16ME 210-FLUID POWER CONTROL

Multiple Choice Questions

UNIT-I

FLUID POWER SYSTEM AND FUNDAMENTALS

1. _____ are shapeless substances that take the shape of their containers; they can be liquids or gasses.

   a) Air b) Water c) Oil **d) Fluids**

2. _____ power is pressurized liquid or gas in a closed system.

   a) Fluid b) Electrical c) Mechanical d) Thermal

3. _____use pressurized oil or other liquids.

   a)Pneumatics **b) hydraulics** c) Electrical d) Electromechanical

4. _____ use pressurized air or other gasses.

   a) Pneumatics b) hydraulics c) Electrical d) Electromechanical

5. By itself, fluid has no power, but when confined and placed under _____ _____, fluid can transmit power that can be stored, directed and made to do work.

   a) Volume b) Force **c) pressure** d) Area

6. Pascal's law states that pressure in a confined body of liquid will act_____in all directions.

   a) erratically **b) equally** c) forward d) sequentially

7. Most of the energy not used to move the load in a hydraulic system turns into_____.

   a)light **b) heat** c) potential d) reserve

8. The pressure of the fluid at rest increases on _____ the depth.

   a) Increasing **b) Decreasing** c) Either increase or decrease d) Neither increase nor decrease.

9. When do you prefer the pneumatic system rather than hydraulic system?

   a) **Medium amount of pressure requires speed, fairly accurate feed.**

   b) Large amount of pressure requires speed, fairly accurate feed.

   c) Large amount of pressure requires less speed, fairly accurate feed

   d) Medium amount of pressure requires speed, accurate feed

10. Hydraulic system is always a _____.

a) closed loop system b) open loop system c) open or closed loop system.

