Reg. No. : | | | | | | | | | | |

Question Paper Code: 95T25

Ph.D. COURSE WORK EXAMINATION, NOV 2019

Elective

Power Electronics and Drives

19PPE525– MICRO ELECTRO MECHANICAL SYSTEMS

(Regulation 2019)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART - A (5 x 20 = 100 Marks)

1.	(a)	Discuss about the overview of micro fabrication process.	CO1- U	(20)
		Or		
	(b)	Explain in detail about the steps involved in silicon based MEMS process	CO1- U	(20)
2.	(a)	Briefly explain about the capacitance, equilibrium position and pull in effect of parallel plate actuators	CO2- U	(20)
		Or		
	(b)	Explain in detail about the flow sensor.	CO2- U	(20)
3.	(a)	Briefly explain about thermal actuators and fundamentals of thermal transfer	CO3- U	(20)
		Or		
	(b)	Discuss in detail about thermal accelerometers based on moving mass and without any moving mass.	CO3- U	(20)
4.	(a)	Describe the common piezoelectric materials and their representative properties.	CO4- U	(20)
		Or		
	(b)	Illustrate the fabrication of piezoelectric sensors using surface micromachining process and bulk micromachining process	CO4- U	(20)

5.	(a)	Design a device with piezo resistive material to measure heart wall accelerations and also explain its fabrication process.	CO5- U	(20)
		Or		
	(b)	Analyze blood pressure sensor with design considerations	CO5- U	(20)