Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC SEM-V Examination-Nov-2011

Subject code: X51901 **Date: 19/11/2011**

Subject Name: Theory of Machine

Time: 2.30 pm -5.00 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 the self-energizing and self-locking effect in band brakes.	**07**
	(b)	What is the function of dynamometer? Explain the difference between absorption and transmission dynamometer.	**07**
Q.2	**(a)**	State the function of governor. Explain the hartnell governor with neat sketch.	**07**
	(b)	Compare the watt governor, porter governor and proell governor.	**07**
		OR	
	(b)	Explain the internal expanding shoe brake.	**07**
Q.3	**(a)**	What is gyroscopic effect? Explain gyroscopic acceleration and gyroscopic couple in detail.	**07**
	(b)	Derive an expression for gyroscopic couple.	**07**
		OR	
Q.3	**(a)**	Discuss the gyroscopic effect in aero planes.	**07**
	(b)	Define the terms related to gyroscopic 1. spin axis 2. Precession axis	**07**
Q.4	**(a)**	Define flywheel and state its importance. What are the types of flywheels?	**07**
	(b)	Explain the following terms as applied to flywheel. 1. Coefficient of fluctuation of energy 2. Coefficient of fluctuation of speed	**07**
		OR	
Q.4	**(a)**	Write a short note on turning moment diagram of IC engine.	**07**
	(b)	What is meant by terms sensitiveness, stability and hunting in governing mechanism?	**07**
Q.5	**(a)**	Explain the D'Alembert's principle.	**07**
	(b)	Explain how mass moment of inertia of connecting rod is determined by compound pendulum method.	**07**
		OR	
Q.5	**(a)**	Explain the following terms related to synthesis problem. 1. Function generation 2. Path generation	**07**
	(b)	Explain the two point synthesis for four bar mechanism.	**07**

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