UNIT II

HYDRAULIC ACTUATORS AND VALVES

1. Hydraulic fluid transmits power almost instantaneously because _____.

A. it lubricates components

B**. it is essentially non-compressible**

C. it is compressible

D. it is heavier than water

2. A pump which develops a constant output is called _____.

A. a high efficiency pump

B**. a positive displacement pump**

C. a variable volume pump

D. an impeller pump

3. All pumps operate on the principle of _____.

A. an increasing and decreasing flow rate

B. an increasing and decreasing volume

C. mechanical work

D. restricted flow

4. The device used to power the pump in a hydraulic system is called _____.

A. a generator

B. an actuator

C. a prime mover

D. a power cell

5. Gear pumps:

A. can be variable volume.

B. cannot be variable volume.

D. can be pressure compensated.

6. A ram cylinder can only have_____in one direction.

A. movement **B. force** C. Rotation

7. A ram cylinder has:

A. a piston with seals to guide it. B. no piston or seals to guide it.

C. a non sealing guide only.

8. The area of a cylinder is figured with the formula:

A. F=PA **B. π r2** C. π d2

9. Cylinder force or thrust is figured by the formula:

A. F=PA B. π r2 C. π d2

10. A 2:1 area ratio cylinder has a rod that is:

A. half the diameter of the piston.

B. twice the diameter of the piston.

C. half the area of the piston.

11. A double rod end cylinder with the same pressure at either end can have:

A. equal force and speed in both directions of travel.

B. higher force in one direction of travel.

C. either of the above.

D. Slower speed in both direction

12. With the same pressure at either end a single rod end cylinder has:

A. equal force in both directions of travel. **B. more force extending.**

C. more force retracting. D. Less force in both directions of travel

13. Cable cylinders are:

A. twice as long as their stroke. B. three times as long as their stroke.

C. slightly longer than their stroke..

14. Tandem cylinders can have almost_____the force as a single cylinder.

A. One time **B. Twice** C. three times D**. four times**

15. A cylinder with an actual 2:1 rod in a regeneration circuit will:

A. extend twice as fast as retract. **B. extend and retract at the same speed.**C. cannot regenerate a 2:1 rod cylinder.

16. A plain check valve can be used as:

A. pilot-operated relief valves

B. direct-acting relief valves

C. either type relief valve

17. A 4-way valve has:

A. two working ports

B. three working ports

C. four working ports

18. A Series bar manifold can have up to:

A. one station.

B. two stations.

C. three stations.

19. Stroke limiters on the working spool of a solenoid pilot operated valve can:

A. slow spool travel.

B. speed up spool travel

C. control actuator speed.

20. Direct solenoid operated valves:

A. are only DC current activated.

B. are only AC current activated.

C. operate off either AC or DC current.

21. Direct acting relief valves have _____ response than/as a pilot operated relief valve.

A. slower

B. same

C. Faster

22. Pilot operated relief valves have _____ pressure override than/as a direct acting reliefvalve.

A. more

B. less

C. the same

23. Solenoid operated relief valves can be made from:

A. direct acting relief valves.

B. pilot operated relief valves.

C. either type relief valve.

24. A vent port is found on:

A. pilot operated relief valves.

B. direct acting relief valves.

C. either type relief valve.

25. Solenoid operated relief valves can be used:

A. on the case drain of a pump.

B. on the tank line of a pump.

C. to unload the pressure port of a pump.

UNIT-III

PNEUMATIC SYSTEM COMPONENTS AND SERVO SYSTEMS

1. Large air compressors load and unload as pressure drops and builds, small air compressors:

A. do the same.

B. never build enough pressure.

C. turn on at a minimum pressure and off at a maximum pressure.

2. Pneumatic system experiences lesser frictional pressure because _____

A. Viscosity of air is high

B. Viscosity of air is low

C. Compressibility of air is high

D. Compressibility of air is low

3. Inertia effect of Pneumatic system is low because

A. Weight density of gas is less

B. Weight density of gas is more

C. Density of gas is less

D. Density of gas is more

4. _____compressors work on the principle of increasing the pressure of a definite volume of air by reducing volume in an closed chamber.

A. **Positive displacement compressors** B. Dynamic compressors

C. High pressure D. Medium Pressure

5. _____ compressors are known as turbo compressors.

A. Positive displacement compressors B**. Dynamic compressors**

C. High pressure D. Medium Pressure

6. A ram cylinder can only have_____in one direction.

A. movement

B. force

C. rotation

7. A ram cylinder has:

A. a piston with seals to guide it.

B. no piston or seals to guide it.

C. a non sealing guide only.

8. A 2:1 area ratio cylinder has a rod that is:

A. half the diameter of the piston.

B. twice the diameter of the piston.

C. half the area of the piston.

9. A double rod end cylinder with the same pressure at either end can have:

A. equal force and speed in both directions of travel.

B. higher force in one direction of travel.

C. either of the above.

10. With the same pressure at either end a single rod end cylinder has:

A. equal force in both directions of travel.

B. more force extending.

C. more force retracting.

11. Infinitely variable valves are for:

A. hydraulic circuits only. B. pneumatic circuits only.

C. both hydraulic and pneumatic circuits.

12. Proportional and servo directional control valves have_____flow response than conventional directional control valves.

A. Slower B. the same **C. faster**

13. Always size infinitely variable directional control valves:

A. with a high pressure drop. B. with a low pressure drop.

C. it really does not matter what the pressure drop is.

14. A servo valve circuit for actuator positioning uses a/an:

A. encoder. **B. linear transducer. C**. load cell.

15. Electro-mechanically controlled servo valves are:

A. more contamination tolerant. B. less contamination tolerant.

C. Have about the same contamination tolerance.

16. A Hydro-stat module under a proportional control valve:

A. gives a consistent pressure at its outlet. **B. gives a consistent flow at its outlet.**
C. sets maximum pilot pressure.

17. An LVDT on a proportional directional control valve tells the electronic control:

A. how much flow is going through the it. B. what the pressure is at its outlet.

C. what position the spool is in.

18. An "AND" element has an output when it has_____input/s.

A. One **B. two** C. three

19. An "OR" element has an output when it has _____input/s.

A. One B. two E. three

20. "NOT" elements are:

