INDUSTRIAL FLUID POWER.

1.Cam lobe hydraulic motor is a type of

a. axial hydraulic motor

b. orbit hydraulic motor

c. gear hydraulic motor
d. radial hydraulic motor

2.What is the function of hydraulic motor?

1. hydraulic motor converts hydraulic oil under pressure into torque and angular displacement
2. hydraulic motor converts hydraulic oil under pressure into force and linear displacement
3. hydraulic motor converts hydraulic energy into mechanical energy
4. hydraulic motor converts mechanical energy into hydraulic energy

3.In which of these pumps, swash plate is replaced by cylinder block?

a. bent axis piston pump
b. radial piston pump
c. axial piston pump
d. none of the above

4. bent axis piston pump has

a. pump axis bent
b. cylinder block which is inclined at an angle to the drive shaft
c. both a. and b.
d. none of the above

3.Which of the following statements are true?
a. piston pumps are self priming
b. piston pumps require high maintenance
c. piston pumps have low cost of production
d. piston pumps have low volumetric efficiency

4.What is the advantage of multiple piston pump?
a. multiple piston pump do not have pulsating flow
b. multiple piston pump have pulsating flow which is required

5.What is the difference between vane pump and radial piston pump?
a. in radial piston pump, radial slots in vane pumps are replaced by radial bores which accommodate pistons
b. in radial piston pump, radial slots in vane pumps are replaced by radial bores which accommodate swash plate

c. in radial piston pump, radial slots in vane pumps are replaced by radial bores which accommodate both swash plate and pistons
d. none of the above

5.What are the reasons causing pressure drop in hydraulic systems?
1. long length of pipe
2. friction
3. type of fluid

4. losses in valves and bends
a. 1 and 4
b. only 1
c. 2 and 3
d. all of the above

6.Which of the following is used for mounting purpose in hydraulic cylinders?
a. Female clevis
b. Circular flange
c. Trunnion
d. all of the above

7.Telescopic cylinders have
a. only two stage units
b. only three stage units
c. two or three stage units
d. multistage units

7.Which of the following statements are true?
1. the length of two stage telescopic cylinder is more than a standard cylinder
2. the length of two stage telescopic cylinder is less than a standard cylinder
3. telescopic cylinder is single acting
4. telescopic cylinder is double acting
a. 1 and 3
b. 2 and 3
c. 2, 3 and 4
d. 1, 3 and 4

8.What causes suction of fluid into the gear pump?
a. when pressure drops during disengagement of teeth at the suction side
b. when pressure increases during disengagement of teeth at the suction side
c. when pressure drops during engagement of teeth at the suction side
d. when pressure increases during engagement of teeth at the suction side

9What is the principle of operation used in gear pumps?
a. two gears rotate in same direction
b. two gears rotate in opposite direction

c. both a. and b.
d. none of the above

9.Variable displacement pumps used in hydraulic applications can
1. have variable flow rate
2. consume less energy
3. be operated with high accuracy for slow and rapid motion
4. generate more heat
a. 1 and 2
b. 3 and 4
c. 1, 2 and 3
d. all of the above

10.In pressure compensated vane pump,
1. having variations in eccentricity between rotor and cam ring gives variable displacement
2. as eccentricity between rotor and cam decreases, flow of fluid decreases
3. as eccentricity between rotor and cam decreases, flow of fluid increases
4. having variations in eccentricity between rotor and cam ring gives fixed displacement
a. 1 and 3
b. 3 and 4
c. 2 and 4
d. 1 and 2

11.The rotation of which inner element causes the liquid to pump out in centrifugal pumps?
a. internal gear
b. rotation of the impeller
c. cylinder rotor
d. none of the above

12. What is the advantage of internal gear pump?
a. moderate speed
b. medium pressure
c. high viscosity fluids can be used
d. all of the above

12.If a pump gives higher flow rate to the valve then, pressure drop in the valve
a. increases
b. decreases
c. remains the same
d. none of the above

13.The total energy developed by the hydraulic oil in a system is given as
a. Total energy = (Potential energy + Pressure energy)
b. Total energy = (Potential energy + Kinetic energy)
c. Total energy = (Potential energy – Kinetic energy)
d. none of the above

13.Speed of the actuator is affected by
a. cross-section area of the orifice
b. velocity of flow
c. pipe diameter
d. all of the above

