Due on 2018-10-03, 23:59 IST.
As per our records you have not submitted this assignment.

1) For a reversible heat transfer and process being adiabatic, which of the following is true?  
   - dQ=0  
   - dS=0  
   - S=constant  
   - all of the mentioned  
   
   No, the answer is incorrect.  
   Score: 0  
   Accepted Answers:  
   all of the mentioned  

2) Which one of the following does not represent an example of high grade energy?  
   - Electrical energy  
   - Hydraulic energy  
   - Geothermal energy  
   - Kinetic energy of a jet  
   
   No, the answer is incorrect.  
   Score: 0  
   Accepted Answers:  
   Geothermal energy  

3) State whether the following statement is true or false.  
   “As a corollary to the 2nd law of thermodynamics complete conversion of low grade energy to high grade energy is possible by a heat engine”  
   - True  
   - False  
   
   No, the answer is incorrect.  
   Score: 0  
   Accepted Answers:  
   False  

4) $\Delta S_1$ for mixing of 2 moles of CH$_4$ with 5 moles of CO and $\Delta S_2$ for mixing of 2 moles of H$_2$ with 5 moles of N$_2$. Now, tick the correct option.  
   - $\Delta S_1 > \Delta S_2$  
   
   1 point
5) The net change in internal energy in a steam power plant is

- Positive
- Negative
- Zero
- None of the mentioned

No, the answer is incorrect.
Score: 0
Accepted Answers:
\( \Delta S_1 = \Delta S_2 \)

6) If a reversible process occurring in a system reaches dead state as its final state then irreversibility is

- \( T_0 S_0 \)
- 0
- \( -T_0 S_0 \)

No, the answer is incorrect.
Score: 0
Accepted Answers:
0

7) Steam enters a turbine at 9 MPa, 600 °C, and 60 m/s and leaves at 20 kPa and 90 m/s with a moisture content of 5%. The turbine is not adequately insulated and it estimated that heat is lost from the turbine at a rate of 180 kW. The power output of the turbine is 3 MW. Assuming the surroundings to be at 25 °C. Determine the reversible power output of the turbine.

- 5242 kW
- 3254 kW
- 5627 kW
- 3673 kW

No, the answer is incorrect.
Score: 0
Accepted Answers:
3673 kW

8) Referring to Q7, determine the exergy destroyed within the turbine.

- 242 W
- 673 W
- 627 W
- 273 W

No, the answer is incorrect.
Score: 0
Accepted Answers:
673 W

9) Referring to Q7, find out the second-law efficiency of the turbine.

No, the answer is incorrect.
Score: 0
Accepted Answers:
No, the answer is incorrect.
Score: 0
Accepted Answers:
10. An insulated piston-cylinder device contains 8 L of saturated liquid water at a constant pressure of 120 kPa. An electric resistance heater inside the cylinder is turned on, and electrical work is done on the water in the amount of 1400 kJ. Assuming the surroundings to be at 25 °C and 100 kPa, determine the minimum work with which this process could be accomplished.

- 278 kJ
- 350 kJ
- 244 kJ
- 372 kJ

No, the answer is incorrect.
Score: 0
Accepted Answers: 82%

11. Referring to Q10, evaluate the exergy destroyed during this process.

- 768 kJ
- 1104 kJ
- 568 kJ
- 1428 kJ

No, the answer is incorrect.
Score: 0
Accepted Answers: 1104 kJ

12. A steam power plant in a region operates on ideal Rankine cycle and has a net power output of 60 MW. Steam enters the turbine at 7 MPa and 500 °C and is cooled in the condenser at a pressure of 10 kPa by running cooling water from a nearby lake through the tubes of the condenser at a rate of 4000 kg/s. Determine the thermal efficiency of the cycle.

- 29%
- 39%
- 42%
- 17%

No, the answer is incorrect.
Score: 0
Accepted Answers: 39%

13. Referring to Q12, calculate the mass flow rate of the steam.

- 45 kg/s
- 30 kg/s
- 60 kg/s
- 48 kg/s

No, the answer is incorrect.
Score: 0
Accepted Answers:
14. Referring to Q12, determine the temperature rise of the cooling water.

- 5.6 °C
- 7.2 °C
- 3.8 °C
- 4.0 °C

No, the answer is incorrect.

Score: 0

Accepted Answers:
5.6 °C