

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

00472

**Term-End Examination
December, 2017**

BIMEE-006 : TRIBOLOGY

Time : 3 hours

Maximum Marks : 70

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

1. (a) Define the term Tribology. Explain with the help of suitable examples, its significance in economic, scientific and multidisciplinary aspects. 7
- (b) Discuss the laws of rolling friction. Compare rolling friction with sliding friction. 7
2. (a) Discuss the effects of surface roughness on wear. Differentiate between waviness and surface roughness. 7
- (b) Explain the method used for the measurement of surface roughness. 7

3. (a) Define Wear. What are the various techniques used for its measurement ? Explain any one technique. 7
- (b) What do you understand by pitting, erosion and corrosion subjected to wear ? 7
4. (a) Explain boundary lubrication with neat sketch. 7
- (b) Explain elastic and plastic contact between metallic surfaces with suitable illustrations. 7
5. (a) What are the requirements of a good lubricating oil ? Also mention its advantages. 7
- (b) Describe the physio-chemical properties of surface layers using suitable diagram. 7
6. (a) What is the effect of operating environment on the wear of ceramics ? How is it different from that of polymers ? 7
- (b) What are the steps to be followed in selection of a bearing for a particular application ? 7
7. (a) Classify the different types of bearings used in various mechanical applications along with their salient features. 7
- (b) Explain in brief, the mechanism of pressure development in bearings. 7

8. Write short notes on any **four** of the following :

$$4 \times 3 \frac{1}{2} = 14$$

- (a) Dry Friction
 - (b) Wear Resistant Materials
 - (c) Surface Peak
 - (d) Real and Contour Area of Contact
 - (e) Flow and Shear Stress on Lubrication
 - (f) Future Scope and Applications of Bearings
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