

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 04
2. State the specification of surface texture
(c) Define the following terms: 07
Tribosurfaces, Tribosystem, Tribology, Antifriction Bearing, Seal of pressure, Converging Fluid Film, Diverging Fluid Film
- 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: 07
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/mm². Calculate supply pressure, oil flow requirement in l/min and power loss in pumping and power loss in friction.
- 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
