



2nd Class • Thermodynamics and Metallurgy

PART A 2

End of Chapter Answer Guide: Numerical Answers



CHAPTER 1 - HEAT, EXPANSION OF SOLIDS, AND HEAT TRANSFER

2. 97.28°C
3. 0.0168 m (1.68 cm)
4. -1°C
5. $14.6 \times 10^{-6}/^{\circ}\text{C}$
6. 253.0 mm²
7. 178.17 m³
8. 181 261.8 mm³
- 10 a) 1.73 MJ
b) 6.675°C
c) 20.026°C
d) 3.294°C
11. 14.76 kJ



CHAPTER 2 - THERMODYNAMICS OF GASES

1. 109.82°C
2. 37.85 kJ
3. 24.54°C
4. $\gamma = 1.35$?
 - a) 246.17 kJ
 - b) 182.27 kJ
6.
 - a) 14 046.63 kNm or kJ
 - b) 17 680 kJ
 - c) 15 962.5 kJ



CHAPTER 3 - THERMODYNAMICS OF STEAM

2. 0.9042

3. a) 0.6776 m³

b) 0.9428

c) 0

d) 1169.79 kJ/kg

4. $P_1 = 800 \text{ kPa}$ $P_2 = 200 \text{ kPa}$

$h_1 = 2705 \text{ kJ/kg}$ $h_2 = 2705 \text{ kJ/kg}$

$s_1 = 6.51 \text{ kJ/kg K}$ $s_2 = 7.12 \text{ kJ/kg K}$

5. 343.84 kg/hr



CHAPTER 4 - PRACTICAL THERMODYNAMIC CYCLES

4. a) 52.5%
b) 37.41%
6. 61.93%
7. a) 214.72°C
b) 342.74°C
c) 39.51%