Name: **Enrolment No:**	UPES UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, May 2019

Course: Tribology: friction, wear ,and lubrication **Semester: VIII**
Program: B. Tech MSNT **Time 03 hrs.**
Course Code: ADEEG353 **Max. Marks: 100**

Instructions:

SECTION A

S. No.		Marks	CO
Q 1	Explain that the viscosity of lubricant decrease with increase in temperature.	**4**	**CO1**
Q2	List the solid lubricants.	**4**	**CO1**
Q3	What is the difference between adsorption and absorption?	**4**	**CO1**
Q4	Recall the seizure and what causes it in a tribological system?	**4**	**CO1**
Q5	Differentiate sliding contact and rolling contact bearings.	**4**	**CO1**
	SECTION B		
Q6	Explain how polymers are used to lubricate the sliding surfaces. Also, explain advantages and disadvantages of polymers.	**10**	**CO3**
Q7	Explain the following wear 1. Fatigue wear 2. Delamination wear	**10**	**CO2**
Q8	Explain the carburizing process and ion implantation of surface improvement in order to make wear resistant surface.	**10**	**CO2**
Q9	Explain different properties of lubricants. OR Explain the additives how they fulfill the different requirement of lubricants.	**10**	**CO3**
	SECTION-C		
Q 10	a. Explain pressure development in the film in journal bearing. b. Explain the boundary lubrication mechanism. OR Derive the Reynolds' equation of pressure distribution in the fluid film lubrication.	**20**	**CO4**

Q11	Derive hertz equation of contact pressure and elastic deformation between two non-conforming surfaces.	**20**	**CO3**