

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V (NEW) EXAMINATION – WINTER 2022****Subject Code:3150210****Date:13-01-2023****Subject Name:Automobile Engines****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.
4. Simple and non-programmable scientific calculators are allowed.

		MARKS
Q.1	(a) Define the terms (1) Swept volume with SI Unit (2) Volumetric efficiency (3) Compression ratio.	03
	(b) Compare Petrol engine and Diesel engine.	04
	(c) How does the actual p-V diagram differs from theoretical diagram in case of four stroke petrol engine?	07
Q.2	(a) Why M.P.F.I. system is used in modern automobile in S.I. engines?	03
	(b) Explain in brief working principle of venture in context to carburetor.	04
	(c) With a line diagram explain the working of common rail fuel injection system.	07
	OR	
	(c) Explain construction & working of Solex Carburetor with neat sketch.	07
Q.3	(a) Enlist properties of C.I engine fuels & define any two.	03
	(b) Explain the working of individual pump system used in C.I. engine.	04
	(c) Discuss with sketch constructional features of different types of nozzle used in diesel engine and explain the function of each.	07
	OR	
Q.3	(a) Give difference between Air and solid injection system.	03
	(b) What are the requirement of a fuel injection system in C.I. engines.?	04
	(c) Explain construction and working of Fuel Injector with neat sketch.	07
Q.4	(a) Describe in brief knocking phenomenon.	03
	(b) Explain the role of Ethylene glycol in the coolant.	04
	(c) Explain with the help of (P- θ) diagram the combustion in S.I. engine.	07
	OR	
Q.4	(a) Define any three factors affecting detonation in S.I engine.	03
	(b) Explain the terms – Rich mixture and Lean mixture	04
	(c) Describe with neat sketch water cooling system with thermostat valve.	07
Q.5	(a) Define scavenging & explain its importance in brief.	03
	(b) Discuss Heat balance sheet for four stroke C.I. engine.	04
	(c) Enlist variable affecting engine performance and discuss in detail.	07
	OR	
Q.5	(a) What are the purposes of supercharging the I.C. Engine?	03
	(b) Differentiate between Air cooling system and Water-cooling system	04
	(c) Explain working principle of turbocharger with neat sketch & also state its advantages over supercharger.	07
