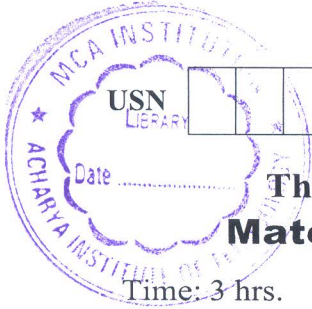


CBCS SCHEME

21MT33



Third Semester B.E. Degree Examination, Jan./Feb. 2023 Material Science and Manufacturing Technology

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. List and explain the factor affecting atomic diffusion. (10 Marks)
b. Explain Fick's law of Ist and IInd law of diffusion. (10 Marks)

OR

- 2 a. Explain plastic deformation of single crystal by slip and twinning. (10 Marks)
b. Explain the stress-strain diagram of ductile material. (10 Marks)

Module-2

- 3 a. Explain: i) Hard lay-up process ii) Pultrusion process. (10 Marks)
b. What is composite and explain the classification of composite materials. (10 Marks)

OR

- 4 a. Explain shape memory alloys and explain shape memory effects. (10 Marks)
b. Explain the following: (10 Marks)
i) Piezoelectric materials
ii) Electrostrictive Materials (ERFS).

Module-3

- 5 a. Explain manufacturing and also its classification. (10 Marks)
b. Explain the steps involved in casting process and also its advantages and disadvantages. (10 Marks)

OR

- 6 a. Explain the classification of furnace and explain: (10 Marks)
i) Electric Arc furnace ii) Gas fired pit furnace,
b. Explain with neat sketch: i) Square casting ii) Thixo casting. (10 Marks)

Module-4

- 7 a. Define welding and explain classification of welding. (10 Marks)
b. With neat sketch, explain the working principle of TIG welding. (10 Marks)

OR

- 8 a. Explain laser welding with neat sketch. (10 Marks)
b. Explain with neat sketch: i) Spot welding ii) Seam welding (10 Marks)

Module-5

- 9 a. With neat sketch explain Merchant circle diagram. (10 Marks)
b. With neat sketch explain tool signature for single point cutting tool. (10 Marks)

OR

- 10 a. Explain with neat diagram: i) Up Milling ii) Down milling. (10 Marks)
b. Explain with neat diagram: i) Drilling ii) Reaming (10 Marks)

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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.