GUJARAT TECHNOLOGICAL UNIVERSITY
BE- SEMESTER–VII EXAMINATION – WINTER 2025

Subject Code:3171923   **Date:01-12-2025**
Subject Name:Internal Combustion Engine
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 and diesel engines based on the following points: 1) Operating cost 2) Compression ratio 3) Fuel Ignition	**03**
	(b)	Classify the I. C. Engines in detail.	**04**
	(c)	Explain working and construction of a simple carburetor with a neat sketch.	**07**
Q.2	**(a)**	Define Stoichiometric, Rich and Lean mixture.	**03**
	(b)	Explain the carburetion process and enlist the ideal requirements of a good carburettor	**04**
	(c)	Write a note on alternative fuels for I.C. engines.	**07**
		OR	
	(c)	Explain the advantages of biofuels.	**07**
Q.3	**(a)**	What do you mean by knocking?	**03**
	(b)	Explain the effects of supercharging	**04**
	(c)	Explain stages of combustion in S. I. engine.	**07**
		OR	
Q.3	**(a)**	What are the effects of knocking on engine performance?	**03**
	(b)	Explain the necessity of engine cooling.	**04**
	(c)	Explain stages of combustion in C. I. engine.	**07**
Q.4	**(a)**	Define the governing of I. C. engine & also name the types of same.	**03**
	(b)	Compare wet sump lubrication with dry sump lubrication system	**04**
	(c)	Explain with a neat sketch splash lubrication system.	**07**
		OR	
Q.4	**(a)**	Enlist the major pollutants from gasoline and diesel engines	**03**
	(b)	Explain the heat balance sheet of I. C. engine.	**04**
	(c)	Explain the fuel supply system in SI engine.	**07**
Q.5	**(a)**	Write down the working principle of a stratified charge engine.	**03**
	(b)	Explain the Bharat Stage emission norms	**04**
	(c)	The following data are collected from a 4-stroke single cylinder engine at full load: Bore = 200 mm, stroke = 280 mm, speed = 300 RPM, indicated mean effective pressure = 5.6 bar, torque on the drum = 250 Nm, fuel consumed = 4.2 kg/ hr, CV = 41000 KJ/kg. Determine	**07**

mechanical efficiency, indicated thermal efficiency and brake thermal efficiency

OR

Q.5	**(a)**	Write a brief note on Wankel engine.	**03**
	(b)	Explain Willan's line method to find friction power of the engine.	**04**
	(c)	A single cylinder 2 stroke engine running at 2000 RPM develops torque 10 Nm. The indicated power of the engine is 2.3 kW. find the loss due to F.P. as a percentage of brake power.	**07**

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