

M.Tech II Semester Regular Examinations, September 2015**TRIBOLOGY**
(Machine Design)**Time : 3 Hours****Max. Marks : 60****Note: Answer Any Five Questions. All Questions carry equal marks.**

1. a) Explain methods of fluid film formation with neat sketch. (6M)
b) Explain the phenomenon of decrease of viscosity of liquids with increase in temperature and increase of viscosity of gases with increase in temperature. And also explain the effect of temperature on viscosity index. (6M)
2. a) How do you select rolling contact bearings? Are rolling contact bearings effective at high sliding speeds? Discuss. (6M)
b) Why rolling contact bearing is called as anti friction bearing? Explain. (6M)
3. A rectangular slider bearing with fixed shoe is operating under the following conditions:
Bearing width=90mm
Bearing length=165mm
Sliding speed=2.5 m/s
Absolute viscosity of oil=0.025 Pa s
Minimum oil film thickness=0.03mm
Maximum oil film thickness=0.07mm
Find (i) the load carrying capacity (ii) the pressure at a distance 50mm measured from the maximum film thickness point. Neglect side leakage. (12M)
4. a) What is hydrodynamic journal bearing? Explain the significance of Sommerfeld number in hydrodynamic bearings? (6M)
b) With the help of a neat diagram illustrate the pressure distribution in a flexible pad? (6M)
5. a) What parameter determines the fundamental limit to boundary lubrication? Discuss. (6M)
b) How failure of Tribological components takes place? Explain with examples? (6M)
6. a) Explain the differences between single and multiple pad bearings? (6M)
b) Derive the expression for optimum film thickness of hydro dynamic thrust bearings? (6M)
7. Explain Raimondi and Boyd solution for hydrodynamic thrust bearings. (12M)
8. Explain different types of oil rings used in bearing? Discuss their practical utility and advantages? (12M)
