Final Exam

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