

CBCS SCHEME

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18SM81

Eighth Semester B.Tech. Degree Examination, June/July 2024 Advanced Smart Manufacturing and Techniques

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Briefly explain : i) Sensors ii) Actuators iii) Communication protocols in IoT. (10 Marks)
b. Illustrate the importance of smart manufacturing in modern industry with example.(10 Marks)

OR

- 2 a. Write on overview of smart manufacturing concepts and principles. (10 Marks)
b. Write a fundamental of IoT and its applications in manufacturing. (10 Marks)

Module-2

- 3 a. Write a note on overview of AI technologies and their role in manufacturing. (10 Marks)
b. Explain the following terms : i) Data Pre-processing ii) Cleaning techniques. (10 Marks)

OR

- 4 a. Define Big data analytics. Write its significance in manufacturing. (10 Marks)
b. Explain machine learning algorithms for predictive maintenance. (10 Marks)

Module-3

- 5 a. Write and explain applications for 3D printing in prototyping, customization and production. (10 Marks)
b. Illustrate multi material printing with a neat sketch. (10 Marks)

OR

- 6 a. Define Additive manufacturing. Explain the fundamental of additive manufacturing process and materials. (10 Marks)
b. What are the steps involved in any type of 3D printing techniques? Explain each slip briefly. (10 Marks)

Module-4

- 7 a. Explain integration of digital twins with IoT data and simulation tools? (10 Marks)
b. Write a note on case studies on using digital twins predictive maintenance. (10 Marks)

OR

- 8 a. Explain the concept of digital twins and their role in smart manufacturing. (10 Marks)
b. Illustrate the process of optimization and product life cycle management. (10 Marks)

Module-5

- 9 a. Write note on : i) Quantum computing ii) Block chain (10 Marks)
b. Write a note on block chain for supply chain transparency. (10 Marks)

OR

- 10 a. Illustrate an overview of emerging technology shaping the future of smart manufacturing. (10 Marks)
b. Write the applications of
i) Augmented Reality (AR) in manufacturing
ii) Virtual Reality (VR) in manufacturing (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.