

Enrolment No./Seat No \_\_\_\_\_

## GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER-V (NEW) EXAMINATION – WINTER 2024

Subject Code:3150210

Date:05-12-2024

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) Compare Petrol engine and Diesel engine.	03
	(b) Enlist the Requirements of modern fuel injection system.	04
	(c) Explain Valve timing diagram for S.I. Engine with neat sketch.	07
Q.2	(a) Why M.P.F.I. system is used in modern automobile in S.I. engines?	03
	(b) Explain Requirement of an automotive carburetor.	04
	(c) Explain construction & working of Solex Carburetor with neat sketch	07
	OR	
	(c) With a line diagram explain the working of common rail fuel injection system	07
Q.3	(a) Enlist properties of C.I. Engine fuel & define any two.	03
	(b) Explain Mechanical governor with neat sketch.	04
	(c) Explain construction and working of Fuel Injector with neat sketch	07
	OR	
Q.3	(a) Given objective of injection system of C.I. Engine.	03
	(b) What is the requirement of a fuel injection system in C.I. engines.	04
	(c) Discuss with sketch constructional features of different types of nozzle used in diesel engine and explain the function of each	07
Q.4	(a) Define any three lubricant properties.	03
	(b) Explain wet & dry lubrication system with neat sketch.	04
	(c) Enlist types of cooling system & explain Thermo-syphon cooling system with neat sketch.	07
	OR	
Q.4	(a) Describe in brief knocking phenomenon	03
	(b) Explain the role of Ethylene glycol in the coolant	04
	(c) Explain Stages of combustion in S.I Engine with pressure & crank angle (P – $\theta$ ) diagram.	07

- Q.5** (a) Define scavenging & explain its importance in brief **03**  
(b) Differentiate between Air cooling system and Water-cooling system **04**  
(c) Enlist variable affecting engine performance and discuss in detail **07**

**OR**

- Q.5** (a) Define following (a) Indicated horse power (b) Brake horse power (c) Friction horse power **03**  
(b) Define following engine efficiencies: (a) Mechanical efficiency (b) Thermal efficiency (c) Volumetric efficiency (d) relative efficiency. **04**  
(c) What is heat balance sheet for an IC engine? Explain how it is prepared? **07**

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