Code: R7420303

R7

B.Tech IV Year II Semester (R07) Supplementary Examinations, March/April 2013
TRIBOLOGY
(Mechanical Engineering)

Time: 3 hours   Max Marks: 80

Answer any FIVE questions
All questions carry equal marks
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1 (a)   Explain any three modes of lubrication.
  (b)   Explain different types of additives used to improve the properties of lubricating oils.

2 (a)   State the desirable properties of lubricating oil.
  (b)   Explain kinematic viscosity, absolute viscosity, viscosity index and SUS.

3 (a)   What are the factors that affect wear rate? Explain them in detail.
  (b)   State and explain any three parameters to be considered in hydrodynamic journal bearing design.

4   Derive the two dimensional Reynold's equation for hydrodynamic lubrication. Also state the various assumptions made in it.

5   State various types of hydrodynamic thrust bearings. Explain in short tilting pad thrust bearing in detail.

6   Derive the equation for flow rate and pressure distribution in hydrostatic step bearing. What are the various assumptions made in it?

7   Explain in detail:
  (a)   Lubricant used in cold metal working.
  (b)   Lubricants used in hot metal working and gaskets.

8 (a)   Explain in detail the techniques used for surface measurement.
  (b)   Give the classification of surface engineering processes.
  (c)   Explain Hertz theory of elasto hydro dynamic lubrication.

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