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Courses » IC Engines and Gas Turbines

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# Unit 7 - Week 5 - Alternative Fuels, Combustion in SI and CI Engines

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## Course outline

How to access the portal

Week 0 - Introductory Session

Week 1 - Introduction to IC Engines

Week 2 - Air Standard Cycles

Week 3 - Carburation

Week 4 - Ignition and Lubrication Systems

Week 5 - Alternative Fuels, Combustion in SI and CI Engines

- Lec 1: Octane and Cetane Numbers, Alternative Fuels - Methanol, Ethanol

## Assignment 05

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment. **Due on 2019-03-06, 23:59 IST.**

1) ----- the turbulence, ----- will be the combustion and ----- will be detonation or knocking. **1 point**

- Lower, lower, lower
- Higher, higher, lower
- Lower, higher, lower
- Higher, lower, higher

No, the answer is incorrect. Score: 0

Accepted Answers: Higher, higher, lower

2) Hydrogen is the best source of energy because **1 point**

- Higher cetane number
- Low emission
- Number of ways to obtain hydrogen
- Higher octane number

No, the answer is incorrect. Score: 0

Accepted Answers: Low emission  
Number of ways to obtain hydrogen  
Higher octane number

3) Detonation or knocking can be reduced by **1 point**

- Mild throttling

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<p>Methanol, Ethanol, Hydrogen, Natural Gas (contd.)</p>	<p>ce De</p>	<p><b>Accepted Answers:</b>  <i>Fuel/air ratio is richer</i>  <i>Keeping main flame speed higher than the secondary</i>  <i>Use of aromatic compounds in fuel</i></p>	
<p><input type="radio"/> Lec 3: Combustion in SI and CI Engines, Pressure Crank Angle Diagram</p>		<p>4) State true or false: Pre-ignition in the engine occurs due to knocking in the engine.</p> <p><input type="radio"/> True  <input type="radio"/> False</p>	<p><b>1 point</b></p>
<p><input type="radio"/> Lec 4: Combustion in SI and CI Engines, Pressure Crank Angle Diagram (contd.)</p>		<p><b>No, the answer is incorrect.</b>  <b>Score: 0</b></p> <p><b>Accepted Answers:</b>  <i>False</i></p>	<p><b>1 point</b></p>
<p><input type="radio"/> Lec 5: Combustion in SI and CI Engines, Pressure Crank Angle Diagram (contd.)</p>		<p>5) Alcohols can be used in the SI engines since they</p> <p><input type="checkbox"/> Have higher octane percentage  <input type="checkbox"/> Flame is visible  <input type="checkbox"/> Higher volumetric efficiency  <input type="checkbox"/> Avoid vapour lock in the exhaust system</p>	<p><b>1 point</b></p>
<p><input type="radio"/> Quiz : Assignment 05</p>		<p><b>No, the answer is incorrect.</b>  <b>Score: 0</b></p>	
<p><b>Week 6 - Fuel Injection Systems</b></p>		<p><b>Accepted Answers:</b>  <i>Have higher octane percentage</i>  <i>Higher volumetric efficiency</i></p>	
<p><b>Week 7: Introduction to Gas Turbines</b></p>		<p>6) For avoiding the ignition delay in the CI engine, engine should have</p> <p><input type="checkbox"/> Higher percentage of cetane quantity in fuel  <input type="checkbox"/> Higher octane number  <input type="checkbox"/> Higher temperature of chamber  <input type="checkbox"/> Higher amount of oxygen</p>	<p><b>1 point</b></p>
<p><b>Interaction Session</b></p>		<p><b>No, the answer is incorrect.</b>  <b>Score: 0</b></p>	
<p><b>Week 8 : Performance Analysis of Brayton Cycle</b></p>		<p><b>Accepted Answers:</b>  <i>Higher percentage of cetane quantity in fuel</i>  <i>Higher temperature of chamber</i>  <i>Higher amount of oxygen</i></p>	
<p><b>Week 9: Introduction to Various Aircraft Engine and Performance Parameters</b></p>		<p>7) The cetane number of fuel is calculated as</p> <p><input type="radio"/> % of n-cetane  <input type="radio"/> % of heptamethylnonane  <input type="radio"/> <math>0.15 \times</math> % of heptamethylnonane  <input type="radio"/> % of n-cetane + <math>(0.15 \times</math> % of heptamethylnonane)</p>	<p><b>1 point</b></p>
<p><b>Week 10: Components of Brayton Cycle Based Power Plant</b></p>		<p><b>No, the answer is incorrect.</b>  <b>Score: 0</b></p>	
<p><b>Week 11: Components of Brayton Cycle Based Power Plant</b></p>		<p><b>Accepted Answers:</b></p>	
<p><b>Week 12: Components of Brayton Cycle</b></p>			

Based Power  
Plant

*% of n-cetane + (0.15 × % of heptamethylnonane)*

8) Identify the correct statements from the following:

1 point

- a. Splashing lubricating system uses the motion crank.  
b. Pressurized oil distributing system can not be run on electrical power.

- a is correct, b is wrong  
 both a and b are correct  
 both a and b are wrong  
 a is wrong, b is correct

No, the answer is incorrect.

Score: 0

Accepted Answers:

*a is correct, b is wrong*

9) List out the stable compounds from the following list:

1 point

Paraffin, Naphthane, Benzene, Olefin, Di-olefin

- paraffin, naphthane, olefin  
 olefin, di-olefin, naphthane  
 paraffin, naphthane, benzene  
 none of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

*paraffin, naphthane, benzene*

10) The sign of force on the piston due to contact with the engine cylinder is - ve when -----and it is + ve when -----.

1 point

- $\theta < 180, 180 < \theta < 360$   
  $\theta < 180, 360 < \theta$   
  $\theta > 180, 180 < \theta < 360$   
 Can't say anything.

No, the answer is incorrect.

Score: 0

Accepted Answers:

*$\theta < 180, 180 < \theta < 360$*

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