Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII • EXAMINATION – SUMMER • 2014

Subject Code: 170203 **Date: 05-06-2014**

Subject Name: Vehicle Dynamics

Time: 02:30 pm - 05:00 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 Vehicle Fixed Co-ordinate system.	**07**
	(b)	Explain Lumped mass and Euler angles.	**07**
Q.2	**(a)**	Explain Tire axis system and Tread design.	**07**
	(b)	Explain Power limited acceleration based on power train.	**07**
		OR	
	(b)	Explain Anti lock Brake system.	**07**
Q.3	**(a)**	Explain Braking proportioning and Braking efficiency.	**07**
	(b)	Explain front wheel geometry.	**07**
		OR	
Q.3	**(a)**	Explain independent suspension system of vehicle.	**07**
	(b)	Explain Active suspension and Roll centre analysis.	**07**
Q.4	**(a)**	Explain Force analysis during steering.	**07**
	(b)	Explain Steering ratio, Under steer and Over steer.	**07**
		OR	
Q.4	**(a)**	Explain Vehicle aerodynamics forces.	**07**
	(b)	Explain Vehicle drag components.	**07**
Q.5	**(a)**	Explain Dynamic axle load on level ground and on grade.	**07**
	(b)	Explain vehicle response properties according to Suspension isolation, Rigid body bounce/pitch motion.	**07**
		OR	
Q.5	**(a)**	Explain Tire cornering forces with equations.	**07**
	(b)	Explain Roll steer, Side slip angle, Yaw velocity gain.	**07**

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