Code: 9D15106a

M.Tech I Semester Regular & Supplementary Examinations January/February 2017

TRIBOLOGY

(Machine Design)

Time: 3 hours Max. Marks: 60

Answer any FIVE questions
All questions carry equal marks
*****

1 (a) Explain the skewness and kurtosis with schematic sketches.
(b) What is a wear map? Explain it with a schematic representation.

2 A single row deep rove ball bearing has a dynamic load capacity of 40500 N and operates on the following work cycle:
(a) Radial load of 5000 N at 500 rpm for 25% of the time.
(b) Radial load of 10000 N at 700 rpm for 50% of the time.
(c) Radial load of 7000 N at 400 rpm for the remaining 25% of the time.
Calculate the life of the bearing in hours.

3 Derive the generalized Reynolds equation for one dimensional fluid flow.

4 What is a hydrostatic bearing? Derive pressure distribution for flat circular hydrostatic pad bearing in terms of lubricant flow, bearing geometry and lubricant viscosity.

5 (a) What are dry rubbing bearings? Explain the characteristics of impregnated bearings.
(b) What are the divisions of conformal fluid film bearings?

6 (a) Discuss different types of temperature-viscosity equation.
(b) What do you understand by viscosity index?

7 (a) What is the principle of sealing?
(b) What are mechanical seals? Explain it with simple schematic sketches.

8 Explain the condition based maintenance (CBM) procedure and its advantages.

*****