



USN

--	--	--	--	--	--	--	--	--	--

10MT63

Sixth Semester B.E. Degree Examination, July/August 2021
Micro and Smart Systems Technology

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions.

- 1 a. Define Smart Material. Explain any three applications of microsystem. (10 Marks)
b. List the differences between microelectronics and microsystems. (04 Marks)
c. Explain why microsystem design and manufacture is multidisciplinary. (06 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. Explain the process of photolithography with neat schematic diagram. (10 Marks)
b. Discuss different types of etching with relevant diagram, chemical equation and etchants. (10 Marks)
- 4 a. Briefly explain the BIMORPH effect with necessary equations. (10 Marks)
b. Explain energy methods for elastic bodies. (10 Marks)
- 5 a. Explain the need for numerical methods for solution of equation. (06 Marks)
b. Elaborate the analysis of a piezoelectric bimorph cantilever beam. (14 Marks)
- 6 a. What is difference amplifier? Derive an expression for its output voltage. (10 Marks)
b. Explain SIX different examples of OP-Amp based circuits. (10 Marks)
- 7 a. Explain the issues in microsystem packing. (08 Marks)
b. Explain the following : (12 Marks)
i) Wire bonding
ii) Flip chip assembly
iii) Ball grid array.
- 8 a. Explain performance parameters of pressure sensor with neat curves. (10 Marks)
b. Discuss vibration control of a beam, with neat block diagram. (10 Marks)

* * * * *

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.