

Name:	 UPES UNIVERSITY WITH A PURPOSE
Enrolment No:	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
Online End Semester Examination, May 2021

Course: Tribology
Program: B. Tech ADE
Course Code: MECH3013P

Semester: VI
Time: 3 hrs
Max. Marks: 100

Instructions: (1) Answer **ALL** questions

SECTION A
All questions carry 5 marks

S. No.	Questions	Marks	CO
Q 1	Name various science subjects whose knowledge is required for tribology.	5	CO1
Q2	Enlist the types of wear.	5	CO1
Q3	Name the lubrication mechanisms.	5	CO4
Q4	<p>Choose the correct answer</p> <p>Q.1. The purpose of lubricant filter system is (a) To remove the debris from the lubricant. (b) To enhance the viscosity of lubricant. (c) Reduce the temperature of lubricant. (d) Reduce the quantity of lubricant.</p> <p>Q.2. Which one of the following parameter is not included by Stribeck curve? (a) Viscosity of the lubricant. (b) Speed of the surfaces (c) Load at the interface (d) Surface roughness</p> <p>Q.3. The purpose of lubrication is (a) To reduce friction. (b) To reduce wear. (c) Transfer heat produced. (d) All of above.</p> <p>Q.4. Which of the following is not a function of lubricant in IC engine? (a) Form a film to separate the surfaces. (b) Adhere to surface. (c) Withstand high temperature inside the cylinder. (d) Reduce the size of the asperities and improve the surface finish.</p> <p>Q.5. Synovial fluid is a lubricant that is found in (a) Human bone joints. (b) Journal bearings. (c) IC engine. (d) None of the above.</p>	5	CO2
Q5	Differentiate between static and kinetic coefficients of friction and what is the	5	CO1

	practical significance of these two terms.		
Q6	What is ploughing effect?	5	CO1
SECTION B 1. Each question will carry 10 marks 2. Instruction: Write short / brief notes			
Q7	Discribe the characteristics of good lubricants.	10	CO2
Q8	Explain the junction growth theory of friction.	10	CO2
Q9	Differentiate between hydrodynamic lubrication and hydrostatic lubrication	10	CO3
Q10	Explain the abrasive wear . Deduce the rebonowitz equation of two body abrasive wear.	10	CO3
Q11	Enlist the surface improvement techniques to make the wear resistant surface. Describe the carbonitriding of the surface treatment.	10	CO3
SECTION C 1. Each Question carries 20 Marks. 2. Instruction: Write long answer.			
Q12	Define elastohydrodynamic lubrication mechanicam. Dduce the hertz equation of elastic contact. <p style="text-align: center;">OR</p> Deduce the generalized Reynolds equation of to estimante the fluid film lubrication pressure.	20	CO4