14.Which of the following statements is/are true according to Bernoulli's principle?
1. If a system has constant flow rate, change in cross-section area of the pipe affects the total energy of system
2. The change in cross-section has no effect on the total energy of the system and is constant if it has varying flow rate
3. A system has constant total energy, if flow rate is constant and change in cross-section has no effect on total energy
a. Statement 1
b. Statement 2
c. Statement 3
d. all of the above

15.Adding an additive to water glycol fluids improves
a. flammability
b. viscosity
c. oxidation
d. all of the above

16.Viscosity of High Water Fluid is
a. greater than water
b. less than water
c. nearby water
d. none of the above

17.High Water Fluids contain
a. oil in water
b. water in oil
c. only water
d. none of the above

18.Match the following group 1 with group 2 and select the correct option
Group 1 ---------- Group 2
1. High water fluids ---------- A. Water and synthetic chemical
2. Water in oil ---------- B. Fire-resistant fluid
3. Water glycol ---------- C. Oil in water
4. Synthetics ---------- D. Tiny droplets of water in oil
a. C – D – A – B
b. D – C – B – A
c. C – B – D – A

d. D – C – A – B

18.What is the relation between temperature and viscosity for hydraulic oil?
a. temperature and viscosity vary linearly
b. as temperature decreases viscosity decreases at atmospheric pressure
c. as temperature increases viscosity decreases at atmospheric pressure
d. none of the above

19 A fluid used in hydraulic systems should have
a. low oxidation resistance
b. high oxidation resistance
c. high oxidation enhancing ability
d. none of the above

20.How is the water content in High Water Fluids (HFA) compared to oil content?
a. more oil than water
b. oil and water are in same proportion
c. more water than oil
d. contains only water

21. What is the disadvantage of petroleum based fluids?
a. low flash point
b. low density
c. light weight
d. all of the above

22For any operation in a hydraulic system the fluid should have pour point
a. 20 ^{0}F below the lowest temperature
b. 20 ^{0}F above the lowest temperature
c. 20 ^{0}C below the lowest temperature
d. 20 ^{0}C above the lowest temperature

22.Which property decides the behavior of fluid when mixed with water?
a. pour point
b. demulsibility
c. viscosity
d. oxidation

23.Highest temperature at which a fluid in hydraulic system flows is called its pour point.
a. True
b. False
What is viscosity index?
a. effect of pressure on changes in viscosity
b. effect of temperature on changes in viscosity
c. effect of resistance between two surfaces
d. none of the above

24. High viscosity fluids have
a. low pressure drop
b. less power consumption
c. slow operation
d. all of the above

25. In industrial applications hydraulic fluids have viscosity grade ranging from
a. 20 to 50
b. 70 to 95
c. 46 to 68
d. 15 to 44

26.When is a pressure reducing valve used?
a. it is used when higher pressure than system pressure is required
b. it is used when lower pressure than system pressure is required
c. when absolutely zero pressure is required
d. all of the above

27.What is the function of sequence valve used in hydraulic circuits?
a. sequence valves are used to perform number of operations one after the other after the set pressure is reached
b. sequence valves are used to perform number of operations continuously before the set pressure is reached
c. sequence valves after reaching set pressure oil is flown to the tank
d. all of the above

28.Which of the following is applicable for bleed off circuits?
a. bleed off circuits develop heat in the system
b. bleed off circuits are used for resistive loads
c. bleed off circuits are used for runaway loads
d. all of the above

29.Why are bleed off circuits used?
a. bleed off circuit is used to restrict the flow of fluid into the hydraulic cylinder
b. bleed off circuit is used to restrict the flow of fluid out of the hydraulic cylinder
c. bleed off circuits are used to reduce the speed of actuator
d. all of the above

30.In a telescopic cylinder, as the number of stages increase
a. diameter of piston rod also increases
b. diameter of piston rod decreases
c. diameter of the piston rod remains the same
d. none of the above

31.Double acting cylinder can be used as a single acting cylinder

a. True
b. False

32.When does expansion of spring and retraction of cylinder take place in spring type single acting cylinder?
a. oil pressure exerted is less than spring compression pressure
b. oil pressure exerted is more than spring compression pressure
c. oil pressure exerted and spring compression pressure are same
d. none of the above

33.What happens when supply of oil to a single acting cylinder is stopped?
a. no pressure is exerted on the system
b. more pressure is exerted on the piston
c. less pressure is exerted on the piston
d. none of the above

