USN | | | | | | | | | | BETCK105A/ BETCKA105

First Semester B.E./B.Tech. Degree Examination, June/July 2024
Smart Materials and Systems

Time: 3 hrs.　　　　　　　　　　　　　　　　　　　　　Max. Marks: 100

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

			M	L	C
Module – 1					
Q.1	a.	Discuss in detail the significance of Honey comb structure in composites.	10	L2	CO1
	b.	Enumerate the advantages, disadvantages and applications of Nanomaterials.	10	L2	CO1
OR					
Q.2	a.	Explain in detail the different properties of polymers.	10	L2	CO1
	b.	Describe the importance of sustainable by products in detail for engineering applications.	10	L2	CO1
Module – 2					
Q.3	a.	How prefabricated building components are made and list its benefits.	10	L2	CO2
	b.	Discuss in detail the benefits of modular co-ordination.	10	L2	CO2
OR					
Q.4	a.	Explain the different levels of standardization in detail.	10	L2	CO2
	b.	Discuss in detail the transportation and installation of prefabricated building components.	10	L2	CO2
Module – 3					
Q.5	a.	Define smart material and explain the principle of piezoelectricity.	10	L2	CO3
	b.	Explain the piezo electric sensors and strain gauges for engineering application.	10	L2	CO3
OR					
Q.6	a.	Discuss in detail the different operational modes of piezo-electrical materials.	10	L2	CO3
	b.	Explain in detail the advantages, disadvantages and applications of smart materials.	10	L2	CO3
Module – 4					
Q.7	a.	Discuss in brief the Necessity of BIM and list out the applications in building design.	10	L2	CO4
	b.	Explain in detail the different types of BIM in building design.	10	L2	CO4

		OR			
Q.8	a.	What is the importance of BIM and list out the advantages and limitations?	10	L2	CO2
	b.	Explain in detail the various types of IBMS.	10	L2	CO4
		Module – 5			
Q.9	a.	What is 3D-printing and list out the different techniques of 3D printing and explain any one of them.	10	L2	CO5
	b.	Explain the advantages and applications of 3D printing over conventional manufacturing.	10	L2	CO5
		OR			
Q.10	a.	Explain in detail the following : i) Data Generation ii) Data conversion with respect to 3D-printing.	10	L2	CO5
	b.	Explain the following : i) 3D modeling advantages ii) Post processing in 3D printing.	10	L2	CO5

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