

Course outline

How does an NPTEL online course work?

Week 0

Week 1

● Lecture 1: Introduction and Classification

● Lecture 2: Introduction and Classification (contd.)

● Lecture 3: Review of the Fundamental Laws

● Lecture 4: Equation of Motion in Rotating Frame

○ Quiz: Assignment 1

● Feedback Form for Week 01

● Week 1 : Assignment 1- Solution

Week 2

Week 3

Week 4

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Assignment 1

The due date for submitting this assignment has passed.

Due on 2021-08-18, 23:59 IST.

As per our records you have not submitted this assignment.

1) The exchanges energy in a rotating impeller as the fluid passes through is because of,

1 point

- Change in pressure of passing fluid.
 Change in temperature of passing fluid.
 Change in linear momentum of passing fluid.
 Change in angular momentum of passing fluid.

No, the answer is incorrect.

Score: 0

Accepted Answers:

Change in angular momentum of passing fluid.

2) For the analysis of flow through a stator blade, one should solve the governing equation in

1 point

- The relative frame of reference.
 The absolute frame of reference
 Both in an absolute and relative frame of reference.
 None of the above.

No, the answer is incorrect.

Score: 0

Accepted Answers:

The absolute frame of reference

3) For the analysis of flow through a rotor blade, one should solve the governing equation in

1 point

- The absolute frame of reference.
 Both in the absolute and relative frame of reference.
 The relative frame of reference.
 None of the above.

No, the answer is incorrect.

Score: 0

Accepted Answers:

The relative frame of reference.

4) In a fully Radial Flow Impeller, the Euler work can be related to

1 point

- The aerodynamic lift.
 The Coriolis force.
 Both the aerodynamic lift and Coriolis force.
 None of the above.

No, the answer is incorrect.

Score: 0

Accepted Answers:

The Coriolis force.

5) In an Axial Flow Impeller, the Euler work can be related to

1 point

- The aerodynamic lift.
 The Coriolis force.
 Both the aerodynamic lift and Coriolis force.
 None of the above.

No, the answer is incorrect.

Score: 0

Accepted Answers:

The aerodynamic lift.

6) In a Mixed Flow Impeller, the Euler work can be related to

1 point

- The aerodynamic lift.
 The Coriolis force.
 Both the aerodynamic lift and Coriolis force.
 None of the above.

No, the answer is incorrect.

Score: 0

Accepted Answers:

Both the aerodynamic lift and Coriolis force.

7) Section 1 refers to the inlet and 2 as the exit of a stator handling incompressible flow. Further, enthalpy is denoted by h , internal energy by u , and pressure by p . The aerodynamic losses can be equated to

1 point

- Loss= $h_{0r1}-h_{0r2}$.
 Loss= $p_{0r1}-p_{0r2}$.
 Loss= $h_{01}-h_{02}$.
 Loss= $u_{01}-u_{02}$.
 Loss= $p_{01}-p_{02}$.
 None of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

Loss= $p_{01}-p_{02}$.

8) The type of impeller with a high specific speed would be,

1 point

- Axial Flow
 Mixed Flow
 Radial Flow
 None of the above.

No, the answer is incorrect.

Score: 0

Accepted Answers:

Axial Flow

9) The type of impeller with a low specific speed would be,

1 point

- Axial Flow
 Mixed Flow
 Radial Flow
 None of the above.

No, the answer is incorrect.

Score: 0

Accepted Answers:

Radial Flow

10) A Pelton wheel is,

1 point

- An impulse turbine
 A reaction turbine
 An axial flow turbine
 None of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

An impulse turbine

11) The radial flow pump impeller has an inlet diameter of 200 mm, exit diameter of 400 mm and width of 25 mm. The impeller is driven at 1500 rpm and delivers 100 l/s with a specific energy change of 500 J/kg. The hydraulic efficiency of the impeller is 85%. Assume zero swirl at inlet and neglect slip at exit. Calculate inlet blade angle with respect to the tangential direction, β_1 .

No, the answer is incorrect.

Score: 0

Accepted Answers:

(Type: Range) 21.5,22.5

2 points

12) Following the data of previous problem (Q.11), calculate exit blade angle with respect to the tangential direction, β_2 .

No, the answer is incorrect.

Score: 0

Accepted Answers:

(Type: Range) 13.5,14.5

3 points