Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – II • EXAMINATION – WINTER • 2013

Subject code: 1721101 **Date: 24-12-2013**

Subject Name: Instrumentation and Vehicle Testing

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 selection and basic requirements of measurement instruments.	**07**
	(b)	Explain different types of measurement errors produced while measuring different parameters of an IC engine.	**07**
Q.2	**(a)**	Enlist different types of vibrometers and explain use of any one vibrometer with neat sketch to measure engine vibration.	**07**
	(b)	Explain FFT analyzer.	**07**
		OR	
	(b)	Enlist different types of Stroboscopes. Explain the use of stroboscopes and working principle of each one.	**07**
Q.3	**(a)**	Explain the application of piezoelectric pressure transducer for measurement of P-Θ diagram in an IC engine with neat sketch.	**07**
	(b)	Enlist different types of automobile horns. Explain working of each of them.	**07**
		OR	
Q.3	**(a)**	Explain operation and application of Air bag used in auto vehicle.	**07**
	(b)	Explain working of warning systems used in auto vehicle.	**07**
Q.4	**(a)**	What is Data acquisition system in automobile? Explain with suitable example.	**07**
	(b)	What is the function of charge amplifiers? Explain construction and working of cathode ray oscilliographs.	**07**
		OR	
Q.4	**(a)**	Explain testing procedure of an CI engine as per IS standards.	**07**
Q.4	**(b)**	What is chassis dynamometer? Explain testing of an auto vehicle using chassis dynamometer.	**07**
Q.5	**(a)**	What is road test of an auto vehicle? Explain necessity and testing methods of road test of an automobile.	**07**
	(b)	Why wheel alignment of an vehicle is required? Explain procedure of an two wheel alignment using wheel aligner.	**07**
		OR	
Q.5	**(a)**	Explain EURO and BS standards for an auto vehicle.	**07**
	(b)	Explain procedure PUC testing of vehicle. Why is PUC testing is required?	**07**

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