

CBCS SCHEME

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18MT55

Fifth Semester B.E. Degree Examination, Dec.2023/Jan.2024

Micro and Smart System Technology

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Define Miniaturization? Why it is required. (06 Marks)
b. Explain difference between Microsystems and MEMS. (07 Marks)
c. With an example explain microfabrication. (07 Marks)

OR

- 2 a. Explain difference between microelectronics and micro systems. (06 Marks)
b. Explain different types of integrated micro systems. (07 Marks)
c. With an example explain applications of smart materials and micro system. (07 Marks)

Module-2

- 3 a. Define sensors, actuators and systems. (06 Marks)
b. Explain piezo resistive pressure sensor and its applications. (07 Marks)
c. With a neat sketch explain portable blood analyzer. (07 Marks)

OR

- 4 a. Explain working principle of micro mirror array for video projection. (10 Marks)
b. With a neat sketch explain working principle of piezoelectric Inkjet print head. (10 Marks)

Module-3

- 5 a. With a crystal structure explain silicon as a material for manufacturing. (10 Marks)
b. Explain with a neat sketch Thermal evaporation for depositing metals and other materials. (10 Marks)

OR

- 6 a. List different steps involved in the wet etching process. (04 Marks)
b. Distinguish isotropic and anisotropic etching. (06 Marks)
c. Explain surface micro machining and bulk micro machining. (10 Marks)

Module-4

- 7 a. Explain with neat sketch Scotty diode. (10 Marks)
b. With a neat sketch explain Bipolar junction transistor. (10 Marks)

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OR

- 8 a. List different types of MOSFET. With neat sketch explain construction of a N-channel MOSFET. (10 Marks)
- b. With circuit diagram explain op-amp circuits. (10 Marks)

Module-5

- 9 a. With block diagram, explain PID controller. (10 Marks)
- b. Explain with a neat sketch digital controller. (10 Marks)

OR

- 10 Write short notes on :
- a. Micro controller
- b. PLC
- c. BEL pressure sensor
- d. Smart structure in vibration control. (20 Marks)
