

**1129**  
**M.E. (Mechanical Engineering)**  
**First Semester**  
**Elective – I**  
**MME-104: Industrial Tribology**

**Time allowed: 3 Hours**

**Max. Marks: 50**

*NOTE: Attempt five questions in all, selecting atleast two questions from each Unit.*

*x-x-x*

**UNIT-I**

- I. a) Discuss the role of Tribology in life cycle and terotechnology.  
b) Write aims of tribological treatment in any process. (6,4)
- II. a) Explain the various theories of friction.  
b) Discuss the surface roughness measurement techniques. (6,4)
- III. List the different types of the wear. Discuss the steps of wear prevention. (4,6)
- IV. a) Explain the phenomenon of wear in gears.  
b) Discuss ASTM standards for wear measurement. (6,4)

**UNIT – II**

- V. Derive the Reynolds equation used to determine the different journal bearing characteristics and also list the assumptions made during the derivation. (10)
- VI. a) Schematically explain the different regimes of lubrication.  
b) Explain the terms oil whirl and oil whip bearings. (6,4)
- VII. a) List the steps for designing of air bearings.  
b) Discuss the importance of Sommerfeld number. Also write briefly about oil grooves. (6,4)
- VIII. Write a short note on application of tribology in following manufacturing processes:  
a) Tool wear  
b) Metal cutting (5,5)

*x-x-x*