

Course outline

How does an NPTEL online course work?

Week 0

Quiz: Assignment 0

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Assignment 0

The due date for submitting this assignment has passed.

Due on 2021-07-26, 23:59 IST.

As per our records you have not submitted this assignment.

- 1) Kaplan turbine is, **1 point**
- A low head axial flow turbine.
 - A high head mixed flow turbine.
 - An outward flow radial turbine.
 - An impulse turbine.

No, the answer is incorrect.
Score: 0

Accepted Answers:
A low head axial flow turbine.

- 2) In order to have maximum power from a Pelton turbine, the bucket speed must be, **1 point**
- Equal to the jet speed
 - Equal to half of the jet speed
 - Equal to twice the jet speed
 - Independent of the jet speed

No, the answer is incorrect.
Score: 0

Accepted Answers:
Equal to half of the jet speed

- 3) For the continuity equation given by $\vec{\nabla} \cdot \vec{V} = 0$ to be valid, where \vec{V} is the velocity vector, which one of the following is a necessary condition? **1 point**

- Steady flow
- Irrotational flow
- Inviscid flow
- Incompressible flow

No, the answer is incorrect.
Score: 0

Accepted Answers:
Incompressible flow

- 4) The operating cycle of a simple gas turbine plant is, **1 point**
- The Carnot cycle.
 - The Rankine cycle
 - The Brayton cycle.
 - None of the above.

No, the answer is incorrect.
Score: 0

Accepted Answers:
The Brayton cycle.

- 5) A centrifugal pump running at 500 rpm delivers a head of 30 m at a flow rate of 60 liters per minute. If the speed of the pump is changed to 1000 rpm, then the head H in meters and flow rate Q in liters per minute would be, **1 point**
- H = 60, Q = 120
 - H = 120, Q = 120
 - H = 60, Q = 480
 - H = 120, Q = 30

No, the answer is incorrect.
Score: 0

Accepted Answers:
H = 120, Q = 120

- 6) Water flows through a pipe having an inner radius of 10 mm at the rate of 36 kg/hr at 25°C. The viscosity of water is 0.001 kg/m-s. The Reynolds number of the flow is in the range, **1 point**
- 575-600
 - 600-625
 - 625-650
 - 650-675
 - >675

No, the answer is incorrect.
Score: 0

Accepted Answers:
625-650

- 7) In a simple gas turbine plant, the minimum and maximum temperatures are 300K and 900 K respectively. The losses in the compressor and turbine are neglected. For the maximum power output, the thermal efficiency of the plant in percentage would be, **1 point**
- 35.0-39.9%
 - 40.0-44.9%
 - 45.0-49.9%
 - 50.0-55.0%

No, the answer is incorrect.
Score: 0

Accepted Answers:
40.0-44.9%

- 8) A Carnot cycle is having an efficiency of 0.75. If the temperature of the high temperature reservoir is 727°C. What is the temperature of low temperature reservoir? **1 point**
- 23°C
 - 23°C
 - 0°C
 - 250°C

No, the answer is incorrect.
Score: 0

Accepted Answers:
-23°C

- 9) Velocity vector of a flow field is given as $\vec{V} = 2xy\hat{i} - x^2z\hat{j}$. The vorticity vector at (1,1,1) is given by, **1 point**
- $4\hat{i} - \hat{j}$
 - $4\hat{i} - \hat{k}$
 - $\hat{i} - 4\hat{k}$
 - $\hat{i} - 4\hat{j}$

No, the answer is incorrect.
Score: 0

Accepted Answers:
 $\hat{i} - 4\hat{k}$

- 10) A simple turbojet engine has a cruise speed of 0.8 Mach number and altitude of 10000m, where the ambient conditions are 0.265 bar and 223 K. Assume for air, $\gamma = 1.4$ and $c_p = 1.005$ kJ/kg K. Considering ideal gas relation, the stagnation temperature at the entry of the engine would be, **1 point**
- 200-214K
 - 215-222K
 - 223-245K
 - 246-255K
 - 256-265K
 - 266-300K

No, the answer is incorrect.
Score: 0

Accepted Answers:
246-255K