

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VIII(NEW) EXAMINATION – SUMMER 2019****Subject Code:2180210/2180215****Date:13/05/2019****Subject Name:Automotive And Combustion Engine Technology****Time:10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

		<b>MARKS</b>
<b>Q.1</b>	(a) What is turbo charging?	<b>03</b>
	(b) Enlist strategy for emission control in gasoline and diesel fueled vehicle.	<b>04</b>
	(c) Define: Engine downsizing. Explain the methods to achieve downsizing.	<b>07</b>
<b>Q.2</b>	(a) What is lean boost direct injection (LBDI) concept?	<b>03</b>
	(b) What is stratified charge operation in case of gasoline direct injection?	<b>04</b>
	(c) Explain different types of direct injection gasoline injectors.	<b>07</b>
<b>OR</b>		
	(c) Explain the thermodynamic aspects of gasoline direct injection and describe the combustion processes.	<b>07</b>
<b>Q.3</b>	(a) Explain Lean NOx trap.	<b>03</b>
	(b) Describe Thermal loading and Turbo lag in context of gasoline engine.	<b>04</b>
	(c) Explain the reasons for knocking and abnormal combustion with turbocharging in SI engine?	<b>07</b>
<b>OR</b>		
<b>Q.3</b>	(a) What is spray guided combustion system?	<b>03</b>
	(b) Explain EGR with the neat sketch.	<b>04</b>
	(c) Explain the salient features of the first-generation and the second generation gasoline direct injection engines.	<b>07</b>
<b>Q.4</b>	(a) Explain phases of combustion of gasoline engine.	<b>03</b>
	(b) Explain the principle of auto ignition.	<b>04</b>
	(c) What are the advantages of combining direct injection and turbo charging in spark-ignition engine	<b>07</b>
<b>OR</b>		
<b>Q.4</b>	(a) Write short note on combustion diesel engine..	<b>03</b>
	(b) Mention the advantages of direct injection system.	<b>04</b>
	(c) Enlist the problems associated with stratified charge lean-burn mixture in a DI gasoline engine.	<b>07</b>
<b>Q.5</b>	(a) What is supercharging?	<b>03</b>
	(b) Enlist the limitation of HCCI combustion.	<b>04</b>
	(c) Differentiate homogenous combustion and diffusion combustion based on any seven aspects.	<b>07</b>
<b>OR</b>		
<b>Q.5</b>	(a) Explain exhaust gas treatment.	<b>03</b>
	(b) Describe the fundamental principle of HCCI	<b>04</b>
	(c) Explain the effect of fuel injection timing on combustion.	<b>07</b>

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