

**UNIVERSITY OF PETROLEUM AND ENERGY STUDIES**  
**End Semester Examination, April/May 2018**

**Course: Tribology, (ADEG353/ MTEG451)**  
**Program: B. Tech Mechanical/B. Tech MSNT**  
**Time: 03 hrs.**

**Semester: VIII**  
**Max. Marks: 100**

**Instructions**

**SECTION A**

S. No.		Marks	CO
Q 1	Explain the viscosity and viscosity index of lubricants.	4	CO5
Q2	Enlist the types of wear. Explain pitting wear.	4	CO3
Q3	Explain welding shearing and ploughing theory of friction.	4	CO1
Q4	Explain the effect of adding additive to the lubricant.	4	CO5
Q5	Explain the purpose of foam inhibitor in lubricants.	4	CO5

**SECTION B**

Q6	Discuss the carbonitriding and electroplating method of surface improvement.	10	CO4
Q7	Explain the Archard's theory of adhesive wear.	10	CO3
Q8	Explain delamination theory of wear.	10	CO3
Q9	Explain the junction growth theory of friction.  OR  Discuss how contamination reduces the friction of tribo-pair.	10	CO2

**SECTION-C**

Q10	Explain elasto-hydrodynamic lubrication. Deduce the expression of hertz contact pressure in the non-conforming tribo- pair.	20	CO4
Q11	Derive Reynold's equation to estimate the pressure distribution for fluid film lubrication.  OR  Explain the hydrostatic lubrication and its advantages and disadvantages. Deduce the expression for pressure distribution and load carrying capacity of circular step thrust bearing	20	CO5