Roll No. ☐☐☐☐☐☐☐☐☐☐☐☐☐   Total No. of Pages : 1

Total No. of Questions : 08

M.Tech (ME) (2017 Batch)   (Sem.–2)
TRIBOLOGY
Subject Code : MTME-202
Paper ID : [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.**

Q1. a) What is the meaning of industrial tribology and explain the industrial significance of tribology?   (6)

   b) What is the extent of economic losses due to friction and wear?   (6)

   c) List the important thermal characteristics of the lubricants. Briefly discuss any two characteristics.   (8)

Q2. Derive the three-dimensional Reynold's equation for Hydrodynamic Lubrication.   (20)

Q3. List the bearing parameters that are predicted from the Reynold's Equation.   (20)

Q4. a) What is the concept of adhesive friction?   (10)

   b) Discuss briefly the methods of measuring friction.   (10)

Q5. What is meant by surface asperity? Explain its mechanics of deformation caused by normal loading during friction and wear processes.   (20)

Q6. Explain the steps for designing the hydrodynamic journal bearing. Illustrate how the friction varies under different lubrication conditions. Illustrate with the help of neat and clean sketch the distribution of hydrodynamic pressure in the oil film on the sliding surface of a journal bearing.   (20)

Q7. How study of tribology helped in development of machines used in mining industry? (20)

Q8. Write short notes on :   (20)

   a) Fluid film thickness measurement.

   b) Roller bearing lubrication.

   c) Comparison of hydro-dynamic and Hydro-static bearing.

   d) Plasto-hydrodynamic lubricants.   (20)