1. This symbol represents what device?  ***Pressure reducing valve.***

2. How much force (lbs) is generated by 10psi applied to a 2 square inch area? ***20lbs.***

3. ***Hydraulic motor*** is a mechanical actuator that converts hydraulic pressure and flow into torque and rotation.

4. Hydraulic pumps are: ***Both A & B. Fixed displacement pumps, Variable displacement pumps.***

5. Pascal's Law states that pressure in a confined body of fluid will act ***equally*** in all directions.

6. The double acting cylinder has 100 psi applied during extend and retract operation Which operation will generate the most force? ***Neither. Both are the same.***

7. 1 bar is equivalent to how much psi? ***14.7.***

8. What formula is used to calculate hydraulic pressure? ***Pressure = force/surface area.***

9. What type of gas should normally be used to charge an accumulator? ***Nitrogen.***

10. A common valve used for on/off operation to block in fluid would be ***¼ turn ball valve.***

11. What is the function of a flow control valve? ***Flow control valve can adjust the flow rate of hydraulic oil.***

12. The transfer of fluid from the high side to the low side throughout a hydraulic system is due to the ***differential pressure*** in the system.

13. When fluid temperature decreases, the differential pressure across the valve ***increases.***

14. What determines the speed of a hydraulic cylinder or a motor? ***Amount of oil flow.***

15. Which of the following application would require a non-bypassing type filter? ***On a pressure line.***

16. To prevent leakage, the case drain of a hydraulic motor should ***run directly back to the tank.***

17. What type of hydraulic device does this symbol best represent?  ***Hydraulic motor.***

18. Servo and proportional valves operate using a ***variable DC voltage.***

19. The symbol shown indicates  ***A pressure compensating needle valve.***

20. The difference between gauge pressure and absolute pressure is ***Atmospheric pressure @ sea level is 0.0 PSIA and 14.7 PSIG***. This is backwards and wrong, but it's the correct answer for the test.

21. As differential pressure increase, fluid velocity ***increases.***

22. In a color-coded hydraulic schematic, green represents ***supply fluid.***

23. The minimum bend radius for a hydraulic hose is ***about 4.5 inches.***

24. Maintaining a constant pressure during increased flow would require a ***compensator.***

25. The piece of equipment that converts electrical energy to hydraulic energy is ***HPU.***

26. The proper tightening of a compression fitting would normally require ***1 ¼ turn past hand tight.***

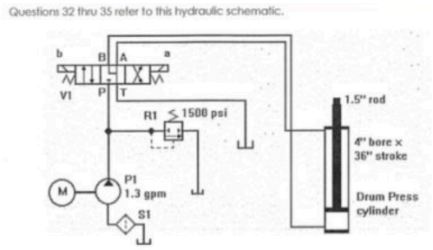
27. Where would a filter use a bypass/check valve? ***On the return line.***

28. A filter used under operating pressure would normally be sized for ***5.0 microns.***

29. Which of the following is set up to be metered out?  ***to actuator.*** May need to zoom

30. The most common cause of pump cavitation is ***All of the above. Low fluid level, Suction line not sealing, Dirty/clogged suction strainer.***

31. Stroke velocity of a cylinder ***Both A & C. Increases when flow rate increases, Decreases when cylinder area increases.***



32. The system is supporting a 500 lb load at 24" stroke. Solenoid power is lost. What happens? ***The load will drop.***

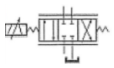
33. When solenoid A is energized, the rod will ***retract.***

34. The device labeled S1 is a ***filter.***

35. The device labeled V1 is a ***4-way, 3 position floating center valve, spring return, electrically actuated.***

36. Horsepower = ***Press (PSI) x flow (GPM) ÷ 1714.***

37. A counterbalance valve ***can help keep the load from running away.***

38. The partial lines top and bottom of the symbol indicate the device is  ***capable of proportional control.***

39. If the pump flow rate stays constant when the tubing size is increased, then the fluid velocity increases. ***False.***

40. Which of the valves is a 3/2 valve, with hand lever /spring return, neutral position P-A?