Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – III • EXAMINATION – SUMMER • 2013

Subject code: 731101 **Date: 13-05-2013**

Subject Name: I.C.Engine modeling and simulation

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)**	Explain and classify significance of combustion modeling for I C engine.	**07**
	(b)	Discuss importance of modeling in context to I C engine.	**07**
Q.2	**(a)**	Explain thin and thick spray model with its application.	**07**
	(b)	Show basic steps of ə-Ůmodel and application of it.	**07**
		OR	
	(b)	What is compression generated turbulence and its effect.	**07**
Q.3	**(a)**	What is turbulence modeling state its type.	**07**
	(b)	Develop wiebe heat release model.	**07**
		OR	
Q.3	**(a)**	Develop spray equation model.	**07**
	(b)	Show steps for simulating I C engine.	**07**
Q.4	**(a)**	Define: 1. Zero dimensional modeling. 2. Single zone modeling. 3. Diffusive burning.	**0**7
	(b)	Explore the procedure for heat release analysis in direct injection C I engine.	**0**7
		OR	
Q.4	**(a)**	Compare different combustion system.	**07**
	(b)	Explain diesel fuel spray structure with its major parameter.	**07**
Q.5	**(a)**	Carried out fuel-air cycle analysis for petrol engine considering gasoline as fuel.	**07**
	(b)	Explain different impingement regims and droplet transition condition with suitable diagram.	**07**
		OR	
Q.5	**(a)**	Considering I C engine as open system, explain combustion efficiency and in efficiency.	**07**
	(b)	Explain various flow processes taken place in S.I. engine during running condition with suitable sketch.	**07**

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