Reg. No.										

Manipal Institute of Technology, Manipal

(A Constituent Institute of Manipal University)

VI SEMESTER B.TECH (MECHANICAL ENGINEERING)

END SEMESTER EXAMINATIONS, JUNE/JULY 2016

SUBJECT: FRICTION & WEAR [MME 340]

REVISED CREDIT SYSTEM

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Answer **ANY FIVE FULL** the questions.
- Missing data may be suitably assumed.

1A. Prove that surface energy influences the area of contact with relevant expressions. **(5)**

1B. Explain the following wear mechanisms:

- Surface fatigue wear
- Corrosive wear **(5)**

2A. State the quantitative laws of rolling friction **(5)**

2B. Write a note on qualitative aspects of corrosive wear. **(5)**

3A. Explain the following techniques to measure the study of surface roughness:

- Profile method
- Reflectivity method **(5)**

3B. Derive the expression for size of transferred particle during adhesive wear. **(5)**

4A. Explain the following concepts with respect to rolling friction:

- Slip at the region of contact.
- Hysteresis losses **(5)**

4B. Explain the phases of corrosive wear. **(5)**

5A. Write a note on elastohydrodynamic lubrication. **(5)**

5B. State the qualitative laws of sliding friction. **(3)**

5C. Write a note on variation of Young's modulus with melting point at room temperature for different metals. **(2)**

6A. Distinguish between boundary lubrication and solid lubrication. **(5)**

6B. How adhesive wear mechanism is different from conventional welding process? **(3)**

6C. Write a note on impact wear. **(2)**