Code No: **RT41035** **R13** **Set No. 1**

IV B.Tech I Semester Supplementary Examinations, February - 2019

MICRO ELECTRO MECHANICAL SYSTEMS

(Mechanical Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any THREE questions from Part-B
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PART–A *(22 Marks)*

1.	a)	Differentiate between structural and sacrificial materials used in MEMS.	[4]
	b)	Write short note on data storage cantilever.	[3]
	c)	What is the basic function of light modulator?	[3]
	d)	What are hard magnetic materials?	[4]
	e)	What are the applications of micro fluidic devices?	[4]
	f)	Comment about various materials used as membrane-transducer.	[4]

PART–B *(3x16 = 48 Marks)*

2.	a)	What is doping? Discuss about various techniques used for doping.	[8]
	b)	Explain how pressure is measured by microphone.	[8]
3.	a)	Explain the working of thermally activated MEMS relay.	[7]
	b)	Discuss the relative merits and demerits of different electro thermal actuators.	[9]
4.	a)	With the help of suitable diagrams explain the functioning of digital micro mirror device.	[8]
	b)	Give the constructional details and explain the working of beam splitter.	[8]
5.	a)	Write a detailed note on large force reluctance magnetic actuator.	[7]
	b)	Discuss the operation of Hall and AMR effect magneto resistive sensors.	[9]
6.	a)	What is a phase shifter? Explain the principle of operation of a switched-line phase shifter.	[8]
	b)	What do you mean by the term tuning and how can the properties of the optical fiber be tuned by using microfluidic systems?	[8]
7.	a)	Describe the different parts of a MEMS based mass-sensitive chemosensor.	[9]
	b)	What are the areas of application of chemocapacitors?	[7]