

Reg. No. :

--	--	--	--	--	--	--	--	--	--

Question Paper Code: 52911

M.E. DEGREE EXAMINATION, DECEMBER 2015.

Elective

CAD / CAM

15PCD502 - TRIBOLOGY IN DESIGN

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions.

(5 x 20 = 100 Marks)

1. (a) Explain in detail about, how the topography of surfaces affect the friction properties of a material. (20)

Or

- (b) Explain in detail about theory of sliding friction and rolling friction. (20)

2. (a) Explain the types of wear and its mechanisms and experimental methods used to quantify any two types of wear. (20)

Or

- (b) Briefly explain about

(i) Surface treatments (7)

(ii) Surface modifications (7)

(iii) Surface coating methods. (6)

3. (a) (i) List the types of lubricants and explain their physical properties in detail. (12)

(ii) Briefly explain about SAE and AGMA lubrication standards. (8)

Or

- (b) Briefly explain about
- (i) Boundary lubrication (7)
 - (ii) Hydrodynamic lubrication (7)
 - (iii) Gas lubrication. (6)
4. (a) Derive one dimensional and two dimensional Reynolds equation. State its assumptions and limitations. (20)

Or

- (b) Derive the equation for the bearing capacity, frictional power loss, energy losses of a hydrostatic step bearing. (20)
5. (a) Explain in detail about contact stresses developed in rolling contacts and derive the Hertzian stress equation for it. (20)

Or

- (b) Briefly explain about Elasto hydrodynamic lubrication theory and derive the Reynolds equation for it. (20)
-