Part 1

1. Jimmy Joe would like to pump ammonium chloride through 316 stainless steel pipe. The use of the pipe for ammonium chloride up to 140 degrees F is?

A Unsatisfactory
B Limited
C Risky at best
D Satisfactory

2. Which is not a method for joining PVC pipe?

A Solvent welding
B Push-on
C Threading
D Hot welding

3. The flange used to seal off the end of a pipe is the?

A Blind flange
B Blank flange
C End stop
D Butt flange

4. The operating temperature is 140 degrees F. Waylon is using polyvinyl chloride pipe 4 inches in diameter. The recommended support spacing is?

A 5.6 inches
B 5.2 inches
C 5.6 feet
D 6.3 feet

5. For steam service, the valve recognized as the best is the?

A Gate valve
B Ball valve
C Globe valve
D Solid wedge gate valve
6. Which reducer produces a center discharge?

A  Butt Weld  
B  Concentric  
C  Eccentric  
D  Funnel  

7. Which gate valve can be installed in any position without danger of the disc jamming?

A  The double disc hemlock jammer  
B  The solid wedge  
C  The cross-over connection plate disc  
D  The stop-valve connector  

8. According to the PIPEFITTERS HANDBOOK, a flange curved to fit a boiler or tank and attached to a threaded pipe is which flange?

A  Saddle  
B  Weld-neck  
C  Slip-on  
D  Outlet  

9. Which pipe is made by welding along a scarfed longitudinal seam in which one part is lapped by the other?

A  Spiral weld  
B  Resistance weld  
C  Lap weld  
D  Longitudinal seam  

10. A pipe weld where one pipe is expanded on the end to allow the entrance of the end of the other pipe is which weld?

A  Slip  
B  Butt  
C  Flange  
D  Cup  

11. According to PIPEFITTERS HANDBOOK, a tee made in which the branch is larger than the run is a/an?

A  Bull head  
B  Straight  
C  Reducing  
D  Lateral
12. A fitting, either cast or wrought, having one side outlet at any angle other than 90 degrees is a/an?

A  Branch tee  
B  Rolling offset  
C  Manifold  
D  Wye

13. According to PIPEFITTERS HANDBOOK, a tee made with easy (long radius) curves between body and branch is which tee?

A  Long radius  
B  Standard  
C  Double sweep  
D  Straight

14. According to PIPEFITTERS HANDBOOK, a valve with a short section of a cone through which a hole is cut so that fluid can flow through when the hole lines up with the inlet and outlet, but when rotated 90 degrees, flow is blocked is a/an?

A  Ball  
B  Plug  
C  Gate  
D  Globe

15. According to PIPEFITTERS HANDBOOK, a joint for connecting a pipe under pressure to a rotating machine is a/an joint?

A  Rotary pressure  
B  Ball  
C  Swivel  
D  U

16. Brazing is?

A  Soldering  
B  Soft soldering  
C  Joining metals using brass  
D  Fine soldering

17. According to PIPEFITTERS HANDBOOK, the maximum support spacing for a 2 inch schedule 80 PVC pipe should be?

A  4.5  
B  5.1  
C  5.8  
D  7.7
18. According to PIPEFITTERS HANDBOOK, the weight of 30 feet long 3" steel pipe, schedule 40 when full of water is how many pounds?

A  96  
B  227  
C  300  
D  323  

19. According to PIPEFITTERS HANDBOOK, the actual inside diameter of a Type K copper tube with a nominal diameter of 1" is?

A  0.652  
B  0.995  
C  1.125  
D  7.583  

20. According to PIPEFITTERS HANDBOOK, the type of heat necessary for hard soldering or brazing is?

A  White  
B  Yellow  
C  Red  
D  Blue  

21. The tank diameter is 7 feet. The tank is 12 feet tall. How many gallons of water are required to fill the tank?

A  Less than 3,000  
B  Between 3,000 and 3,500  
C  Between 3,500 and 4,000  
D  More than 4,000  

22. The number of horsepower equivalent to 33,000 foot pounds per minute is?

A  1  
B  2  
C  2 1/2  
D  5  

23. The tank diameter is 5 feet. The tank is 18 feet tall. The number of gallons of water required to fill the tank is?

A  Less than 2,500  
B  Between 2,500 and 2,600  
C  Between 2,600 and 2,700  
D  More than 2,700  

24. Polyethylene pipe is joined by means of?

A  Threading and stainless steel clamps
B  Plastic fittings and clamps
C  Stainless steel fittings and clamps
D  Plastic fittings and stainless steel clamps

25. At 72 degrees Fahrenheit, a type 2 polyvinyl chloride thermoplastic has a chemical resistance to wet chlorine.

A  Limited
B  Unlimited
C  Satisfactory
D  Unsatisfactory

26. Stainless steel 316 with a fluid temperature up to 140 degrees Fahrenheit has a ____________ chemical resistance to ammonium chloride.

