

# Unit 4 - Week 3 : FLUID DYNAMICS

## Course outline

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## Assignment 3

The due date for submitting this assignment has passed.  
As per our records you have not submitted this assignment.

**Due on 2019-09-18, 23:59 IST.**

- 1) Identify the statements below and choose the correct answer  
Statement A: A system focus on set of fluid particles  
Statement B: A control volume focuses on region of space
- a. A and B are true  
 b. A is false and B is true  
 c. A and B are false  
 d. None of the above
- No, the answer is incorrect.**  
**Score: 0**  
**Accepted Answers:**  
*a. A and B are true*
- 2) Which of the following is the intensive property
- a. Density  
 b. Mass  
 c. Volume  
 d. Energy
- No, the answer is incorrect.**  
**Score: 0**  
**Accepted Answers:**  
*a. Density*
- 3) Which of the following is the extensive property
- a. Viscosity  
 b. Concentration  
 c. Density  
 d. Momentum
- No, the answer is incorrect.**  
**Score: 0**  
**Accepted Answers:**  
*d. Momentum*
- 4) Continuity equation deals with the law of conservation of
- a. mass  
 b. momentum  
 c. energy  
 d. none of the above
- No, the answer is incorrect.**  
**Score: 0**  
**Accepted Answers:**  
*a. mass*
- 5) Identify the statements below and choose the correct answer  
Statement A: A control volume allows mass flux across its boundaries  
Statement B: A control volume is fixed and cannot move or deform
- a. A is true and B is false  
 b. A and B are true  
 c. A is false and B is true  
 d. A and B are false
- No, the answer is incorrect.**  
**Score: 0**  
**Accepted Answers:**  
*a. A is true and B is false*
- 6) The necessary condition for the flow to be steady is
- a. The velocity does not change from place to place  
 b. The velocity is constant at a point with respect to time  
 c. The velocity changes at a point with respect to time  
 d. None of the above
- No, the answer is incorrect.**  
**Score: 0**  
**Accepted Answers:**  
*b. The velocity is constant at a point with respect to time*
- 7) For a steady compressible flow, the continuity equation can take the form
- a.  $A_1V_1=A_2V_2$   
 b.  $\rho_1V_1=\rho_2V_2$   
 c.  $\rho_1A_1V_1=\rho_2A_2V_2$   
 d.  $\rho_1A_1/V_1=\rho_2A_2/V_2$
- No, the answer is incorrect.**  
**Score: 0**  
**Accepted Answers:**  
*c.  $\rho_1A_1V_1=\rho_2A_2V_2$*
- 8) Differential manometer is a device used for measuring
- a. Velocity at a point in a fluid  
 b. Pressure at a point in a fluid  
 c. Difference of pressure between two points  
 d. None of the above
- No, the answer is incorrect.**  
**Score: 0**  
**Accepted Answers:**  
*c. Difference of pressure between two points*
- 9) An incompressible homogeneous fluid is flowing steadily in a variable pipe having the large and small diameter as 15 cm and 5 cm respectively. If the velocity at section at the 15 cm diameter portion of the pipe is 2.5 m/sec, the velocity of fluid (in m/s) at section falling in 5 cm portion of the pipe is
- a. 20 m/s  
 b. 21.25 m/s  
 c. 22.5 m/s  
 d. 22.75 m/s
- No, the answer is incorrect.**  
**Score: 0**  
**Accepted Answers:**  
*c. 22.5 m/s*
- 10) The Reynold transport theorem is
- a. Applies to steady and unsteady situations  
 b. Applies only to conserved properties  
 c. Both a and b  
 d. Only b
- No, the answer is incorrect.**  
**Score: 0**  
**Accepted Answers:**  
*c. Both a and b*
- 11) In a static fluid, the pressure at a point is
- a. equal to the weight of the fluid above  
 b. equal in all directions  
 c. equal in all directions, only if its viscosity is zero  
 d. always directed downwards
- No, the answer is incorrect.**  
**Score: 0**  
**Accepted Answers:**  
*b. equal in all directions*
- 12) The diameters of a pipe at the sections 1 and 2 are 10 cm and 15 cm respectively. Given velocity of water flowing through the pipe at section 1 is 5 m/s. Determine velocity at section 2 (in m/s)
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- No, the answer is incorrect.**  
**Score: 0**  
**Accepted Answers:**  
*(Type: Range) 2.0,2.4*
- 13) For the question above calculate discharge flowing through the pipe
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- No, the answer is incorrect.**  
**Score: 0**  
**Accepted Answers:**  
*(Type: Range) 39,40*
- 14) A 30 cm diameter pipe, conveying water, branches into two pipes of diameter 20 cm and 15 cm respectively. If the average velocity in the 30 cm diameter pipe is 2.5 m/s, find the discharge in this pipe (in litres/s)
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- No, the answer is incorrect.**  
**Score: 0**  
**Accepted Answers:**  
*(Type: Range) 170,180*
- 15) In the previous question, determine the velocity in 15 cm pipe if the average velocity in 20 cm diameter pipe is 2 m/s (in m/s)
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- No, the answer is incorrect.**  
**Score: 0**  
**Accepted Answers:**  
*(Type: Range) 5,7*
- 16) For the question above, calculate discharge (in litres/s)
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- No, the answer is incorrect.**  
**Score: 0**  
**Accepted Answers:**  
*(Type: Range) 110,115*

2 points