

Unit 7 - Week 5: Real Cycles for Reciprocating Engines

Course outline

How to access the portal

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Week 1 : Review of Thermodynamic Principles

Week 02 : Thermodynamic Property Relations

Week 3 Properties of pure substances

Week 4: Air Standard Cycles

Week 5: Real Cycles for Reciprocating Engines

 Fuel-air cycle

 Numerical exercise on Fuel-air cycles

 Losses in actual cycle & valve-timing diagram

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Week 7: Vapor Power Cycles

Week 8: Cogeneration & Combined Cycles

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Live Session-1

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Assignment 5

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

Due on 2019-09-04, 23:59 IST.

1) Among the followings, which one is not considered in fuel-air cycle? 1 point

- chemical composition of gas
- chemical non-equilibrium
- dissociation
- change in gas volume

No, the answer is incorrect.
Score: 0

Accepted Answers:
chemical non-equilibrium

2) Effect of dissociation is 1 point

- to reduce cycle thermal efficiency
- to reduce specific power output of the cycle
- to reduce maximum cycle temperature
- all of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
all of the above

3) With dissociation, the peak temperature is obtained 1 point

- at the stoichiometric fuel-air ratio
- when the mixture is slightly lean
- when the mixture is slightly rich
- none of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
when the mixture is slightly rich

4) With dissociation, the exhaust gas temperature 1 point

- decreases
- increases
- remains unchanged
- increases till certain A/F and then decreases

No, the answer is incorrect.
Score: 0

Accepted Answers:
decreases

5) The practical efficiency of a good engine is _____ of the estimated fuel-air efficiency 1 point

- 100%
- 85%
- 50%
- 37%

No, the answer is incorrect.
Score: 0

Accepted Answers:
85%

6) For a compression process with variable specific heat, the peak temperature and pressure are 1 point

- lower
- higher
- unchanged
- inversely proportional

No, the answer is incorrect.
Score: 0

Accepted Answers:
lower

7) When the spark is advanced, work output is less as 1 point

- the peak pressure is low
- the peak temperature is low
- additional work is required to compress the burning gas
- frictional losses increases

No, the answer is incorrect.
Score: 0

Accepted Answers:
additional work is required to compress the burning gas

8) The major source of loss in a CI engine is 1 point

- direct heat loss
- incomplete combustion loss
- rubbing friction loss
- pumping loss

No, the answer is incorrect.
Score: 0

Accepted Answers:
incomplete combustion loss

9) During the operation of an Otto cycle with compression ratio of 10, c_v decreases by 2%. If the ratio of specific heat is 1.4, then the percentage change in the efficiency of the cycle (correct to 1 decimal place) is _____ %.

Hint

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 1.1,1.3

1 point

10) During the operation of a diesel cycle with compression ratio of 16 and cut-off ratio of 10% of the swept volume, c_v decreases by 2%. If $c_v = 0.717$ kJ/kg.K and ratio of specific heat = 1.4, then then the percentage change in the efficiency of the cycle (correct to 1 decimal place) is _____ %.

Hint

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 1.1,1.35

1 point