A  Limited
B  Unlimited
C  Satisfactory
D  Unsatisfactory

27. Given a pressure of 175 pounds per square inch, a 2-inch nominal size cast iron double disc flanged gate valve has a laying length of how many inches?

A  7
B  7.25
C  7.5
D  8

28. A piping system is colored yellow or orange to indicate its contents are classified materials.

A  Extra valuable
B  Dangerous
C  Safe
D  Protective

29. A 7 foot diameter water tank is 12 feet high. The tank will hold how many gallons of water when full?

A  Less than 3,000
B  Between 3,000 and 3,200
C  Between 3,200 and 3,400
D  More than 3,400
30. Raymond Ray is installing Schedule 80 polyvinyl chloride pipe. The pipe will be carrying water at a temperature of 140 degrees F. The 2-inch pipe will require support every?

A 3.5 feet  
B 3.7 feet  
C 4.2 feet  
D 4.5 feet

31. The tank is 7 feet long and 12 feet in diameter. The tank holds how many gallons?

A 5,922  
B 6,768  
C 5,687  
D 9,306

32. The temperature of the wrought iron pipe at installation was 80 degrees F. The pipe was filled with a liquid with a temperature of 300 degrees F. The pipe is 250 feet long. The expansion of the pipe after the liquid is turned on is?

A 1.572 inches  
B 6.202 inches  
C 4.465 inches  
D 4.63 inches

33. Which are the only current methods for joining polyethylene pipe?

A Gorilla glue 1M and polyethylene cleaner  
B Plastic fittings and stainless steel clamps  
C Pressed bonding and impact clamps  
D Compression fittings and stainless steel screw clamps

34. The laying length for a 2 inch cast iron flanged wedge gate valve at 175 psi is?

A 6 inches  
B 7 inches  
C 7.25 inches  
D 8 inches

35. Oxygen piping should be identified with the color?

A Purple  
B Chartreuse  
C Green  
D Yellow
36. A cylindrical tank 20 feet in diameter and 13 feet long can hold ___________ U. S. gallons.

A 10,529  
B 5,758  
C 7,521  
D 30,550

37. The laying length of a 2 inch cast iron flanged gate valve with a pressure of 175 psi is?

A 7 inches  
B 7 1/4 inches  
C 81 inches  
D 9 inches

38. Polyethylene pipe is joined by means of?

A Adhesives and plastic fittings  
B Friction rings, plastic fittings and stainless steel clamps  
C Plastic fittings and stainless steel clamps  
D Adhesives, plastic fittings and corrosion resistant clamps

39. At 120 degrees Fahrenheit, stainless steel (316), has a __________ chemical resistance to ammonium chloride.

A High  
B Low  
C Satisfactory  
D Unsatisfactory

40. Water piped through a Type L copper pipe with a 1 1/2 inch nominal diameter weighs _________ pounds per lineal foot (of piping).

A 1.3419  
B .7731  
C .5450  
D .3794

41. A 620-foot wrought iron pipe was installed during 80 degree weather. The computed expansion of the line when 360 degree steam is turned on in the line is __________ inches.

A 14.81  
B 13.77  
C 11.93  
D 10.16
42. At 72 degrees Fahrenheit, "Type II" polyvinyl chloride has a __________ chemical resistance to hydrochloric acid.

A  High  
B  Low  
C  Satisfactory  
D  Unsatisfactory  

43. Given an absolute pressure in pounds per square inch of 0.2562 and a vacuum of 29.40 expressed in inches of mercury, the temperature of saturated steam will be __________ degrees Fahrenheit.

A  60  
B  80  
C  100  
D  101.83  

44. Piping systems that transport oxygen are __________ in color.

A  Yellow  
B  Green  
C  White  
D  Red  

45. A 580-foot copper pipe was installed during 40 degree weather. The computed expansion of the line when 220 degree steam is turned on in the line is __________ inches.

A  14.81  
B  13.77  
C  11.93  
D  10.16  

46. Willy has 250 feet of steel pipe passing through a room that has a temperature of 80 degrees F. The pipe will carry hot liquid at a temperature of 300 degrees F. Carrying the liquid the expansion of the pipe will be?

