**Roll No.** | | | | | | | | | | | | | **Total No. of Pages : 01**

**Total No. of Questions : 08**

**M.Tech (ME) (2019 Onwards) (Sem.–2)**

# TRIBOLOGY

**Subject Code : MTME-202**

**M.Code : 74978**

**Time : 3 Hrs.** **Max. Marks : 100**

**INSTRUCTIONS TO CANDIDATES :**

1. **Attempt any FIVE questions in all, out of EIGHT questions.**
2. **Each question carries TWENTY marks.**

1. a) Differentiate between macro tribology and micro/nano tribology. (4)

   b) What do you understand by tribological treatment and why do we need it? (6)

   c) What are the main challenges of tribology to control friction and wear? (10)

2. What are the different types of wear? Explain briefly. What is the cause or source of wear? (20)

3. Discuss in detail the tribological aspects of extrusion process. Explain the type of lubrication used and wear that takes place in extrusion process. (20)

4. Derive the three-dimensional Reynold's equation for Hydrodynamic Lubrication. (20)

5. a) Draw and explain the friction transition graph during sliding. (8)

   b) What is stick-slip phenomenon in sliding friction? Explain in detail the mechanism of stick-slip. (12)

6. Explain the steps for designing the hydrostatic bearing. What are the selection criteria for hydrostatic bearing? (20)

7. How to measure wear in dry and wet environment? Discuss some of the measurement instruments used for measuring wear. (20)

8. Write short notes on : (5×4=20)

   a) Flash temperature theory.

   b) Pressure distribution in oil film.

   c) Sommar-field number.

   d) Tribology of tools and cutters in mining industry.

**NOTE : Disclosure of identity by writing mobile number or making passing request on any page of Answer sheet will lead to UMC case against the Student.**