

# SP03P - Pre-Instructional Survey

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Some questions may have more than one correct choice.

1. Pick the Process Analytical Technology most utilized in Refining and Petrochemical process measurements from the following choices.
  - a. NIR
  - b. FTIR
  - c. UV
  - d. GC
  
2. Provide the name of the most simple removable sample extraction probe.
  - a. Insertion quill probe
  - b. Wall tap
  - c. Blowback-enabled probe
  - d. Heated blowback-enabled probe
  
3. Provide the maximum exposed line length to allow access to tubing unions on a heat-traced-and-insulated sample transfer line.
  - a. One inch either side of union
  - b. Three inches either side of union
  - c. Six inches either side of union
  - d. No exposed line and also insulate tubing union
  
4. Provide the most correct answer(s)
  - a. Plastic is hard; elastomer is soft
  - b. Plastic is able to be machined; elastomer is not able to be machined
  - c. Plastic is all very brittle and breaks easily; elastomer is all very soft
  - d. Plastic is all bends easily; elastomer all stretches easily
  
5. Provide the most correct answer(s)
  - a. Steam heat is easier to control than electrical heat for sample lines
  - b. Steam heat controls more closely than electrical heat for sample lines
  - c. Steam heat always has excess heating capacity for sample lines
  - d. Electrical heat for sample lines is the easiest to control and most reliable energy source for heating sample lines

6. Performance coatings for the inside of sample transfer lines improve which analyses?
  - a. PPM water
  - b. PPM sulfur
  - c. PPM oxygen
  - d. PPM oxides of nitrogen
  
7. Which is the correct order of filter placement in any sample system?
  - a. Particulate, coalescing, polishing
  - b. Polishing, particulate, coalescing
  - c. Coalescing, polishing, particulate
  - d. Particulate, polishing, coalescing
  
8. Which of the following are types of Teflon?
  - a. TFE
  - b. PFA
  - c. NIR
  - d. FEP
  
9. Rank the following Cooling Technologies from least to most energy required per BTU of cooling?
  - a. Peltier (TEM) cooler
  - b. Mechanical compressor refrigeration
  - c. Vortex tube
  - d. They are all the same
  
10. Which of the following have rotary-design pump heads?
  - a. Centrifugal
  - b. Gear
  - c. Diaphragm
  - d. Ejector (jet)
  
11. Valves in a sample system can perform which of the following operations?
  - a. Direct flow
  - b. Prevent flow
  - c. Relieve pressure
  - d. Measure flow

12. Flow rate measurement by a rotameter (variable area flowmeter) requires what physical orientation of the meter tube?
- Horizontal
  - 45-degrees from vertical
  - Vertical
  - It makes no difference
13. Which are the correct units for pressure measurement?
- PSI
  - PSIG
  - 27 inHg
  - 3 inWC
14. Why do you heat a pressure regulator flowing a liquid from very high source pressure to near atmospheric delivery pressure?
- Makes the liquid flow easier
  - Decreases the viscosity of the liquid
  - Replaces the Heat of Vaporization of the liquid
  - Counteracts the Joule-Thompson cooling of the high pressure liquid
15. Alloys are mixtures of what?
- Glasses
  - Metals
  - Elastomers
  - Plastics
16. The Electrical Hazard Rating system in the USA uses which of the following definitions?
- Class
  - Group
  - Division
  - Microns
17. ISA Electrical Hazard reduction Purges are defined by which of the following letters?
- X-purge
  - Y-purge
  - Z-purge
  - VA-purge

18. The new technology for sample conditioning systems is referred to by which terminology?
- a. NeSSI
  - b. CPAC
  - c. ASTM/ISA-76
  - d. Autoflow

## SP03P - Pre-Instructional Survey Answer Sheet

1. d
2. a
3. d
4. a, b
5. d
6. a, b
7. a
8. a, b, d
9. a, b, c
10. a, b
11. a, b, c
12. c
13. a, b, c, d
14. c, d
15. b
16. a, b, c
17. a, b, c
18. a, c