Enrolment No.\_\_\_\_\_

## **GUJARAT TECHNOLOGICAL UNIVERSITY**

## M.E. SEMESTER III–EXAMINATION (Remedial)– WINTER 2015

Subject code: 731101Date: 04/1		code: 731101 Date: 04/12/201	2/2015	
Subject Name: I. C. Engine modeling and simulation Time: 2:30 PM to 5:00 PM Total Marks Instructions:			: <b>70</b>	
1115	1. 2. 3.	Attempt all questions. Make suitable assumptions wherever necessary. Figures to the right indicate full marks.		
Q.1	(a)	Discuss thin spray and thick spray modeling concept. In what situation, such	07	
	(b)	What basic procedure you follow to generate, fluid mechanics based multidimensional model for engine processes. Which governing equations are required for this?	07	
Q.2	(a) (b)	Classify and Explain different types of diesel combustion system. What is Probability density function?	07 07	
	<b>(b</b> )	Show the evaluation of spray elements? Explain each term.	07	
Q.3	(a)	Why modeling of combustion is needed for internal combustion engine? Explain with example. List out different software useful in modeling of combustion.	07	
	<b>(b</b> )	Generate model for nonevaporating liquid sprays into gaseous environment.	07	
Q.3	(a) (b)	How engine gas density influence on brake up regime boundaries? How does combustion air swirl affect spray penetration?	07 07	
Q.4	<b>(a)</b>	Generate structure of thermodynamic based DI diesel combustion simulation?	07	
	<b>(b</b> )	What is compression generated turbulence and its effect? OR	07	
Q.4	(a) (b)	Explain wall impingement phenomenon and its effect? Explain Advantages and Disadvantages of Modeling and Simulation in details.	07 07	
Q.5	(a)	What is the aim of engine modeling? State the procedure followed to generate simple model for engine processes?	07	
	<b>(b</b> )	Write a note on "Droplet impingement on walls". OR	07	
Q.5	(a)	What basic procedure you follow to generate, fluid mechanics based multi- dimensional model for engine processes. Which governing equations are required for this?	07	
	<b>(b)</b>	How does combustion air swirl affect spray penetration?	07	

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