2023
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) Explain about different surface layers and their characteristics? Draw appropriate diagrams as needed.

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.   (10)

IV. a) Explain the phenomenon of wear in gears.

b) Discuss ASTEM 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) Write short notes on hydrostatic lubrication theory, and electrohydrodynamic theory.

b) Explain the terms oil whirl and oil whip bearings.   (6,4)

VII. a) Bearing is important part of mechanical systems. Justfy this statement by giving suitable application examples.

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) Extrusion Process   (2x5)

x-x-x