M.E. Second Semester (Digital Electronics) (Part Time / Full Time) (C.G.S.- New)

13235 : Elective-II : Micro Electro Mechanical Systems : 2 UMEF 5

P. Pages : 1 | **AW - 3767**

Time : Three Hours | Max. Marks : 80

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Notes : 1. Answer **Three** question from Section A and **Three** question from Section B.
2. Assume suitable data wherever necessary.
3. Illustrate your answer necessary with the help of neat sketches.
4. Use of pen Blue/Black ink/refill only for writing the answer book.

1.	a)	Explain MEMS and microsystems definitions with examples.	7
	b)	Explain the benefits of miniaturization.	6
		OR	
2.	a)	Explain with the help of block diagram the component of microsystem.	7
	b)	Discuss the development of MEMS technology.	6
3.	a)	Explain silicon as substrate material for MEMS.	7
	b)	Discuss the aircraft sensor in detail.	6
		OR	
4.	a)	Explain the application of MEMS in telecommunication sector.	6
	b)	Explain in detail at least three applications of MEMS in industry.	7
5.		Explain MEMS design consideration in detail.	14
		OR	
6.	a)	List the types of scaling laws and explain any one in detail.	7
	b)	Explain scaling in Geometry in detail.	7
7.	a)	List the types of CVD. Explain any one chemical vapor deposition method.	7
	b)	Explain photolithography fabrication process of MEMS.	6
		OR	
8.	a)	Differentiate between chemical vapor deposition and physical vapor deposition.	6
	b)	Explain the ions implementation process for MEMS.	7
9.	a)	How surface micro machining is implemented for fabrication of MEMS. devices?	7
	b)	Explain in brief the LIGA process.	6
		OR	
10.	a)	Explain the following terms related to Etching. i) Dry etching. ii) Wet etching.	8
	b)	Explain the packaging of MEMS.	5
11.	a)	Explain the working of chemical sensors with the help of diagram.	7
	b)	What are optical sensors? Explain the working of optical sensors.	7
		OR	
12.		What are Micromotors, Microgears and Micropumps? Explain in detail.	14

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