

1. Which of the following is not a characteristic of a fluid coupling?

- a) Variable torque ratio
- b) Variable speed ratio
- c) Slip-free operation
- d) High efficiency

Answer: b) Variable speed ratio

Explanation: Fluid couplings provide a variable torque ratio but maintain a constant speed ratio between the input and output shafts. They operate without slip and typically exhibit high efficiency.

2. What is the function of a velocity diagram in fluid machinery?

- a) To determine slip
- b) To visualize the flow velocity
- c) To calculate efficiency
- d) To measure torque

Answer: b) To visualize the flow velocity

Explanation: Velocity diagrams help engineers visualize the flow velocity and direction within fluid machinery, aiding in design and analysis.

3. What is the primary distinction between positive displacement machines and turbo machines?

- a) Positive displacement machines operate at constant speed
- b) Turbo machines have variable displacement
- c) Positive displacement machines have fixed displacement
- d) Turbo machines operate with constant torque

Answer: c) Positive displacement machines have fixed displacement

Explanation: Positive displacement machines displace a fixed volume of fluid per cycle, while turbo machines impart energy to the fluid continuously.

4. Which type of pump has a variable displacement?

- a) Centrifugal pump
- b) Axial-flow pump
- c) Gear pump
- d) Piston pump

Answer: d) Piston pump

Explanation: Piston pumps are positive displacement pumps that can have variable displacement by adjusting the stroke length or rotational speed.

5. In a hydrostatic system, what is the function of an accumulator?

- a) Stores excess fluid
- b) Regulates pressure fluctuations
- c) Converts mechanical energy into hydraulic energy
- d) Controls flow direction

Answer: b) Regulates pressure fluctuations

Explanation: Accumulators store fluid under pressure and help regulate pressure fluctuations within a hydraulic system, providing a source of stored energy.

6. What is the purpose of a hydraulic intensifier?

- a) To increase the flow rate
- b) To amplify hydraulic pressure

- c) To reduce fluid viscosity
- d) To regulate temperature

Answer: b) To amplify hydraulic pressure

Explanation: Hydraulic intensifiers increase hydraulic pressure by using a small force to act on a small area and transmit a larger force to a larger area, effectively amplifying pressure.

7. Which type of machine is best suited for high-pressure applications in hydraulic systems?

- a) Positive displacement pump
- b) Turbo machine
- c) Centrifugal pump
- d) Axial-flow pump

Answer: a) Positive displacement pump

Explanation: Positive displacement pumps are capable of generating high pressures because they deliver a fixed volume of fluid per cycle, regardless of system resistance.

8. What is the characteristic feature of a torque converter?

- a) Variable torque ratio
- b) Fixed speed ratio
- c) Slip-free operation
- d) Low efficiency

Answer: a) Variable torque ratio

Explanation: Torque converters provide a variable torque ratio between the input and output shafts, allowing for smooth power transmission in automotive applications.

9. What distinguishes a turbo machine from a positive displacement machine?

- a) Turbo machines operate with variable displacement
- b) Positive displacement machines operate with constant torque
- c) Turbo machines have fixed displacement
- d) Positive displacement machines have variable speed

Answer: a) Turbo machines operate with variable displacement

Explanation: Turbo machines, such as turbines and compressors, operate with variable displacement, while positive displacement machines maintain a fixed displacement.

10. Which component of a hydrostatic system is used to store hydraulic energy?

- a) Hydraulic intensifier
- b) Accumulator
- c) Positive displacement pump
- d) Torque converter

Answer: b) Accumulator

Explanation: Accumulators store hydraulic energy in the form of pressurized fluid, which can be used to supplement system power during peak demands or absorb shocks.

11. What does slip refer to in fluid machinery?

- a) Loss of pressure
- b) Loss of speed
- c) Loss of torque
- d) Loss of efficiency

Answer: b) Loss of speed

Explanation: Slip in fluid machinery refers to the difference between the theoretical speed

and the actual speed of the machine, typically caused by factors such as fluid viscosity or mechanical losses.

12. Which type of pump is commonly used in high-pressure hydraulic systems?

- a) Gear pump
- b) Centrifugal pump
- c) Axial-flow pump
- d) Piston pump

Answer: d) Piston pump

Explanation: Piston pumps are well-suited for high-pressure hydraulic systems due to their ability to generate significant pressure by displacing fluid with reciprocating or rotating pistons.

13. What is the primary advantage of a variable displacement pump over a fixed displacement pump?

- a) Higher efficiency
- b) Lower cost
- c) Greater reliability
- d) Adjustable flow rate

Answer: d) Adjustable flow rate

Explanation: Variable displacement pumps allow for the adjustment of flow rate, making them versatile for applications where varying fluid flow requirements are needed.

14. Which component of a fluid coupling contributes to its slip-free operation?

- a) Impeller

- b) Turbine
- c) Stator
- d) Shaft

Answer: c) Stator

Explanation: The stator in a fluid coupling redirects the fluid flow exiting the turbine back to the impeller, reducing slip and improving the efficiency of power transmission.

15. What distinguishes a positive displacement pump from a turbo machine?

- a) Positive displacement pumps have fixed displacement
- b) Turbo machines have variable displacement
- c) Positive displacement pumps operate with constant speed
- d) Turbo machines have fixed speed

Answer: a) Positive displacement pumps have fixed displacement

Explanation: Positive displacement pumps displace a fixed volume of fluid per cycle, while turbo machines continuously impart energy to the fluid without necessarily displacing a fixed volume.

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