Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VIII (NEW) - EXAMINATION – SUMMER 2018

Subject Code: 2181926 Date: 02/05/2018

Subject Name: Tribology(Department Elective III)

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 the importance of tribology in design.	**03**
	(b)	1. Differentiate Good surface and Bad surface 2. State the specification of surface texture	**04**
	(c)	Define the following terms: Tribo surfaces, Tribo system, Tribology, Antifriction Bearing, Seat of pressure, Converging Fluid Film, Diverging Fluid Film	**07**
Q.2	**(a)**	How EHD is different from hydrodynamic lubrication	**03**
	(b)	State the function of lubricants	**04**
	(c)	Write the Reynold's equation for 3D. State the meaning of each term in equation	**07**
		OR	
	(c)	Explain regimes of lubrication with the help of plot of coefficient of friction and bearing characteristic number.	**07**
Q.3	**(a)**	Differentiate between long journal bearing and short journal bearing	**03**
	(b)	Draw the neat sketch of mechanism of oil film development in hydrodynamic lubrication	**04**
	(c)	The following data is given for hydrostatic thrust bearing: Shaft diameter = 500 mm, Recess diameter = 300 mm, Shaft speed = 720 r.p.m, Thrust load = 500 N, Oil film thickness = 0.15 mm, Absolute viscosity = 29.3×10^{-9} N-s/mm^2. Calculate supply pressure, oil flow requirement in l/min and power loss in pumping and power loss in friction.	**07**
		OR	
Q.3	**(a)**	What are greases? When it is preferred?	**03**
	(b)	Discuss lubrication system in automobiles	**04**
	(c)	Compare oil lubricated bearing and gas lubricated bearing	**07**
Q.4	**(a)**	State any two examples of wear and two examples of friction can be beneficial in day to day application.	**03**
	(b)	Explain factor affecting the wear rate	**04**
	(c)	Explain Archard's theory of adhesive wear with assumption.	**07**
		OR	
Q.4	**(a)**	Differentiate between two body abrasive wear and three body abrasive wear	**03**
	(b)	List various methods of wear testing	**04**
	(c)	Write short notes on (i) Surface fatigue wear (ii) Corrosive wear	**07**
Q.5	**(a)**	What is stick-slip friction?	**03**
	(b)	List out different theories of friction.	**04**
	(c)	Explain the deformation theory of friction considering spherical asperity.	**07**
		OR	
Q.5	**(a)**	Classify friction.	**03**
	(b)	Explain the method of measurement of kinetic friction	**04**
	(c)	Explain simple adhesion theory of friction.	**07**

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