A  4.63 feet  
B  4.43 feet  
C  4.43 inches  
D  4.63 inches  

47. A flange used to seal off the end of a pipe is a/an?

A  Cap flange  
B  Blind flange  
C  Block flange  
D  Braze flange
48. Dangerous piping should be identified with?

A  Red with white lettering  
B  Yellow marking with red lettering  
C  Orange with black lettering  
D  Bright blue with white lettering

49. The travel is 11.31 feet. There will be a 45 degree angle. The offset distance is?

A  8 feet  
B  4.68 feet  
C  9.24 feet  
D  3.31 feet

50. Waste water piping is identified by the color?

A  Purple  
B  Blue  
C  Red  
D  Green

51. Which of the following is suitable for use with hydrochloric acid piping?

A  Cast iron  
B  Aluminum  
C  Stainless steel  
D  Type 2 PVC

52. Storage space requires a tank be 10 feet in diameter and contain at least 8,225 gallons. The minimum length of the tank will be?

A  3 1/2 feet  
B  7 feet  
C  14 feet  
D  28 feet

53. The total weight of one foot of 1 1/2 inch Type "L" copper pipe filled with water is?

A  1.14 pounds  
B  .7731 pounds  
C  1.913 pounds  
D  2.133 pounds
Part 2

1. The maximum support spacing on a horizontal run of 2” diameter standard weight pipe Carrying 200 degree water is:

A. 13
B. 15
C. 18
D. 22
E. 10

2. A _____________ is made by welding along a scarred longitudinal seam in which one part is overlapped by the other.

A. Spiral weld pipe
B. Resistance weld pipe
C. Lap weld pipe
D. Longitudinal seam pipe
E. Butt weld pipe

3. A pipe weld where one pipe is expanded on the end to allow the entrance of the end of the other pipe is a:

A. Sup weld
B. Butt weld
C. Lap weld pipe
D. Longitudinal seam pipe
E. Cup weld

4. A _____________ is a tee in which the branch is larger than the run.

A. Bull head tee
B. Straight tee
C. Reducing tee
D. Lateral tee
E. Lap joint nipple tee

5. The throat length of a 90 degree elbow with a 30” throat radius is:

A. 42”
B. 54”
C. 47”
D. 52”
E. 60”
6. The nominal diameter of a 1-1/8" copper tube type K is:

A. ¾"
B. 1"
C. 1-1/8"
D. 1-1/4"
E. 1-1/2"

7. A tee made with easy (long radius) curves between body and branch is a:

A. Long-tee
B. Standard
C. Double sweep tee
D. Straight tee
E. Double radius tee

8. A __________ is one with a short section of a cone through which a hole is cut so that fluid can flow through when the hole lines up with the inlet and outlet, but when rotated 90 degrees, flow is blocked.

A. Ball valve
B. Plug valve
C. Gate valve
D. Globe valve
E. Butterfly valve

9. A joint for connecting a pipe under pressure to a rotating machine is a/an:

A. Rotary pressure joint
B. Ball joint
C. Swivel joint
D. U joint
E. Expansion joint

10. The weight of a 30 foot long 3" steel pipe, schedule 40, when full of water is ________? Select the closest answer.

A. 100 lb
B. 150 lb
C. 200 lb.
D. 225 lb.
E. 325 lb.
11. Brazing is a term used for:

A. Soldering
B. Soft soldering
C. Hard soldering
D. Fine soldering
E. Welding

12. The maximum support spacing for a 2" schedule 80 ABS pipe carrying water should be:

A. 4.0
B. 4.5
C. 5.0
D. 5.5
E. 6.0

13. What would be the length of a 2-1/2" cast iron pipe required for travel between two 45 degree angles so that the offset would be 10"?

A. 8-1/8
B. 10-1/8
C. 12-1/8
D. 14-1/8
E. 16-1/8

14. How many gallons of water can be carried per lineal foot of schedule 80 steel pipe with a nominal diameter of 2-1/2"?

A. 0.2855
B. 0.3101
C. 0.2200
D. 0.1803
E. 0.3750

15. A cylindrical tank measures 12' in length and 8' in diameter. How many cubic feet of water will the tank hold when it is completely filled?

A. 633.2
B. 635.0
C. 601.2
D. 703.2
E. 835.0
16. Water at 100 degrees weighs \_\_\_\_\_\_\_ pounds per cubic foot.

A. 62.00  
B. 62.42  
C. 62.30  
D. 60.00  
E. 61.32

17. A cylindrical tank is 8.5 feet in diameter and 24 feet long. How many cubic feet of capacity does it have?

A. 1005.3  
B. 1500.5  
C. 1206.2  
D. 1361.8  
E. None of the above

18. A 10,000 gallon tank has \_\_\_\_\_\_ cubic feet.

A. 74,830  
B. 83,400  
C. 6,684  
D. 13,368  
E. 1,336

19. 5,624 gallons is equal to \_\_\_\_\_\_ cubic feet.

