
- A. 10%
 - B. 33%
 - C. 50%
 - D. 0%
128. An ASTM wire IQI has _____ wires, and the smallest wire is always on the _____.
- A. 6, left
 - B. 5, left
 - C. 8, right
 - D. 6, right
129. Metal cored electrode differs from flux-cored electrode mainly in that:
- A. Flux cored electrode is used only for non-pressure parts
 - B. Metal cored electrode is only allowed for thicknesses less than 1/2" thick
 - C. Metal core contains primarily alloying agents, flux core contains primarily shielding agents
 - D. Metal core is not described or allowed in ASME IX, flux-core is allowed.
130. An NPS 1.5 primary process circuit has been classified as a Class 3 piping circuit. this means that the usual inspection of the pipe _____?
- A. Is optional, at the owner/users discretion
 - B. Should be conducted every 10 years
 - C. Should be conducted every 5 years
 - D. Is required only on deadlegs, where corrosion is anticipated
131. Hammer testing can be used to locate thin areas of a pipe wall by "ringing" the pipe, and listening for the sound. This method should not be used on all of the following, except:
- A. Cast iron
 - B. Stress-relieving caustic lines
 - C. Internally coated lines
 - D. None of the above

132. Which of the following film artifacts are not allowed by ASME V, if they appear in the area of interest?
- A. Fogging
 - B. Scratches
 - C. Finger marks
 - D. All of the above
133. Fatigue cracking can often be detected (or is highly probable) at which of the following locations:
- A. Areas above 900°F
 - B. Stainless steel welded and normalized
 - C. At points of high stress intensification
 - D. At low areas where moisture can accumulate
134. If a certified API 570 Inspector has not been actively engaged as a Piping Inspector for over _____ years, recertification by written test will be required.
- A. 3
 - B. 5
 - C. 6
 - D. 9
135. Which of the following thermal affects must be considered when designing, repairing, or re-rating a piping system?
- A. Loads due to restraints
 - B. Loads due to temperature gradients
 - C. Loads due to differences in expansion characteristics
 - D. All of the above
136. A "deadleg", per API 570, can include all of the following, except:
- A. Closed block valves
 - B. Spare pump piping
 - C. High point vents
 - D. None of the above
137. The difference between A-53 piping and A-106 piping is that _____.
- A. A-106 is made for temperatures over 800°F, A-53 is made for 600°F.
 - B. A-106 is fully silicon killed, A-53 is not.
 - C. A-53 is welded, A-106 is seamless
 - D. A-106 is good for high erosion areas, A-53 is not.
138. In ASME IX, some materials are shown with an "S" number designation instead of a P# designation. This "S" number is _____.
- A. A mandatory essential variable
 - B. Only used for B31 piping materials
 - C. A designation that stands for "Schindler" number
 - D. Essentially used the same as UNS numbers
139. The purpose of conducting a piping stress-analysis includes all of the following, except:
- A. Assess system flexibility
 - B. Solve observed piping vibration problems
 - C. Establish corrosion/erosion rates
 - D. Both A & B, above

140. Which of the following is usually not suitable for intelligent pigging?
- A. Most plant piping systems
 - B. Large diameter pipe
 - C. Small diameter pipe
 - D. Aboveground pipe with 10 diameter bends
141. When using the pressure decay method of pressure testing, one of the conditions that may affect the interpretation of the results is?
- A. The lack of volumetric measuring meters
 - B. The addition of chemical tracers
 - C. Line pack
 - D. Sensor spacing
142. For severe cyclic service, B31.3 requires that _____% of fabrication and erection be visually examined.
- A. 5
 - B. 10
 - C. 50
 - D. 100
143. Most brittle fractures occur:
- A. On thin materials
 - B. On first operating stress
 - C. On the first application of stress, such as hydrotest or overload
 - D. In high alloy steels
144. A DWE/DWV technique for radiography on piping can only be used when the piping is NPS _____ or less.
- A. 6
 - B. 3.5
 - C. 4
 - D. 2
145. On a typical pressure gauge used in a sensitive leak test, the upper gage range should be at least _____ to _____ for a test pressure of 100 psig.
- A. 0 - 600
 - B. 250 - 400
 - C. 150 - 400
 - D. 0 - 150
146. The frequency of inspection intervals may be increased or decreased beyond the target dates in API 570 by _____.
- A. Approval of the Engineer
 - B. Approval of the Inspector
 - C. Conducting an RBI Assessment
 - D. Complete hydrotesting and stress analysis

147. An area enclosed by a circle having a diameter not greater than 2" or 3" on certain pipe diameters describes a _____.
- A. TML
 - B. Test point
 - C. Reporting point
 - D. Radiography profile location
148. When radiographic profile inspections are conducted, it is important that _____.
- A. A comparator be used to determine radiographic expansion
 - B. That operators be informed because of the potential affect on controls
 - C. The pipe wall is measured with accurate caliper readings
 - D. All of the above
149. An ultrasonic transducer may not reflect an accurate reading on lightly pitted surfaces because:
- A. The sound beam may not reflect back to the transducer
 - B. Ultrasonics will not penetrate a surface at an angle
 - C. Multiple reflectors will cause loss of back signal
 - D. The sound path will be disguised by the attenuation of the lamb wave
150. A welding operator is being qualified to ASME IX by welding production butt welds on NPS 6 pipe with SAW. This operator must weld at least _____ welds to attain the total weld length required by ASME IX.
- A. 1
 - B. 2
 - C. 3
 - D. 4

CODEWEST API-570 ANSWER SHEET FOR FINAL EXAMINATION #3

FILL IN THE BLOCK TO THE RIGHT OF THE CORRECT ANSWER

OPEN BOOK ANSWERS

- | | | | | | |
|-----|---|------|---|------|---|
| 1. | A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> | 51. | A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> | 103. | A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> |
| 2. | A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> | 52. | A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> | 104. | A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> |
| 3. | A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> | 53. | A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> | 105. | A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> |
| 4. | A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> | 54. | A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> | 106. | A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> |
| 5. | A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> | 55. | A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> | 107. | A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> |
| 6. | A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> | 56. | A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> | 108. | A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> |
| 7. | A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> | 57. | A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> | 109. | A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> |
| 8. | A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> | 58. | A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> | 110. | A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> |
| 9. | A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> | 59. | A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> | 111. | A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> |
| 10. | A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> | 60. | A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> | 112. | A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> |
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API 570 FINAL 3
 ANSWERS

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| 21. | D - 570, 4.4 | 69. | B - 574, 10.1.2.2 | 119. | D - 16.5, 3.1 |
| 22. | B - 570/ 31.3 | 70. | A - 574, 10.3.1.4 | 120. | D - 570, 3.4 |
| 23. | B - V, SE 797 | 71. | C - 570, 7.2.6 | 121. | A - B31.3, 345.5 |
| 24. | B - IX, QW-250 | 72. | C - B31.3, 330.1.4 | 122. | C - B31.3, 300.2 |
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| 28. | A - V, T-653 | 76. | D - 570, 6.3.7 | 126. | A - 574, 4.5.5 |
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| 34. | B - 570, 3.8 | 82. | D - 570, 3.3 | 132. | D - V, T-281 |
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| 37. | C - IX, 404.32 | 85. | C - 570, 3.3.3.2 | 135. | D - B31.3, 301.7 |
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| 41. | D - IX, 451.1 | 89. | A - 570, 3.7 | 139. | C - 570, 5.5 |
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