

**B.Tech. – VIEP – MECHANICAL ENGINEERING  
(BTMEVI)**

**Term-End Examination**

**June, 2017**

**00867**

**BIMEE-006 : TRIBOLOGY**

*Time : 3 hours*

*Maximum Marks : 70*

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*Note : Attempt any **five** questions. All questions carry equal marks.*

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1. (a) State and explain the laws of friction. Also describe the various friction theories. 7
- (b) How is rolling friction different from sliding friction ? Explain. 7
2. (a) Explain how solid lubricants work. Give suitable examples. 7
- (b) Discuss wear in polymers and ceramics. Also explain the ways to prevent it. 7
3. (a) Briefly explain the various bio-based lubricants. 7
- (b) Define wear. Describe the various techniques that are used for its measurement. 7

4. (a) What is the additives used for lubricating oil ? How are they classified ? What are their functions ? 7
- (b) What is thick film and thin film lubrication ? Explain them briefly. 7
5. (a) What is clearance with respect to bearing ? What factors lead to wear of cylinder and piston rings ? Explain. 7
- (b) Describe the elastic-plastic contact of frictionless solids. What will be the mode of deformation in such solids ? 7
6. (a) Discuss in brief the procedure and steps involved in bearing design. 7
- (b) What are the different types of bearings used in the various mechanical applications ? Briefly explain their salient features. 7
7. Write short notes on any **four** of the following :  $4 \times 3 \frac{1}{2} = 14$
- (a) Wear-resistant Materials
- (b) Contact of Rough Surfaces
- (c) Load and Utilization Factor
- (d) Effect of Sliding Speed on Friction
- (e) Pitting Process
- (f) Interaction of Surface Peaks