

Saylor Foundation's
ME103 Assessment, Unit 6

Instructions: Please answer each of the following questions to the best of your ability.

Questions:

1. Consider an air-standard Otto-cycle engine with a compression ratio of 8. At the beginning of compression, the pressure and temperature at the beginning of compression are 100 kPa and 300 K, respectively. Determine the thermal efficiency of the engine if 1.8 kJ is added per kg air and $C_v = 0.7165$ J/kg

2. Determine the thermal efficiency of a Carnot steam cycle operating between a source temperature of 583 K and a sink temperature of 306 K. The boiler and condenser pressures are 10 MPa and 5 kPa, respectively.