A. normally passing elements. B. normally non-passing elements.

C. normally exhausting elements.

UNIT-IV

DESIGN OF CIRCUITS

1. A weight loaded accumulator:

A. loses pressure as fluid discharges. B. gains pressure as fluid discharges.

C. stays the same pressure as fluid discharges.

2. A spring loaded accumulator:

A. loses pressure as fluid discharges. B. gains pressure as fluid discharges.

C. stays the same pressure as fluid discharges.

3. Gas charged accumulators use:

A. oxygen. **B. nitrogen.**C. argon. D.Hydrogen

4. The most common accumulator circuit is:

A. supplementing pump flow. B. making up for system leaks.

C. emergency power supply. D. Adding pressure

5. Precharge pressure should be checked at least every:

A. 1-2 month. B. 2-3 months. **C. 3-6 months.** D. 4-8 months

UNIT-V

INDUSTRIAL CIRCUITS AND MAINTENANCE OF FLUID POWER SYSTEM

1. Infinitely variable valves are for:

A. hydraulic circuits only. B. pneumatic circuits only.

C. both hydraulic and pneumatic circuits.

2. Proportional and servo directional control valves have_____flow response than conventional directional control valves.

A. Slower B. the same **C. faster**

3. Always size infinitely variable directional control valves:

A. with a high pressure drop. B. with a low pressure drop.

C. it really does not matter what the pressure drop is.

4. A servo valve circuit for actuator positioning uses a/an:

A. encoder. **B. linear transducer. C**. load cell.

5. Electro-mechanically controlled servo valves are:

A. more contamination tolerant. B. less contamination tolerant.

C. Have about the same contamination tolerance.

6."YES" elements can be used as:

A. amplifiers. B. normally passing elements. C. 4-way valves.

7. This is a symbol for a/an:

A. "OR" element B. "NOT" element. C. "AND" element.

8. "FLIP-FLOP" elements are the same as a:

A. 5-Way valve. **B. 4-Way valve.** C. 3-Way valve.

9. "OR" elements are the same as:

A. directional control valves. **B. shuttle valves.** C. flow control valves.

10. A "TIME ON" time delay:

A. passes air after it times out. B. blocks air after it times out. C. none of the above.

11. A "NAND" element needs:

A. one signal to block through flow. **B. two signals to block through flow.**

C. three signals to block flow.

12. A "NOR" element needs:

A. one signal to block through flow. B. two signals to block through flow.

C. three signals to block flow.

13. PLCs are _____ designed for use in the control of a wide variety of manufacturing machines and systems.

A. special-purpose industrial computers B. personal computers

C. electromechanical systems D. All of the above

14)The _____ is moved toward the relay electromagnet when the relay is on.

A. Armature B. Coil C. NO contact D. NC contact

15)When a relay is NOT energized:

A. There is an electrical path through the NO contacts

B. There is an electrical path through the NC contacts

C. Neither the NO or the NC contacts have an electrical path

D. Both the NO and the NC contacts have an electrical path

16. If the Pump delivering insufficient or no oil, then _____

A.Top cover packing damaged B. Shaft packing worn out

C. Clogged strainer or suction pipe line D. Misaligned sinve or tight belt drive

17. If Pump oil over-heated then_____

A. Seizure of pumps sliding parts B.Top cover packing damaged

C. Dirt in oil D. Worn poppet or seat

18. If there is an _____ then Dirt in oil presents in relief valves.

A. No pressure B. low pressure C. **Erratic pressure** D. Excessive noise or chatter

19. Cylinder or motor leakage results in

A. Variation in feed B. External leakage C. Feed rate variation

D. Maximum flow not obtainable

20. Piston bearing worn out in cylinder results in

A.Reduced speed B. **Piston packing failing too often**

C. Insufficient force D. no movement

21. Unusual noise results in compressors

A. Leaking cylinder valve B. Drift in suction filter C. Filter is undersized

D. End gap not staggered in grooves

22. Excessive pressure drop through filter is by _____

A. Broken elements B. Dew point of air is too high **C. Dirty filter element**

D. Element too coarse

23. Oil delivery is delayed in Lubricator by

A. Improper needle valve adjustment B. Closed needle valve

C. Non-vertical positioning **D. Clogged pick-up tube inlet**

24. Cylinder fails to move the load when valve is actuated because

A. Air Flow rate is low B. Pinched or extruded seal **C. Pressure too low**

D. Torn or worn seal

25. Lack of power in air motor is because of

A. Rotor rubbing **B. Worn vanes** C. Dirty air D. Insufficient lubrication