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MANIPAL INSTITUTE OF TECHNOLOGY

(A constituent unit of MAHE, Manipal)

I SEMESTER M.TECH (T & M) END SEMESTER EXAMINATIONS, NOVEMBER 2018

SUBJECT: FRICTION & WEAR [MME 5162]

REVISED CREDIT SYSTEM

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

- Answer ALL the questions.
- Missing data may be suitably assumed.

1A.	Explain with neat sketch of the optical profiler method of measuring Ra.		
1B.	Discuss the limitations of the optical profilometer.	2	
1C.	Mention advantages and disadvantages of Atomic Force Microscope.	3	
2A.	Elaborate types of friction with examples each.	4	
2B.	Explain the experimental set up & procedure to arrive the static friction co efficient using weight measuring method.		
2C.	A 500-gram puck is sliding at 20 m/s across a level surface. The coefficient of kinetic friction between the puck and surface is 0.20. How long will it take the puck to skid to a stop?		
3A.	Elaborate your understandings on 'zero' and 'measurable' wear.	3	
3B.	Discuss mild, severe and seizure adhesive wear characteristics.	3	
3C.	Explain the erosive wear mechanisms with schematics.	4	
4A.	Define (i) Adhesive, (ii) Abrasive & (iii) Corrosive wear with examples each.	3	
4B.	Discuss at least 3 properties of lubricant.	3	
4C.	Define (i) Hydrostatic, (ii) Hydrodynamic, (iii) Elasto-hydrodynamic & (iv) Fluid lubrication.	4	
5A.	Discuss the circumstances of friction and wear problem occurrences.	2	
5B.	Explain (i) Surface treatment, (ii) Surface modification & (iii) Surface coating surface engineering surfaces	6	
5C.	List 5 types of special surfacing processes	2	