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Second Semester B.E./B.Tech. Degree Examination, Nov./Dec. 2023
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. VTU Formula Hand Book is permitted.
       3. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
Q.1	a.	What are Nanomaterials. List the different Nanomaterial and their application.	10	L2	CO1
	b.	What are Engineered Polymers and suggest the applications?	10	L1	CO1
		OR			
Q.2	a.	Write a note on construction chemicals.	10	L1	CO1
	b.	Explain GGBS as emerging by product in construction industry.	10	L2	CO1
		Module – 2			
Q.3	a.	What is prefabricated building and explain the prefabricated building components.	10	L2	CO2
	b.	Mention the advantages and disadvantages of pre-fabricated building components.	10	L1	CO2
		OR			
Q.4	a.	What is the difference between prefabricated building and pre-engineered building?	10	L1	CO2
	b.	Explain the stages of prefabrication of building.	10	L2	CO2
		Module – 3			
Q.5	a.	What are Smart Materials? Give examples.	05	L1	CO3
	b.	List the application of Smart materials.	05	L1	CO3
	c.	Explain the principle of Piezo electricity.	10	L2	CO3
		OR			
Q.6	a.	Explain direct piezo electric effect and converse piezo electric effect.	10	L2	CO3
	b.	Mention the advantages and disadvantages of piezo electric materials.	10	L1	CO3
		Module – 4			
Q.7	a.	Define BIM. Mention the advantages and disadvantages of BIM.	10	L1	CO4
	b.	Explain briefly infrastructure design and construction used in BIM.	10	L2	CO4

		OR			
Q.8	a.	Define IBMS and necessity of IBMS.	10	L1	CO4
	b.	Mention the advantages of IBMS and what are the types of IBMS.	10	L1	CO4
		Module – 5			
Q.9	a.	Explain briefly the historical development of 3D printing.	10	L2	CO5
	b.	Explain briefly classification of 3D printing.	10	L2	CO5
		OR			
Q.10	a.	List the advantages and application of 3D printing.	10	L1	CO5
	b.	Explain the process chain involved in 3D printing process.	10	L2	CO5

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