Unit 6 - Week 4: Air Standard Cycles

Assignment 4

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2019-08-28, 23:59 IST.

1) Compression ratio of a reciprocating engine is defined as the ratio of *1 point*

- maximum to minimum pressure
- maximum to minimum volume
- maximum to minimum temperature
- expansion to compression work

No, the answer is incorrect.
Score: 0

Accepted Answers:
maximum to minimum volume

2) An Otto cycle is characterized by *1 point*

- isochoric heat addition and isochoric heat rejection
- isobaric heat addition and isochoric heat rejection
- isochoric heat addition and isobaric heat rejection
- isobaric heat addition and isobaric heat rejection

No, the answer is incorrect.
Score: 0

Accepted Answers:
isochoric heat addition and isochoric heat rejection

3) Thermal efficiency of an Otto cycle is *1 point*

- inversely proportional to the compression ratio, but directly proportional to the ratio of specific heat
- inversely proportional to the ratio of specific heat, but directly proportional to the compression ratio
- inversely proportional to both the compression ratio and the ratio of specific heat
- directly proportional to both the compression ratio and the ratio of specific heat

No, the answer is incorrect.
Score: 0

Accepted Answers:
directly proportional to both the compression ratio and the ratio of specific heat

4) An Ericsson cycle comprises of *1 point*

- two isothermal and two isentropic processes
- two isothermal and two isochoric processes
- two isothermal and two isobaric processes
- two isochoric and two isobaric processes

No, the answer is incorrect.
Score: 0

Accepted Answers:
two isothermal and two isobaric processes

5) An engine running on Otto cycle receives air at 85 kPa, 280 K. If the maximum cycle pressure and temperature are 5 MPa and 2000 K respectively, the temperature at the end of the expansion stroke (correct to 1 decimal place) is _____ K.

Hint

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 850,870

1 point

6) A gasoline engine with compression ratio of 10 receives air at 50 kPa, 280 K. Temperature at the expansion stroke is 750 K. If air can be assumed to be an ideal gas with R= 0.287 kJ/kg.K, mean effective pressure for this cycle (correct to 1 decimal place) is _____ kP

Hint

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 345,360

1 point

7) An Otto cycle with a compression ratio of 10, receives air at 290 K, 85 kPa. If the peak cycle pressure is 6000 kPa, its highest temperature (correct to 1 decimal place) is _____ K

Hint

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 2040,2060

1 point

8) A Diesel cycle has a compression ratio of 20, with an inlet state of 95 kPa, 290 K, and a maximum cycle temperature of 1800 K. If air can be assumed to be an ideal gas with R= 0.287 kJ/kg.K and c_v = 0.717 kJ/kg.K, net specific work output from the cycle (correct to 1 decimal place) is _____ kJ/kg.

Hint

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 548,553

1 point

9) A diesel engine receives air before compression at 280 K, 85 kPa. The highest temperature and pressure of the cycle are 2200 K and 6 MPa respectively. If air can be assumed to be an ideal gas with R= 0.287 kJ/kg.K and c_v = 0.717 kJ/kg.K, mean effective pressure of the cycle (correct to 1 decimal place) is _____ kPa

Hint

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 890,900

1 point

10) A cycle working on ideal dual combustion cycle receives two-third of the total heat supply at constant volume and rest at constant pressure. It has a compression ratio of 9, state at the beginning of compression is 90 kPa, 20°C, and it receives 2100 kJ of heat per kg of the working fluid. If air can be assumed to be an ideal gas with R= 0.287 kJ/kg.K and c_v = 0.717 kJ/kg.K, the thermal efficiency of the cycle (correct to 2 decimal places) is _____.

Hint

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 0.56,0.6

1 point