34.Which of the following is a hydraulic cylinder based on application?
a. welded
b. bolted
c. ram
d. all of the above

35. What causes reduction in speed of the piston rod when the hydraulic cylinder is cushioned?
a. oil flow through small space
b. back pressure created in the system
c. both a. and b.
d. none of the above

36.Which of the following is a hydrodynamic pump?
a. vane pump
b. centrifugal pump
c. gear pump
d. piston pump

37.Volumetric efficiency is the ratio of
a. theoretical flow rate to actual flow rate
b. actual flow rate to theoretical flow rate
c. actual fluid power to pump input power
d. none of the above

38.Positive displacement pump used in hydraulic systems have
a. high viscosity of fluids
b. low efficiency
c. required volume of fluid cannot be discharged

d. all of the above

39.Which law explains the behavior of hydraulic fluids under pressure?
a. Charles's law
b. Newtons law
c. Pascal's law
d. none of the above

40.Pressure applied on a fluid in a container is equally distributed in all directions and acts with
a. equal force on equal areas parallelly
b. equal force on different areas and at right angles
c. equal force on equal areas and at right angles
d. none of the above

41.Which of the following statements are true?
1. Low viscosity fluids have higher leakage
2. High viscosity fluids have high pressure drop
3. Low viscosity fluids consume more power
4. Low viscosity leads to wear of components
a. 1 and 2
b. 1, 2 and 3
c. 1, 2 and 4
d. 2, 3 and 4

42.The heat generated in hydraulic systems can be absorbed by
a. lubrication
b. cooling
c. sealing
d. all of the above

43. Which of the following reasons make water unsuitable to use as a fluid in hydraulic systems?
1. Poor lubrication
2. High viscosity
3. More leakage
4. Quickly evaporates
a. 1 and 3
b. 2 and 4
c. 1, 3 and 4
d. all of the above

44.What is PLC?
a. Process logic control
b. Programmable language converter

c. Programmable logic control
d. Programmable logic converter

45.Which of the following is a characteristic of servo valve?
a. open loop system
b. closed loop system
c. less contamination
d. all of the above

46.In which control valve energy consumption reduces as load decreases?
a. conventional direction control valve
b. proportional direction control valve
c. both a. and b.
d. none of the above

47.In electropneumatic circuits,
a. spool is shifted by signal air
b. spool is shifted by control air
c. spool is shifted by electromotive force
d. all of the above

48.Which of the following is a type of cushioning in hydraulic cylinders?
a. trunnion cushioning
b. adjustable cushioning
c. clevis cushioning
d. none of the above

49.Which of the following is an element of time delay valve?
a. flow control valve
b. direction control valve
c. both a. and b.
d. none of the above

50.Which valve gets activated only in one direction that is forward or backward movement of the piston rod?
a. roller lever valve
b. idle roller lever valve
c. both a. and b.
d. none of the above

51.Which of the following is used to sense the initial and final positions of a piston rod?
a. lever operated direction control valve
b. limit switch

c. roller lever valve
d. all of the above

52.What is the difference between signal air and control air?
a. signal air actuates final control valve and control air flows to the cylinder through the final control valve for forward and backward movement of piston rod
b. control air actuates final control valve and signal air flows to the cylinder through the final control valve for forward and backward movement of piston rod
c. both a. and b.
d. none of the above

53.What is difference between regulator and pressure switch?
a. regulator operates at set value pressure while pressure switch operates with slight fluctuation in pressure
b. pressure switch operates at set value pressure while regulator operates with slight fluctuation in pressure

54.What is the advantage of PLC?
a. easy to find errors
b. replacements can be easily made
c. PLC's are easily programmed
d. all of the above

55.Which of the following pumps saves more power?
a. single pump
b. double pump
c. single and double pump use same amount of power
d. none of the above

56.Which of the following statements is true, for two pumps used in circuit when initially fast operation is performed to reach a job and feeding operation is done at a slow speed?
a. initially to reach a job, a tool must be connected to a pump of high discharge and low pressure
b. initially to reach a job, a tool must be connected to a pump of low discharge and high pressure
c. for feeding operation low discharge low pressure pump is required
d. none of the above

