Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC - SEMESTER–V • EXAMINATION – WINTER • 2014

Subject Code: X 51904 **Date: 06-12-2014**

Subject Name: Internal Combustion Engines

Time: 10:30 am - 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.**

Q.1	**(a)**	Draw and explain Valve timing diagram with P vs V plot of two stroke petrol engine.	**07**
	(b)	Give complete classification of IC Engines with suitable diagrams.	**07**
Q.2	**(a)**	What do you mean by air standard cycle? List assumptions for air standard cycle and list causes of departure of actual diesel cycle from ideal.	**07**
	(b)	Derive the equation showing the effect of variable specific heat on efficiency of diesel cycle.	**07**
		OR	
	(b)	In an air standard Diesel cycle, the compression ratio is 13 and the fuel is cut-off at 8% of the stroke. Calculate the % change in efficiency if the specific heat at constant volume increases by 2%. Assuming $\gamma = 1.4$ constant for air.	**07**
Q.3	**(a)**	Explain phenomenon of Knocking in SI Engine. Write its effects and methods to prevent it.	**07**
	(b)	Enlist methods for measurement of fuel consumption in testing of IC Engine. Explain anyone of them.	**07**
		OR	
Q.3	**(a)**	Give complete classification of SI engine Combustion chamber with schematic diagram of each type.	**07**
	(b)	Enlist methods to find frictional power of IC Engine. Explain any one of them.	**07**
Q.4	**(a)**	Explain mixture requirement for different working condition of SI Engine with suitable diagrams.	**07**
	(b)	Enlist types of Fuel injection nozzles for CI Engine. Explain each type with schematic diagram and their spray characteristics.	**07**
		OR	
Q.4	**(a)**	Explain Battery ignition system for SI engine with schematic diagram.	**07**
	(b)	Enlist types of governing methods for I C Engines. Explain each method with suitable diagram.	**07**
Q.5	**(a)**	Write brief note on variable compression Engine.	**07**
	(b)	What is scavenging? Explain methods for scavenging in two stroke engine with suitable diagram.	**07**
		OR	
Q.5	**(a)**	Write short note on Pollutants from CI Engine and its effects on environment.	**07**
	(b)	Describe with sketches the different methods of supercharging.	**07**

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