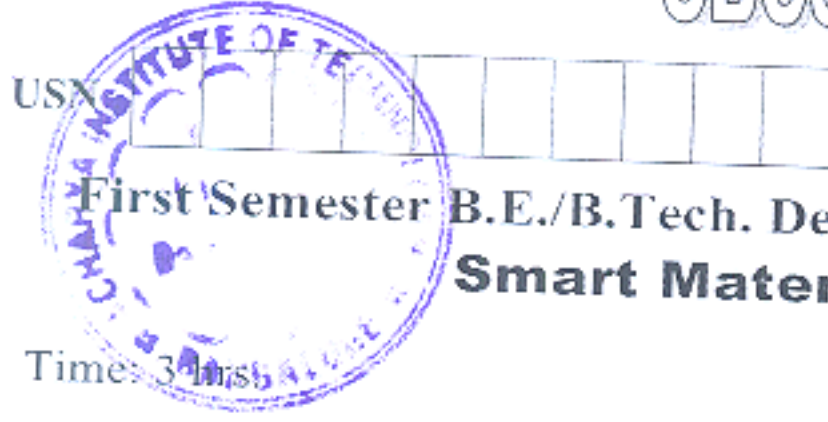


CBCS SCHEME



BETCK105A

First Semester B.E./B.Tech. Degree Examination, Dec.2025/Jan.2026 Smart Materials and Systems

Time: 3 hrs

Max. Marks: 100

*Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.*

Module - 1					
Q.1	a.	Define and discuss the properties of carbon composites.	M	L	C
			8	L2	CO1
	b.	Explain Nano Materials.	8	L2	CO1
	c.	Explain the significance of Honeycomb structure.	4	L2	CO1
OR					
Q.2	a.	Discuss the advantages and disadvantages of nano materials.	7	L2	CO1
	b.	List the properties of engineered polymers. Also discuss the applications of engineered polymers.	7	L1 L2	CO1
	c.	Explain briefly on the role of admixtures and water proofing chemicals in construction industry.	6	L2	CO1
Module - 2					
Q.3	a.	Discuss briefly about classification of prefabrication.	6	L2	CO2
	b.	Explain the important components of prefabrication.	7	L2	CO2
	c.	Discuss briefly about modular coordination.	7	L2	CO2
OR					
Q.4	a.	List the advantages and disadvantages of prefabricated building components.	8	L2	CO2
	b.	What is modular coordination? Explain advantages and disadvantages of modular coordination.	8	L2	CO2
	c.	List the types of prefabrication systems.	4	L1	CO2
Module - 3					
Q.5	a.	Explain briefly about piezo electric materials. Also discuss the principle of piezo-electricity.	8	L2	CO3
	b.	Explain the need and applications of smart materials.	8	L2	CO3
	c.	Define the term i) Sensors ii) Actuators	4	L2	CO3

OR

Q.6	a.	Define piezo-electricity and explain the features of piezo-electricity.	8	L2	CO3
	b.	What are Smart Materials? Explain the features of Smart Materials.	8	L2	CO3
	c.	Explain the classification of polymers.	4	L2	CO3

Module – 4

Q.7	a.	Define Building Information Modeling (BIM). Also discuss the necessity of BIM.	8	L2	CO4
	b.	Discuss briefly the different phases of BIM.	8	L2	CO4
	c.	What is BIM in building design?	4	L2	CO4

OR

Q.8	a.	Explain briefly about Integrated Building Management System (IBMS).	8	L2	CO4
	b.	Discuss the benefits of IBMS.	8	L2	CO4
	c.	List the advantages of IBMS.	4	L2	CO4

Module – 5

Q.9	a.	What is 3D printing? Explain the importance of 3D printing.	8	L2	CO5
	b.	Explain the advantages of 3D printing.	8	L2	CO5
	c.	List the different types of 3D printing.	4	L1	CO5

OR

Q.10	a.	Define 3D modeling and explain data conversion and transmission.	8	L2	CO5
	b.	Explain the steps in 3D printing process chain.	8	L2	CO5
	c.	List the applications of 3D modeling.	4	L1	CO5
