

## ***HPC (4<sup>TH</sup> SEM AUTOMOBILE ENGINEERING)***

1. How is the arrangement of pistons in piston pumps?
  - (A) Axially
  - (B) Radially
  - (C) Both (A) & (B)
  - (D) None of the above
2. How many strokes does a single piston pump need to discharge oil?
  - (A) One stroke
  - (B) Two stroke
  - (C) Three stroke
  - (D) None of these
3. 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
4. What is the relation between pressure and overall efficiency for a gear pump?
  - (A) as pressure increases, overall efficiency decreases
  - (B) as pressure increases, overall efficiency increases
  - (C) overall efficiency is not affected by change in pressure
  - (D) cannot say
5. What causes internal leakage in internal gear pump?
  - (A) less tolerance level between the meshing surfaces
  - (B) more tolerance level between the meshing surfaces
  - (C) no tolerance between the meshing surfaces
  - (D) none of the above
6. Which of the following is the correct relation between centroid (G) and the centre of pressure (P) of a plane submerged in a liquid?
  - (A) G is always below P
  - (B) P is always below G
  - (C) G is either at P or below it.
  - (D) P is either at G or below it.
7. In the inverted U-tube Differential manometer, how is the specific gravity of manometric fluid used relative to the fluid flowing in the pipes
  - (A) Specific gravity is more than that of fluid flowing in pipes

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(B) Specific gravity is less than that of fluid flowing in pipes  
(C) Specific gravity is equal to that of fluid flowing in pipes  
(D) None of the mentioned

8. Which device is popularly used for measuring difference of low pressure?  
(A) Inverted U-tube Differential Manometer  
(B) U-tube Differential Manometer  
(C) Inclined Single column manometer  
(D) Vertical Single column manometer

9. The right limb of a simple U-tube manometer containing mercury is open to the atmosphere while the lift limb is connected to a pipe in which a fluid of specific gravity 0.85 is flowing. The centre of the pipe is 14 cm below the level of mercury in the right limb. Evaluate the pressure of fluid flowing in the pipe if the difference of mercury level in the two limbs is 22 cm.  
(A)  $2.86 \text{ N/cm}^2$   
(B)  $5.73 \text{ N/cm}^2$   
(C)  $1.43 \text{ N/cm}^2$   
(D) None of the mentioned

10. A Differential manometer is connected at the points A and B at the centre of two pipes. The pipe A(left limb) contains a liquid of specific gravity = 1.5 while pipe B (right limb)contains a liquid of specific gravity 0.85. The pressure at A and B are  $.5 \text{ kgf/cm}^2$  and  $1.2 \text{ kgf/cm}^2$  respectively. Find the difference in level of mercury in the differential manometer. A is 2.5m above B and 5 m above the mercury in its own limb. B is 2.5 m above the mercury level in limb A.  
(A) 12.7 cm  
(B) 25.5 cm  
(C) 6.28 cm  
(D) 10.85 cm

11. The continuity equation is based on the principle of  
(A) Conservation of mass  
(B) Conservation of momentum  
(C) Conservation of energy  
(D) Conservation of force

12. Reciprocating pump is a \_\_\_\_\_  
(A) Negative displacement pump  
(B) Positive displacement pump  
(C) Diaphragm pump  
(D) Emulsion pump

13. Reciprocating pumps operate by drawing \_\_\_\_\_ into the chamber  
(A) Liquid  
(B) Pressure

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- (C) Heat
- (D) Electricity

14. The cylinder of reciprocating cylinder is made up of \_\_\_\_\_

- (A) Cast iron
- (B) Wrought iron
- (C) Aluminium
- (D) Copper

15. Reciprocating pumps are also called as \_\_\_\_\_

- (A) Force pump
- (B) Mass pump
- (C) Heat pump
- (D) Speed pump

16. Power operated pump in which only one side engages the fluid displacement is called \_\_\_\_\_

- (A) Froth pump
- (B) Single acting
- (C) Double acting
- (D) Bicycle pump

17. An up and down back and forth relative linear motion is called \_\_\_\_\_

- (A) Reciprocation
- (B) Rotation
- (C) Filtration
- (D) Excavation

18. The main function of centrifugal pumps are to \_\_\_\_\_

- (A) Transfer speed
- (B) Transfer pressure
- (C) Transfer temperature
- (D) Transfer energy

19. Centrifugal pumps transfer energy from \_\_\_\_\_

- (A) Rotor to fluid
- (B) Fluid to rotor
- (C) Draft to rotor
- (D) Rotor to draft

20. The fluid coming into the centrifugal pump is accelerated by \_\_\_\_\_

- (A) Throttle
- (B) Impeller
- (C) Nozzle
- (D) Governor

21. When is a reciprocating pump used?

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(A) When quantity of liquid is small  
(B) When quantity of liquid is large  
(C) To pump high pressure  
(D) To pump low pressure

22. What does BPVC stand for?  
(A) Boiler and pressure vessel code  
(B) Boiler and pump vessel code  
(C) Boiler and pressure vessel clutch  
(D) Boiler and pump vessel clutch

