Sixth Semester B.E. Degree Examination, Aug./Sept.2020
Micro and Smart Systems Technology

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions, selecting at least TWO full questions from each part.*

PART – A

1	a.	Elucidate the multidisciplinary aspect of micro system with block diagram.	(10 Marks)
	b.	List out the application of smart materials and micro system.	(06 Marks)
	c.	Explain Feynman's vision.	(04 Marks)

2	a.	With a neat sketch, explain silicon capacitive accelerometer.	(08 Marks)
	b.	Explain piezo-electric based inkjet print-head with neat sketch.	(06 Marks)
	c.	Briefly explain portable blood analyzer.	(06 Marks)

3	a.	List out different methods of thin film deposition and explain CVD.	(08 Marks)
	b.	Explain the realization of Cantilever structure using surface micromachining.	(08 Marks)
	c.	Write a short note on crystal structure of silicon.	(04 Marks)

4	a.	Explain Gauss's Law. Derive Laplace's Equation.	(10 Marks)
	b.	Discuss the effect of Residual stress and Residual stress Gradient.	(10 Marks)

PART – B

5	a.	Explain Finite Element procedure with neat diagram.	(10 Marks)
	b.	Elaborate the analysis of a Piezoelectric Bimorph Cantilever Beam.	(10 Marks)

6	a.	Explain Six different examples of Op – Amp based Circuits.	(12 Marks)
	b.	Discuss the output characteristics of BJT under various Regions of operation.	(08 Marks)

7	a.	What are the objectives of packaging explain the challenges and their possible solutions in packaging.	(10 Marks)
	b.	Explain wire bonding and flip-chip assembly packaging techniques in detail.	(10 Marks)

8		Write short notes on :	
	a.	Silicon water preparation	
	c.	Silicon capacitive accelerometer	
	d.	Etching	
	e.	BEL pressure sensor.	(20 Marks)

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