Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME – SEMESTER II (NEW) – • EXAMINATION – SUMMER 2016

Subject Code: 2720911 **Date: 27/05/2016**

Subject Name: Tribology

Time:10:30 am to 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 Elasto-hydrodynamic theory.	**07**
	(b)	Explain various tribological problems faced by industries.	**07**
Q.2	**(a)**	Derive the expression for the pressure distribution of infinitely long hydrodynamic journal bearing.	**07**
	(b)	Explain different regimes of lubrication.	**07**
		OR	
	(b)	Explain the function of lubricants and its various properties.	**07**
Q.3	**(a)**	Derive the Stribeck equation for basic static capacity of ball bearing.	**07**
	(b)	Derive the expression for the pressure distribution in aerostatic step bearing.	**07**
		OR	
Q.3	**(a)**	Explain equivalent dynamic load for bearing under cyclic loading.	**07**
	(b)	Derive the expression for the pressure distribution in hydrostatic conical thrust bearing.	**07**
Q.4	**(a)**	Explain design procedure for hydrodynamic journal bearing.	**07**
	(b)	Explain performance analysis of bearing in terms of (1) fatigue failure mode (2) wear mode and (3) fracture mode.	**07**
		OR	
Q.4	**(a)**	Explain performance analysis of gear in terms of (1) fatigue failure mode (2) wear mode and (3) lubrication mode.	**07**
	(b)	Explain various causes of friction.	**07**
Q.5	**(a)**	Explain the following friction measurement methods (1) Inclined plane rig (2) Pin on disc rig	**07**
	(b)	Explain the Archard's theory of adhesive wear	**07**
		OR	
Q.5	**(a)**	State laws of friction and discuss Coulomb's law in detail.	**07**
	(b)	Explain various types of minor wears.	**07**

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