

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VIII (NEW) EXAMINATION – WINTER 2017

Subject Code: 2181926

Date: 15/11/2017

Subject Name: Tribology(Department Elective III)

Time:02:30 PM TO 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.

		MARKS
Q.1	(a) Define viscosity and explain the effect of pressure and temperature on viscosity	03
	(b) Explain hydrostatic lubrication.	04
	(c) Explain performance analysis of gear.	07
Q.2	(a) Explain coulomb's theory of interlocking.	03
	(b) Explain electro and electro-less plating.	04
	(c) Explain elasto hydrodynamic lubrication in detail.	07
	OR	
	(c) Explain Archard's theory of adhesive wear and derive equation for wear rate.	07
Q.3	(a) Explain hot deep coating.	03
	(b) Explain pin on disc wear measurement technique.	04
	(c) Explain lubrication in rolling with neat sketch.	07
	OR	
Q.3	(a) Explain cladded coating.	03
	(b) Explain gas lubrication.	04
	(c) Derive Reynolds's equation for lubrication.	07
Q.4	(a) Explain sliding friction.	03
	(b) Explain crystallizing coating.	04
	(c) Explain performance analysis of cam and follower.	07
	OR	
Q.4	(a) Explain bearing materials.	03
	(b) Explain metal spraying.	04
	(c) Explain lubrication in drawing and extrusion process.	07
Q.5	(a) Explain adhesive wear.	03
	(b) Explain performance analysis of piston ring.	04
	(c) Derive pressure distribution equation for aerostatic step bearing.	07
	OR	
Q.5	(a) Explain lubricant selection procedure.	03
	(b) A journal of bush bearing rotates at 1200 r.p.m. and supports a radial load of 850N. The viscosity of lubricating oil is 40 mPa-s. The effective coefficient of friction in bearing is 0.02. The (l/d) ratio for the bearing is 1.0, while the radial clearance between the journal and the bush is 100 microns. Assuming that the journal runs concentric to the bush, calculate the dimensions of journal and bush.	04
	(c) Derive pressure distribution equation for infinitely long hydrodynamic journal bearing.	07
