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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.
