Total No. of Questions :8] *[Total No. of Printed Pages :2*

Roll No .....

MMMD/MMPD-302(A)

M.E./M.Tech., III Semester

Examination, December 2016

Fluid Film Lubrication (Elective-II)

Time : Three Hours

Maximum Marks: 70

Note : i) Attempt any five questions.
ii) All questions carry equal marks.
iii) Draw neat diagrams wherever required.

1. a) State the need for bearing lubrication. Write the classification of bearings.
   b) Discuss basic theory of hydrodynamic lubrication.

2. a) What is Petroff's equation? State its significance and assumptions made.
   b) Discuss five distinct forms of lubrication :
      i) Hydrodynamic
      ii) Hydrostatic
      iii) Elastohydrodynamic
      iv) Boundary
      v) Solid film

3. a) Compare full Somerfield and half Somerfield conations in journal bearings.
   b) Write a short note on Reynold's equation for infinitely long full journal bearing.

4. Discuss the following terms :
   a) Kingsbury analogy
   b) Somerfield number
   c) Reynold's condition

5. a) What is difference between oil and gas bearing? Discuss static characteristics of gas bearing.
   b) Discuss behaviour and boundary conditions used in non-circular bearings.

6. Explain in detail the following numerical methods for solution of fluid film bearing (any two) :
   a) Finite difference method
   b) Galer Kein's method
   c) Ritz method

7. a) Write in short; characteristics and applications of Rolling Element Bearings.
   b) How life prediction is done for Rolling Element Bearings? Discuss.

8. Write short note on following (any two):
   a) Geometry of non-circular bearings
   b) Governing equations for Gas Bearings
   c) High speed consideration in rolling bearings

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