

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-V EXAMINATION – WINTER 2025****Subject Code:3150210****Date:25-11-2025****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.

- Q.1 (a)** Classify I.C. Engine. **03**
- (b)** Define (1) Clearance volume (2) Bore (3) Stroke (4) Swept Volume **04**
- (c)** Explain working & construction of 4 - stroke petrol engine with neat sketch **07**
- Q.2 (a)** Differentiate between Petrol engine (S.I .engine) & Diesel engine (C.I. engine) **03**
- (b)** Explain valve timing diagram of 4 - stroke diesel engine **04**
- (c)** Explain construction & working of Simple Carburettor with neat sketch. **07**
- OR**
- (c)** Explain construction & working of MPFI with neat sketch **07**
- Q.3 (a)** Define : (1) Knocking (2) Ignition lag (3) Detonation **03**
- (b)** Explain construction and working of Fuel Injector with neat sketch. **04**
- (c)** Explain types of fuel injector nozzle. Explain phasing & calibration of F.I. pump **07**
- OR**
- Q.3 (a)** Explain the function of cooling system & Differentiate between Air Cooling & Water Cooling system. **03**
- (b)** Explain the working of water cooling system. Write its merits & de merits. **04**
- (c)** Enlist types of lubrication system used in automobile engines. Explain any one with neat sketch. **07**
- Q.4 (a)** Explain the desirables properties of lubricating oil. **03**
- (b)** Differentiate between Supercharger & Turbocharger. **04**
- (c)** Explain flame propagation? Explain stages of combustion in S.I. engine in brief. **07**
- OR**
- Q.4 (a)** Enlist types of scavenging. Explain any one in brief. **03**
- (b)** Differentiate between Supercharger & Turbocharger. **04**
- (c)** Enlist types of methods of scavenging. Explain any one in brief. **07**
- Q.5 (a)** Explain heat balance sheet. **03**
- (b)** Define (1) IHP (2) BHP (3) FHP (4) Thermal Efficiency **04**
- (c)** Explain measurement of indicated power of multi cylinder engine by Morse test. **07**
- OR**
- Q.5 (a)** Define (1) Volumetric efficiency (2) Top Dead centre (3) Compression ratio **03**
- (b)** Explain factors effecting engine performance. **04**
- (c)** Write different types of dynamometer. Explain any one dynamometer test in brief. **07**

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 – θ) 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**

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-V (NEW) EXAMINATION – WINTER 2023

Subject Code:3150210

Date:13-12-2023

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) Discuss factors influencing firing order of SI engine.	03
	(b) Give difference between four stroke & two stroke engine.	04
	(c) Explain Valve timing diagram for S.I 4-stroke engine with neat sketch.	07
Q.2	(a) Enlist properties of C.I engine fuels & define any two.	03
	(b) Explain in brief working principle of venturi in context to carburetor.	04
	(c) Explain construction & working of Solex Carburetor with neat sketch.	07
OR		
	(c) Write a short note on MPFI system.	07
Q.3	(a) Define scavenging. State different types of scavenging.	03
	(b) Explain the Pintaux nozzle with neat sketch and discuss its merits and demerits.	04
	(c) Describe CRDI system for diesel engine with neat sketch.	07
OR		
Q.3	(a) State the different parameters to control the knock.	03
	(b) Explain the working of pneumatic governor.	04
	(c) Explain the stages of combustion with P- θ diagram in C.I. engines.	07
Q.4	(a) State the function of lubrication system.	03
	(b) Give the comparison between Air cooling system and Water-cooling system	04
	(c) State the types of turbocharging and explain any one with neat sketch.	07
OR		
Q.4	(a) State the limitations of turbocharging.	03
	(b) Discuss the factors affecting flame propagation in S.I. Engine.	04
	(c) Explain with neat sketch water cooling system with thermostat valve.	07
Q.5	(a) What is valve overlapping? Give significance of it.	03
	(b) Explain concept of supercharging.	04
	(c) Differentiate between Mist and Pressure feed lubrication system.	07
OR		
Q.5	(a) Define following (a) Indicated horse power (b) Brake horse power (c) Friction horse power	03
	(b) Discuss Heat balance sheet for four stroke C.I. engine.	04
	(c) Explain with neat sketch the construction and working of bosch fuel pump.	07

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
