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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.

UNIT - I			CO	PO	Marks
1	a)	Discuss briefly the classification of engineering materials with examples.	<i>CO1</i>	<i>PO1</i>	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.	<i>CO1</i>	<i>PO1</i>	10
UNIT - II					
2	a)	Define the terms ionization potential, electron affinity and electronegativity.	<i>CO2</i>	<i>PO1</i>	06
	b)	Distinguish ionic and covalent solids.	<i>CO2</i>	<i>PO1</i>	06
	c)	Discuss the structure of silica and silicates.	<i>CO2</i>	<i>PO1</i>	08
OR					
3	a)	Define bond energy and bond length? What is their significance?	<i>CO2</i>	<i>PO1</i>	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) $[0\ 11]$	<i>CO2</i>	<i>PO1</i>	06
	c)	Summarize ionic and covalent solids.	<i>CO2</i>	<i>PO1</i>	08
UNIT - III					
4	a)	Explain free electron theory.	<i>CO3</i>	<i>PO2</i>	08
	b)	What are superconductors? Describe type-I and type-II superconductors.	<i>CO3</i>	<i>PO2</i>	08
	c)	Resistivity of materials are important from the engineering point of view. Give the classification with examples.	<i>CO3</i>	<i>PO2</i>	04
UNIT - IV					
5	a)	What are intrinsic semiconductors? Obtain an expression for the density of carriers in an intrinsic semiconductor.	<i>CO3</i>	<i>PO2</i>	06

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.

	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

SUPPLEMENTARY EXAMS 2024