

Thermodynamics (MEL2020)
Indian Institute of Technology Jodhpur

Tutorial-7

Date: 2nd March 2022

Instructions:

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- *Answer all the questions*
 - *Please write your solutions/explanations on an A4 size paper with your own handwriting*
 - *Scan all pages as a single pdf file and upload in google classroom before 8 PM same day*
 - *This will give you **1 point** towards your total evaluation*
 - *Late submission lead to deduction of **half mark**.*
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1. Saturated liquid-vapor mixture of water, called wet steam, in a steam line at 2000 kPa is throttled to 100 kPa and 120°C. What is the quality in the steam line?
2. An insulated cylinder equipped with an external spring initially contains air at 150 kPa pressure, 22 °C temperature and volume of 0.11 m³. The tank is connected to a supply line, and air is allowed to enter the cylinder until its volume doubles. At this condition pressure is 0.7 MPa and temperature is 22°C. The mass of the air that entered and the final temperature in the cylinder are to be determined
3. An evacuated bottle is surrounded by atmospheric air. A valve is opened, and air is allowed to fill the bottle. The amount of heat transfer through the wall of the bottle when thermal and mechanical equilibrium is established is to be determined.