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B.Tech. – VIEP – MECHANICAL ENGINEERING (BTMEVI) Term-End Examination

December, 2017

BIMEE-006 : TRIBOLOGY

Time : 3 hours

Maximum Marks : 70

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

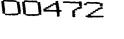
- 1. (a) Define the term Tribology. Explain with the help of suitable examples, its significance in economic, scientific and multidisciplinary aspects.
 - (b) Discuss the laws of rolling friction. Compare rolling friction with sliding friction.
- 2. (a) Discuss the effects of surface roughness on wear.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

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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, errosion 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

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- 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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