Course Code/Name : **PH3256 – Physics for Information Science**
Regulation : **2021**

UPC – Student Planner

Slot	Unit .No	Name of the Unit	Questions	CO Mapping	Grade	
					A	B
1	**IV**	Optical Properties of Materials	1. Photocurrent in P-N diode & Solar Cell(8+8) 2. LED & OLED(8+8) 3. Laser diode(8) 4. Optical data storage(8) 5. Absorption emission and scattering of light in metals, insulators, semiconductors 6. Carrier generation and recombination	C110.4	1 2 3 4 - -	 - 5 6
2	**I**	Electrical Properties of Materials	1. Electrical & Thermal conductivity & Wiedemann Franz law(16) 2. Density of energy states(16) 3. Effective mass of an electron(8) 4. Tight binding approximation(8) 5. Fermi Dirac statistics(8) 6. Particle in 3D box(16) 7. Energy bands in solids(8)	C103.1	1 2 3 4 5 - -	 6 7
3	**V**	Nano Devices & Quantum Computing	1. Quantum structures (10) 2. Coulomb blockade & Single electron transistor(12) 3. Resonant tunneling diode(12) 4. Quantum gates(8) 5. Bloch sphere(8) 6. Quantum system for information & Quantum cellular automata(6+6) 7. Advantages of quantum computing over classical computing, classical bits and quantum bits(6)	C110.5	1 2 3 4 5 - -	 6 7
4	**III**	Magnetic properties of Materials	1. Domain theory of ferromagnetism with 4 types of energy(16) 2. Hysteresis curve & Domain Explanation(12) 3. Soft and hard magnetic materials(8) 4. Exchange interaction(8) 5. Magnetic hard disc(8) 6. Classification of magnetic materials(8)	C110.3	1 2 3 4 5 -	 6
5	**II**	Semiconductor Physics	1. Intrinsic Carrier Concentration(16) 2. Carrier Concentration of N-Type Semiconductor(16) 3. Carrier Concentration of P-Type Semiconductor(16) 4. Hall Effect(16) 5. Schottky Diode & Ohmic Contacts(8+8)	C110.2	1 2 3 4 5	

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UPC – Questions

Unit .No	Name of the Unit	Questions	CO Mapping	Grade	
				A	B
I	Electrical Properties of Materials	1. Electrical & Thermal conductivity & Wiedemann Franz law(16)	C110.1	1	
		2. Density of energy states(16)		2	
		3. Effective mass of an electron(8)		3	
		4. Tight binding approximation(8)		4	
		5. Fermi Dirac statistics(8)		5	
		6. Particle in 3D box(16)		-	6
		7. Energy bands in solids(8)		-	7
II	Semiconductor Physics	1. Intrinsic Carrier Concentration(16)	C103.2	1	
		2. Carrier Concentration of N-Type Semiconductor(16)		2	
		3. Carrier Concentration of P-Type Semiconductor(16)		3	
		4. Hall Effect(16)		4	
		5. Schottky Diode & Ohmic Contacts(8+8)		5	
III	Magnetic properties of Materials	1. Domain theory of ferromagnetism with 4 types of energy(16)	C110.3	1	
		2. Hysteresis curve & Domain Explanation(12)		2	
		3. Soft and hard magnetic materials(8)		3	
		4. Exchange interaction(8)		4	
		5. Magnetic hard disc(8)		5	
		6. Classification of magnetic materials(8)		-	6
IV	Optical Properties of Materials	1. Photocurrent in P-N diode & Solar Cell(8+8)	C110.4	1	
		2. LED & OLED(8+8)		2	
		3. Laser diode(8)		3	
		4. Optical data storage(8)		4	-
		5. Absorption emission and scattering of light in metals, insulators, semiconductors		-	5
		6. Carrier generation and recombination		-	6
V	Nano Devices & Quantum Computing	1. Quantum structures (10)	C110.5	1	
		2. Coulomb blockade & Single electron transistor(12)		2	
		3. Resonant tunneling diode(12)		3	
		4. Quantum gates(8)		4	
		5. Bloch sphere(8)		5	
		6. Quantum system for information & Quantum cellular automata(6+6)		-	6
		7. Advantages of quantum computing over classical computing, classical bits and quantum bits(6)		-	7

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