BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE
FIRST SEMESTER 2023-24, COMPREHENSIVE EXAM
DE G513 TRIBOLOGY (Regular) (Closed Book + Open Book)

Date: 11-12-2023   Maximum Marks: 35   Time: 3 Hours

Part-A (Closed Book)(15 Marks)

Q1. Answer the followings.   **[1*5=5]**

(i) What is Gumbel Number? How it is associated with co-efficient of friction for different lubrication discuss with proper plot.

(ii) List the different methods for tribo analysis of lubricating oil.

(iii) Suggest some remedies to minimize electric arc induced wear?

(iv) State the rules for sliding friction.

(v) What do you mean by free rolling and tractive rolling? Also discuss the conditions for their presence

Q2. Answer The following: **[1.5*4=6]**

(i) Discuss the advantages, disadvantages and application of thrust ball bearing.

(ii) Define roughness, waviness, lays and flaws in surface texture

(iii) Discuss the application, advantages and disadvantages of aerostatic bearings.

(iv) Discuss the advantages and disadvantages of Rayleigh step bearing over linear pad bearing.

Q3. Show by derivation that velocity profiles in hydrodynamic film is combination of parabolic distribution, linear distribution and some fixed velocity.   [4]