23. The underlying principle behind a hydraulic press is based on \_\_\_\_\_ principle  
(A) Bramah's  
(B) Pascal's  
(C) Stoke's  
(D) Newton's

24. A \_\_\_\_\_ is the main essence of a car crushing system.  
(A) Hydraulic press  
(B) Hydraulic cylinder  
(C) Hydraulic crane  
(D) Accumulator

25. A \_\_\_\_\_ is a storage reservoir under pressure where a liquid is held under pressure.  
(A) Hydraulic accumulator  
(B) Hydraulic crane  
(C) Hydraulic gear  
(D) Hydraulic pump

26. The most frequently used accumulator type is \_\_\_\_\_  
(A) Liquid accumulator  
(B) Solid accumulator  
(C) Compressed gas accumulator  
(D) Plasma accumulator

27. The inert gas used in gas compressed accumulator is usually \_\_\_\_\_  
(A) Sulphur  
(B) Nitrogen  
(C) Oxygen  
(D) Carbon dioxide

28. A \_\_\_\_\_ is a hydraulic machine for converting hydraulic power at low pressure into a reduced volume at higher pressure.  
(A) Hydraulic ram  
(B) Hydraulic crane

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(C) Hydraulic intensifier  
(D) Hydraulic accumulator

29. The working volume of the intensifier is restricted by the stroke of the \_\_\_\_\_  
(A) Piston  
(B) Shaft  
(C) Jack  
(D) Cylinder

30. A \_\_\_\_\_ is a cyclic water pump that derives its power from hydroelectric sources.  
(A) Hydraulic crane  
(B) Hydraulic ram  
(C) Hydraulic accumulator  
(D) Hydraulic press

31. \_\_\_\_\_ aids in cushioning the shock of the hydraulic pressure during the working of the hydraulic ram  
(A) Pressure valve  
(B) Air bags  
(C) Inlet valve  
(D) Drive pipe

32. An alternate option to the hydraulic ram is \_\_\_\_\_  
(A) Water-powered pump  
(B) Oscillating pump  
(C) Inlet pressure pump  
(D) Water vessel pump

33. The two types of pulleys in a hydraulic lift are \_\_\_\_\_ and \_\_\_\_\_  
(A) Fixed , fixed  
(B) Movable , fixed  
(C) Movable , movable  
(D) Semi-movable , movable

34. \_\_\_\_\_ helps in indicating the maximum lifting limit of the crane.  
(A) Jib  
(B) Gear  
(C) Shaft  
(D) Load moment indicator

35. In a hydraulic system the development of pressure is by variable displacement pump and \_\_\_\_\_  
(A) Stationary pump  
(B) Fixed pump  
(C) Gear pump  
(D) Motor pump

36. Turbomachines work under \_\_\_\_\_

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- (A) Newtons first law
- (B) Newtons second law
- (C) Newtons third law
- (D) Kepler's law

37. The main function of nozzle is to \_\_\_\_\_

- (A) Temperature variation
- (B) Pressure variation
- (C) Load variation
- (D) Heat variation

38. Gear pumps are mainly used in chemical installations because they pump \_\_\_\_\_

- (A) High viscosity fluid
- (B) High density fluid
- (C) High pressure fluid
- (D) High temperature fluid

39. Gear pumps are \_\_\_\_\_

- (A) Tangential flow pumps
- (B) Positive displacement pumps
- (C) Negative displacement pumps
- (D) Radial pumps

40. Which of the following cannot be the value of absolute pressure of a fluid at any point?

- (A) 0
- (B) 1.013 bar
- (C) -1 bar
- (D) 200 bar

41. A manometric liquid should suitably have \_\_\_\_\_

- (A) Low density & Low Vapour pressure
- (B) Low density & High Vapour pressure
- (C) High density & Low Vapour pressure
- (D) High density & High Vapour pressure

42. The specific gravity of a liquid has

- (A) the same unit as that of mass density
- (B) the same unit as that of weight density
- (C) the same unit as that of specific volume
- (D) no units

43. The specific volume of a liquid is the reciprocal of

- (A) Weight density
- (B) Mass density
- (C) Specific weight

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(D) Specific volume

44. Specific gravity is what kind of property?

- (A) Intensive
- (B) Extensive
- (C) None of the above
- (D) Depends on external conditions

45. Which of the following contribute to the reason behind the origin of surface tension?

- (A) Only cohesive force
- (B) Only adhesive force
- (C) neither cohesive forces nor adhesive forces
- (D) both cohesive forces and adhesive forces

46. A point in a fluid flow where the flow has come to rest is called \_\_\_\_\_

- (A) Pressure point
- (B) Initial point
- (C) Flow point
- (D) Stagnation point

47. A one dimensional flow is also called as \_\_\_\_\_

- (A) Steady flow
- (B) Uniform flow
- (C) Zig-zag flow
- (D) A flow which involves zero transverse component

48. Which of the following logic valve is known as shuttle valve?

- (A) OR gate
- (B) AND gate
- (C) NOR gate
- (D) NAND gate

49. 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

50. 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 the above