57.What is the function of unloading relief valve and can it be used as an accessory for accumulators?
a. unloading relief valve is used to charge the accumulator by a pump when accumulator pressure falls below the set value and it can be used as an accessory.
b. unloading relief valve is used to charge the accumulator by a pump when accumulator pressure falls below the set value but is not used as an accessory

c. unloading relief valve is used to charge the accumulator by a pump when accumulator pressure rises above the set value but is not used as an accessory
d. unloading relief valve is used to charge the accumulator by a pump when accumulator pressure rises above the set value and is used as an accessory

58.Intensifier used in pneumatic systems has output pressure
a. less than input pressure
b. more than input pressure
c. same as input pressure
d. none of the above

59.What is the function of pressure switch?
a. pressure switch is used to start a motor
b. pressure switch is used to stop a motor
c. pressure switch is used to de-energize a solenoid
d. all of the above

60.Accumulator used in gas charged accumulator is
a. hydraulic
b. pneumatic
c. hydro pneumatic
d. none of the above

61.What is the difference between pressure relief valve and pressure reducing valve?
a. pressure reducing valve is connected between pump and tank line while pressure relief valve is connected between DCV and branch circuit
b. pressure relief valve is always normally opened
c. pressure reducing valve is connected between DCV and branch circuit while pressure relief valve is connected between pump and tank
d. none of the above

62.How is reverse flow possible in pilot operated check valve?
a. spring force lifts the ball due to which reverse flow is possible
b. fluid pressure lifts the ball due to which reverse flow is possible
c. both a. and b.
d. none of the above

63.Which of the following statements are true for throttle valve?
1. Reverse flow of fluid is not possible
2. Input pressure for a throttle valve is more than output pressure
3. The actuator speed can be reduced by a throttle valve
4. Correct flow control valve for a particular application can be selected on the basis of pressure drop specified

a. 1, 2 and 3
b. 1, 3 and 4
c. 2, 3 and 4
d. all of the above

64.A pressure relief valve can be
a. direct operated
b. pilot operated
c. solenoid operated
d. all of the above

65.Check valve is a type of
a. pressure reducing valve
b. pressure relief valve
c. directional control valve
d. none of the above

66.In single acting hydraulic cylinders, the piston comes back to its original position due to
a. spring force
b. self-weight
c. momentum of a flywheel
d. all of the above

67. Leakage in welded type of hydraulic cylinder is prevented by
a. wiper in gland cover
b. rod seal in end cover
c. rod seal in gland cover
d. none of the above

68.Which of these actions does a hydraulic cylinder perform?
a. pushing
b. lifting
c. both a. and b.
d. none of the above

69.Which of the following statements is true?
a. Tie-rod cylinders are used in applications having working pressure of 70 bar
b. Welded type cylinders are used in systems having working pressure more than 70 bar
c. Tie-rod cylinders can be used in systems having working pressure more than 70 bar
d. all of the above

70.Why are hydraulic cylinders cushioned?
a. cushioning decelerates the piston of a cylinder

b. stress and vibrations can be reduced
c. both a. and b.
d. none of the above

71.Radial piston pumps can have,
a. cylinder block rotating and cam stationary
b. cylinder block stationary and cam rotating
c. both a. and b.
d. none of the above

72.What effect does working pressure have on input power for radial piston pumps?
a. as working pressure increases input power decreases
b. as working pressure increases input power increases
c. pressure remains constant for different input powers
d. none of the above

73.While operating a positive displacement pump,
a. the shut-off valve should be closed on delivery side
b. the shut-off valve should be closed on suction side
c. the shut-off valve should be opened on delivery side
d. none of the above

74.What is a positive displacement pump?
a. oil from suction side of the pump flows completely to the delivery side
b. volume of fluid discharged cannot return back to the suction side of the pump
c. discharges fixed volume of fluid every cycle
d. all of the above

75.Pumps used in hydraulic applications are
a. positive displacement pumps
b. variable displacement pumps
c. fixed displacement pumps
d. all of the above

76.Which type of pump is used for lifting water from the ground surface to the top of the building?
a. centrifugal pump
b. turbine pump
c. submersible pump
d. all of the above

77.Which of the following is used as an accessory in hydraulic power unit?
a. pumps

b. valves
c. motor
d. reservoir

78.In a hydraulic circuit a pump is provided with two outlet paths, one where load is attached and other to the reservoir. Which path will the oil choose to flow first?
a. oil will flow to the path where load is attached
b. oil will flow back to the reservoir first
c. oil will flow through both the paths simultaneously
d. none of the above

