

GUJARAT TECHNOLOGICAL UNIVERSITY
BE- SEMESTER–VIII (NEW) EXAMINATION – WINTER 2020

Subject Code:2180215**Date:21/01/2021****Subject Name:Automotive And Combustion Engine Technology****Time:02:00 PM TO 04:00 PM****Total Marks: 56****Instructions:**

1. Attempt any FOUR questions out of EIGHT questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

		MARKS
Q.1	(a) What is Automobile? What is Engine?	03
	(b) Explain different types of Nozzles used in Diesel engine.	04
	(c) Define: Engine downsizing. Explain the methods to achieve downsizing.	07
Q.2	(a) Define : Atkinson cycle and Miller cycle.	03
	(b) Explain EGR with the neat sketch.	04
	(c) With a neat sketch explain thermodynamic analysis of gasoline direct injection at part-load condition.	07
Q.3	(a) What is turbo charging? Advantage of turbo charging in SI engine.	03
	(b) What is stratified charge operation in case of gasoline direct injection?	04
	(c) Explain the wall, air and spray combustion system for the mixture preparation of gasoline direct injection.	07
Q.4	(a) What is Hybrid vehicle?	03
	(b) Write the advantages of gasoline direct injection in terms of efficiency in a real engine.	04
	(c) What is auto ignition phenomenon? What is the basic difference between auto ignition combustion and SI combustion?	07
Q.5	(a) Enlist the limitation of HCCI combustion.	03
	(b) Compare emissions with HCCI and CI engine operation.	04
	(c) Explain stages of combustion of HCCI engine.	07
Q.6	(a) Give the difference between turbo charging and supercharging.	03
	(b) Name the different types of supercharger. Explain any one of them.	04
	(c) Describe the purpose of supercharging and also explain with thermodynamic cycles with supercharging.	07
Q.7	(a) Explain basic principle of HCCI combustion.	03
	(b) Enlist the controlling parameters for HCCI combustion for best fuel economy and low emissions in SI engine.	04
	(c) Comparison of knocking in S.I. and C.I. engine.	07
Q.8	(a) What is internal exhaust gas recirculation system and external exhaust gas recirculation system?	03
	(b) Which are the modifications required to change from SI combustion to auto ignition combustion?	04
	(c) What are the approaches to auto ignition combustion operation in gasoline engines? Explain any two in detail.	07