

U.S.N.

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

September / October 2024 Supplementary Examinations**Programme: B.E.****Branch: Electrical and Electronics Engineering****Course Code: 19EE7CE2EM****Course: Electrical and Electronics Engineering Materials****Semester: VII****Duration: 3 hrs.****Max Marks: 100**

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.			UNIT - I	CO	PO	Marks
	1	a)	Discuss briefly the classification of engineering materials with examples.	CO1	PO1	10
		b)	The concept of stability is easily understood by considering a mechanical analog. Explain the stability and metastability with the help of a tilting rectangular block.	CO1	PO1	10
			UNIT - II			
	2	a)	Define the terms ionization potential, electron affinity and electro-negativity.	CO2	PO1	06
		b)	Distinguish ionic and covalent solids.	CO2	PO1	06
		c)	Discuss the structure of silica and silicates.	CO2	PO1	08
			OR			
	3	a)	Define bond energy and bond length? What is their significance?	CO2	PO1	06
		b)	Draw the following planes and directions inside a cubic unit cell. (i) $(0\ 0\ \bar{1})$ (ii) (011) (iii) $[\bar{1}\ 1\ 0]$ (iv) $[0\ 11]$	CO2	PO1	06
		c)	Summarize ionic and covalent solids.	CO2	PO1	08
			UNIT - III			
	4	a)	Explain free electron theory.	CO3	PO2	08
		b)	What are superconductors? Describe type-I and type-II superconductors.	CO3	PO2	08
		c)	Resistivity of materials are important from the engineering point of view. Give the classification with examples.	CO3	PO2	04
			UNIT - IV			
	5	a)	What are intrinsic semiconductors? Obtain an expression for the density of carriers in an intrinsic semiconductor.	CO3	PO2	06

	b)	Discuss briefly the various steps involved in the fabrication of integrated circuits.	CO3	PO2	10
	c)	Explain working of a photoconductor and mention applications.	CO3	PO2	04
		UNIT - V			
6	a)	Explain the terminology and classification of magnetic materials.	CO4	PO3	10
	b)	Explain the method of measurement of electrical conductivity in materials.	CO4	PO3	10
		OR			
7	a)	Write short note on soft and hard magnetic materials.	CO4	PO3	10
	b)	Briefly discuss the properties of ferromagnetic and antiferromagnetic materials.	CO4	PO3	10
