



THE UNIVERSITY OF  
**JORDAN**



School of Engineering  
Mechanical Engineering Department  
Fluid Mechanics -

<b>School</b>	Engineering	<b>Department</b>	Mechanical
<b>Course Name</b>	Fluid Mechanics -1	<b>Course No.</b>	0944706
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<b>Exam Date</b>		<b>Exam Type</b>	Quiz-3
		<b>Exam Time</b>	15 minutes

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1. What does the linear momentum equation represent in fluid mechanics?
  - A) Conservation of mass
  - B) Conservation of energy
  - C) Newton's second law applied to a fluid system
  - D) The relationship between pressure and velocity
2. Which of the following terms is NOT part of the linear momentum equation?
  - A) Force due to pressure
  - B) Rate of change of momentum
  - C) Kinetic energy correction factor
  - D) Momentum inflow and outflow
3. The term  $\Sigma F_{ext}$  in the linear momentum equation represents:
  - A) Internal forces within the control volume
  - B) External forces acting on the control volume
  - C) Momentum accumulation within the control volume
  - D) The rate of energy loss
4. In the context of the momentum equation, what does the term  $\rho AV$  represent?
  - A) Momentum accumulation
  - B) Rate of momentum flow across a control surface
  - C) Pressure force
  - D) Viscous force
5. Which of the following is a necessary condition to simplify the linear momentum equation?
  - A) The control volume must be accelerating.
  - B) Flow must be steady and uniform across control surfaces.
  - C) The fluid must be compressible.
  - D) The control volume must be moving with the fluid.
6. The angular momentum equation is most useful in analyzing:
  - A) Laminar flow
  - B) Inviscid flow
  - C) Rotating machinery like turbines and fans
  - D) Flow over flat plates



7. **In which scenario would you apply the momentum equation to a moving control volume?**
  - A) When analyzing fluid flow through a nozzle
  - B) When calculating forces on a stationary dam
  - C) When evaluating the thrust of a rocket in motion
  - D) When determining pressure losses in a pipe bend
8. **When is the accumulation term in the momentum equation zero?**
  - A) For unsteady flow conditions
  - B) When there is no change in momentum within the control volume over time
  - C) When the fluid is compressible
  - D) When the control volume is accelerating
9. **What is the primary difference between the Bernoulli equation and the energy equation?**
  - A) The Bernoulli equation considers only mechanical energy, while the energy equation includes both mechanical and thermal energy.
  - B) The energy equation applies only to inviscid flow.
  - C) The Bernoulli equation requires the flow to be compressible.
  - D) The energy equation can only be applied to closed systems.
10. **Which term in the energy equation accounts for energy losses due to friction?**
  - A) Pump head
  - B) Elevation head
  - C) Velocity head
  - D) Head loss
11. **In the energy equation, what does the term \_\_\_\_\_ represent?**
  - A) Pump work
  - B) Pressure head
  - C) Velocity head
  - D) Kinetic energy correction factor
12. **What assumption is NOT made when applying the energy equation to a fluid system?**
  - A) The flow is steady.
  - B) The fluid density is constant.
  - C) Thermal energy terms (except for head loss) can be neglected.
  - D) The flow is inviscid.
13. **In a system with a pump and a turbine, what is the relationship between the pump head  $h_p$  and the turbine head  $h_t$ ?**
  - A)  $h_p$  is always greater than  $h_t$ .
  - B)  $h_t$  is subtracted from  $h_p$  in the energy equation.
  - C)  $h_p$  and  $h_t$  are unrelated.
  - D)  $h_t$  is added to  $h_p$  in the energy equation.
14. **Which of the following conditions must be satisfied for the energy equation to reduce to the Bernoulli equation?**
  - A) The fluid must be compressible.
  - B) The flow must be unsteady.
  - C) The head loss must be zero, and no pumps or turbines are present.
  - D) The control volume must have multiple inlets and outlets.
15. **How is power related to head in a fluid system, according to the energy equation?**
  - A) Power is directly proportional to the square of the head.
  - B) Power is inversely proportional to head.
  - C) Power equals mass flow rate times gravity times head.
  - D) Power is independent of head.



**What does the linear momentum equation represent in fluid mechanics?**

- Answer: c) Newton's second law applied to a fluid system

**Which of the following terms is NOT part of the linear momentum equation?**

- Answer: c) Kinetic energy correction factor

**The term  $\Sigma F_{ext}$  in the linear momentum equation represents:**

- Answer: b) External forces acting on the control volume

**In the context of the momentum equation, what does the term  $\rho AV$  represent?**

- Answer: b) Rate of momentum flow across a control surface

**Which of the following is a necessary condition to simplify the linear momentum equation?**

- Answer: b) Flow must be steady and uniform across control surfaces.

**The angular momentum equation is most useful in analyzing:**

- Answer: c) Rotating machinery like turbines and fans

**In which scenario would you apply the momentum equation to a moving control volume?**

- Answer: c) When evaluating the thrust of a rocket in motion

**When is the accumulation term in the momentum equation zero?**

- Answer: b) When there is no change in momentum within the control volume over time

**What is the primary difference between the Bernoulli equation and the energy equation?**

- Answer: a) The Bernoulli equation considers only mechanical energy while the energy equation includes both mechanical and thermal energy.

**Which term in the energy equation accounts for energy losses due to friction?**

- Answer: d) Head loss

**In the energy equation, what does the term represent?**

- Answer: a) Pump work

**What assumption is NOT made when applying the energy equation to a fluid system?**

- Answer: d) The flow is inviscid.

**In a system with a pump and a turbine, what is the relationship between the pump head  $h_{ph\_php}$  and the turbine head  $h_{th\_tht}$ ?**

- Answer: b)  $h_{th\_tht}$  is subtracted from  $h_{ph\_php}$  in the energy equation.

**Which of the following conditions must be satisfied for the energy equation to reduce to the Bernoulli equation?**

- Answer: c) The head loss must be zero and no pumps or turbines are present.

**How is power related to head in a fluid system according to the energy equation?**

- Answer: c) Power equals mass flow rate times gravity times head.