Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

VII SEMESTER B.TECH (MECHANICAL/IP ENGG.) END SEMESTER EXAMINATIONS, NOV 2018

SUBJECT: TRIBOLOGY [MME 4004]

REVISED CREDIT SYSTEM

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Answer **ALL the** questions.
- Missing data if any, Can be suitably assumed

1A.	List the important functions of a lubricant Explain the significance and importance of each of these functions	**05**
1B.	Define thin film lubrication. Briefly explain the mechanism of thin film lubrication and desirable properties of thin film lubricant	**05**
2A.	Derive the differential equation of motion in three directions	**07**
2B.	With neat sketch, highlight the functional regions during EHD contact	**03**
3A.	Write a note on indirect techniques of friction and wear measurement. With neat sketches explain the indirect technique based on acoustic emissions	**04**
3B.	Write a note on criticisms of Bowden and Tabor theory of friction. Briefly discuss the Bowden and Tabor's theory of friction	**03**
3C.	Distinguish the theories of wear proposed by (a) Holm and (b) Burwell and Strang	**03**
4A.	With neat sketch, explain the 3 zone model to understand the concept of superficial layer	**04**
4B.	With neat schematic representation, discuss the type of lubrication during gear meshing	**03**
4C.	List and compare the three types of reference lines with neat sketch	**03**
5A.	List the strengths and limitations of Scanning Electron Microscope (SEM)	**05**
5B.	Explain with neat sketch, the failure mode of machine vibration using bath tub curve. Also, discuss the influence of variable compliance on rolling element bearing vibration	**05**