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Continuing Education Course #448  
Positive Displacement Pump Selection

1. How does a positive displacement pump move fluid?
  - a. Spinning metal impeller
  - b. Pressure swings
  - c. Chambers that fill and empty
2. What are the two main categories of PD pumps?
  - a. Reciprocating & Rotary
  - b. Centrifugal & Rotary
  - c. Reciprocating & Vertical
3. Which is an advantage of PD pumps?
  - a. Acceleration of fluid
  - b. Can maintain the discharge pressure
  - c. Consistent flow during changing pressures
4. Which is a disadvantage of PD pumps?
  - a. Pulsation/acceleration of fluid
  - b. Priming and lift abilities
  - c. Viscosity limitations
5. Which is NOT a method for flow control with a reciprocating pump?
  - a. Stroke speed
  - b. Stroke length
  - c. Tube speed
6. What is a common turndown ratio for a metering pump?
  - a. 0.5:1
  - b. 100:1
  - c. 10,000:1
7. What is a commonly accepted guide for the design of pumping systems?
  - a. NFPA 20
  - b. Hydraulic Institute Standards
  - c. AWWA Standard E503
8. What category is a diaphragm pump?
  - a. Reciprocating
  - b. Rotary
  - c. Other

9. What category is a peristaltic pump?
- a. Reciprocating
  - b. Rotary
  - c. Other
10. What category is a gear pump?
- a. Reciprocating
  - b. Rotary
  - c. Other
11. What is the most common type of PD pump?
- a. Diaphragm
  - b. Circumferential piston
  - c. Progressive cavity
12. Which is NOT a type of diaphragm pump?
- a. Air diaphragm
  - b. Controlled-volume diaphragm
  - c. Water diaphragm
13. What type of pump is a pumpjack for an oil well?
- a. Double disc
  - b. Piston
  - c. Progressive cavity
14. What is the most common type of rotary pump?
- a. Peristaltic
  - b. Vane
  - c. Flexible impeller
15. What category is a piston pump?
- a. Reciprocating
  - b. Rotary
  - c. Other
16. What category is a screw pump?
- a. Reciprocating
  - b. Rotary
  - c. Other
17. Which is a common application for a double disc pump?
- a. Medical
  - b. Sludge
  - c. Chemical metering
18. Which is not a configuration for a peristaltic pump?
- a. Hose
  - b. Tube
  - c. Pipe
19. When should the number of pumps be decided during the design process?

- a. Near the beginning of the design process
  - b. Near the end of the design process
  - c. Anytime
20. Which of the following is NOT a design criteria?
- a. Salvage value of \$1000
  - b. Peak design flow of 100 gph at 40 psi
  - c. Wetted parts compatible with sodium hydroxide
21. Which is the highest design flow to be maintained by the pumping system?
- a. Big design flow
  - b. Maximum design flow
  - c. Peak design flow
22. Which is a benefit of a duplex pump arrangement versus a triplex arrangement?
- a. Simple design
  - b. Covers a greater range of flows
  - c. Covers a greater range of pressures
23. What is the formula for flow control for a reciprocating pump?
- a. Pump Flow = Peak flow \* % Speed / 2
  - b. Pump Flow = Max Pump Flow \* % Speed \* % Stroke / 2
  - c. Pump Flow = Max Pump Flow \* % Speed \* % Stroke
24. Which is NOT a unit to express chemical dosage?
- a. ppm by volume
  - b. ppm by solids
  - c. ppm by liquid weight
25. What is a process flow diagram?
- a. Schematic showing major components and piping
  - b. Elevation view with hydraulic grade line
  - c. Instrumentation diagram
26. In general, which can pull a greater lift?
- a. Positive displacement pump
  - b. Centrifugal pump
  - c. Vertical pump
27. Which should be larger: NPSHr or NPSHa?
- a. Should be equal
  - b. NPSHa
  - c. NPSHr
28. Which formula represents TDH?
- a. TDH = minor losses + pipe friction + static
  - b. TDH = minor losses + major losses + static
  - c. TDH = minor losses + dynamic losses + static
29. What tool can be used to identify pump models that meet the required flow and pressure?
- a. Efficiency calculator
  - b. Hydraulic profile

c. Review charts or tables of pump capacity ranges

30. How should the rated pressure compare to the delivery pressure?

a. Rated pressure = delivery pressure

b. Rated pressure > delivery pressure

c. Rated pressure < delivery pressure

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