79.During any operation in hydraulic system, oil prefers the path of
a. least resistance
b. maximum resistance
c. both a. and b.
d. none of the above

80.Which factor helps in obtaining high speed of the piston rod in the hydraulic system?
a. decreased friction
b. pump capacity
c. increased flow rate
d. all of the above

81.If capacity of pump is more, it pumps less oil per unit time.
a. True
b. False

82.If no load is attached to piston rod, the movement of piston assembly is possible when
a. oil overcomes its self weight
b. oil overcomes friction in the piston rod assembly
c. both a. and b.
d. none of the above

83. Which system uses kinetic energy to transmit power?
a. hydrostatic system
b. hydrodynamic system
c. pneumatic system
d. none of the above

84.Which energy is used to transmit power in hydrostatic system?
a. pressure energy
b. kinetic energy
c. potential energy

d. all of the above

85.The hydraulic system is
a. less precise than pneumatic system
b. more precise than pneumatic system
c. both hydraulic and pneumatic systems are same on basis of precision
d. none of the above

86.How is tilting action possible in trucks for unloading the gravel material using hydraulic power?
1. Tilting action is possible if, oil flows at high pressure into the cylinder
2. Tilting action is possible if, air flows at low pressure into the cylinder
3. The truck body tilts when piston rod in the actuator is pushed out.
4. Tilting action is possible if air is compressed at high pressure
a. 1 and 3
b. 2 and 4
c. 3 and 4
d. none of the above

87.Which of the following statements is/are false?
a. air is non-compressible
b. less power is developed in fluid power systems than conventional systems
c. mechanical linkages used for load handling purposes have high efficiency
d. all of the above

88.Which of the following statements is true for a proportional valve?
a. spool of the proportional valve can travel maximum length
b. digital type of functioning is possible in proportional valve
c. proportional valve requires a separate flow control valve
d. all of the above

89.What is the advantage of DC solenoid coils?
a. DC solenoid coils have high rush in current
b. DC solenoid coils have constant level of current
c. DC solenoid coils have rating of 220 V DC
d. all of the above

90.In conventional valves, which component is used to move the spool?
a. torque motor
b. mechanical servo valve
c. solenoid
d. all of the above

91.What does servo mean in servo valve system?
a. it cannot receive a feedback but the desired output can be obtained
b. it cannot receive a feedback and the desired output cannot be obtained
c. it can receive a feedback and the desired output can be obtained
d. none of the above

92.In which systems, spool of the servo valve is operated by a torque motor?
a. hydro mechanical servo systems
b. electrohydraulic servo systems
c. conventional servo valve
d. all of the above

93.Which of the following statements is true for cascade method which is used to draw a pneumatic circuit?
a. signal processing valves are connected in parallel
b. when the number of signal processing valves are greater than 4, the signals are strong
c. cascade method does not consider the cost factor
d. all of the above

94.Overlapping of signals in pneumatic systems can be avoided by using
a. rolling lever valve
b. idle roller lever valve
c. both a. and b.
d. none of the above

95.What is a pressure sequence valve?
a. it is a combination of adjustable pressure relief valve and directional control valve
b. it is a combination of nonadjustable pressure relief valve and directional control valve
c. it is a combination of adjustable pressure reducing valve and check valve
d. it is a combination of adjustable pressure reducing valve and flow control valve

96.In pneumatic systems, AND gate is also known as
a. check valve
b. shuttle valve
c. dual pressure valve
d. none of the above

97.Which of the following logic valve is known as shuttle valve?
a. OR gate
b. AND gate
c. NOR gate
d. NAND

98.Which of the following is a component used in air generation system?
a. pressure switch
b. pressure gauge
c. drier
d. intercooler

99.Which of the following factors is/are considered while selecting a compressor?
a. type of oil filter required
b. volumetric efficiency
c. viscosity of the liquids used
d. all of the above

100.Which type of compressor requires a reservoir for compressed air and why?
a. rotary compressor to avoid pulsating effect
b. reciprocating compressor to avoid pulsating effect
c. both rotary and reciprocating compressors to avoid pulsating effect
d. none of the above

101.Which of the following systems generate more energy when used in industrial applications?
a. hydraulic systems
b. pneumatic systems
c. both systems generate same energy
d. cannot say