1. (a) Differentiate between absolute and kinematic viscosity.

(b) Explain how temperature influences the viscosity of a fluid. [16]

2. With the help of a line diagram explain the construction and working of a hydrostatic thrust bearing. [16]

3. Derive Reynolds equation in two dimensions. [16]

4. Explain the design procedure of a journal bearing. [16]

5. Explain the concept of instability in gas lubricated bearings. [16]

6. Explain the concept of boundary friction. Also draw the stribec diagram for a journal bearing. [16]

7. What is the function of oil rings in a bearing? What are the different types of oil rings used? Explain in detail. [16]

8. Listout various materials used for bearings. Explain their merits and demerits. [16]
1. Define viscosity. Discuss various parameters which influence the amount of viscosity of a fluid. [16]

2. Derive an equation for normal load carrying capacity of a circular step bearing. [16]

3. Explain the concept of hydrodynamic instability in bearings. [16]

4. Derive an equation for the load bearing capacity of an infinitely long journal bearing. [16]

5. List out various gas bearings. Explain with the help of a model. [16]

6. What is solid film lubrication? Explain with the help of a model. [16]

7. What is partial bearing? Explain its construction and working. [16]

8. What are the different liquid lubricants used in the industry? Explain their individual merits and applications. [16]
TRIBOLOGY
(Automobile Engineering)

Time: 3 hours  Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. List out various viscometers used in industry. Explain their constructional features and working. [16]

2. With the help of a schematic diagram explain how a hydrostatic lift works. [16]

3. Derive Reynolds equation for pressure distribution in a fluid film. [16]

4. Derive an equation for load bearing capacity of an infinitely short journal bearing. [16]

5. Derive an equation for load carrying capacity of an infinitely long plane air lubricated bearing. [16]

6. Explain the lubricating conditions in two dimensional metal forming process. [16]

7. What is the basic principle of working of a pressure feed bearing? Explain its construction and working. [16]

8. List out different bearing materials used in industry. What are advantages and disadvantages of these materials. Make a comparative note. [16]

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1. Define viscosity index. Explain the method of determination of viscosity index. What is the practical use of viscosity index. [16]

2. What is a journal bearing? On what principle it works? How a hydrostatic squeeze film is applied to it? [16]

3. Derive Navier-Stokes equation in cartesian coordinate. [16]

4. Explain the numerical solution method for finite length journal bearing. [16]

5. What is an air lubricated bearing? Explain its features. What are the advantages of air lubricated bearings. [16]

6. Explain the lubricating conditions in two dimensional rolling process. [16]

7. Draw a line diagram of externally pressurised bearings and explain its working. [16]

8. Explain in detail the general requirements of bearing material. [16]

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