A. 600  
B. 650  
C. 700  
D. 750  
E. 800

20. A type L copper pipe with a nominal diameter of 5" and 42 feet long will hold \_\_\_\_\_\_\_gallons when filled to capacity.

A. 21.5  
B. 22.1  
C. 30.0  
D. 36.6  
E. 40.7
ANSWER KEY

Part 1

1  D  Pipefitter's Handbook  3-42
2  B  Pipefitter's Handbook  3-23
3  A  Pipefitter's Handbook  5-87
4  C  Pipefitter's Handbook  3-35
5  D  Pipefitter's Handbook  5-6
6  B  Pipefitter's Handbook  2-48
7  B  Pipefitter's Handbook  5-6
8  A  Pipefitter's Handbook  5-92
9  C  Pipefitters Handbook  5-90
10  D  Pipefitter's Handbook  5-89
11  A  Pipefitter's Handbook  5-87
12  D  Pipefitter's Handbook  5-94
13  C  Pipefitter's Handbook  5-89
14  B  Pipefitter's Handbook  5-91
15  A  Pipefitter's Handbook  5-92
16  C  Pipefitter's Handbook  3-2
17  D  Pipefitter's Handbook  3-35
18  D  Pipefitter's Handbook  5-11/17
   5-11: 3.201 5-17: 7.58
   3.201 + 7.58 X 30 = 323.43
19  B  Pipefitter's Handbook  5-13
20  C  Pipefitter's Handbook  3-2
21  B  Pipefitters Handbook  5-26/51
   3.14 X R X R XL X 7.48 = Gallons
   3.14 X 3.5 X 3.5 X 12 X 7.48 = 3,452.6
   OR
   Use Chart Page 5-51
22  A  Pipefitters Handbook  5-56
23  C  Pipefitters Handbook  5-26/51
   3.14 XR XRXLX 7.48 =
3.14 X 2.5 X 2.5 X 18 X 7.48 = 2,642.3

OR

Use Table 5-26

24  D  Pipefitter's Handbook  3-28
25  A  Pipefitter's Handbook  3-41
26  C  Pipefitter's Handbook  3-42
27  B  Pipefitter's Handbook  4-100
28  B  Pipefitter's Handbook  5-22
29  D  Pipefitters Handbook  5-26/51

3.14 X R X R X H X 7.48 = Gallons
3.14 X 3.5 X 3.5 X 12 X 7.48 = 3,452.6

OR

Use Table

30  D  Pipefitters Handbook  3-35
31  A  Pipefitters Handbook 5-27/51

.14 X R X R X L X 7.48 = Gallons
3.14 X 6 X 6 X 7 X 7.48 = 5,918.7

OR

Use Table

32  D  Pipefitters Handbook  5-25

80 Degrees is .629 and 300 Degrees is 2.481
2.481 - .629 = 1.852
1.852 ÷ 100 X 250 = 4.63

33  B  Pipefitters Handbook  3-28
34  C  Pipefitters Handbook  4-99
35  D  Pipefitters Handbook  5-24
36  D  Pipefitter's Handbook 5-28/51

3.14 X R X R X L X 7.48 = Gallons
3.14 X 10 X 10 X 13 X 7.48 = 30,533.36

OR

Use Table

37  B  Pipefitters Handbook  4-99
38  C  Pipefitter's Handbook  3-28
39  C  Pipefitter's Handbook  3-42
40  B  Pipefitter's Handbook  5-11
41  A  Pipefitter's Handbook  5-25
42  C  Pipefitter's Handbook  3-41
43  A  Pipefitter's Handbook  5-5
44  A  Pipefitter's Handbook  5-24
45  C  Pipefitter's Handbook  5-25

40 Degrees is .444 and 220 Degrees is 2.501
2.501 - .444 + 100 X 580 = 11.93

46  C  Pipefitter's Handbook  5-25

80 Degrees is .601 and 300 Degrees is 2.376
2.376 - .601 + 100 X 250 = 4.43

47  B  Pipefitter's Handbook  5-87
48  C  Pipefitter's Handbook  5-22
49  A  Pipefitter's Handbook  4-2
50  D  Pipefitter's Handbook  5-24
51  D  Pipefitter's Handbook  3-41/42
52  C  Pipefitter's Handbook  5-27
53  C  Pipefitter's Handbook  5-11/14

**Part 2**

No answers