## SSLC, HSE, DIPLOMA, B.E/B.TECH, M.E/M.TECH, MBA, MCA

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	Reg. No.:	
	Question Paper Code: 95	2074
B.E./B.Tech. I	DEGREE EXAMINATIONS, NOVEMBI Second Semester Civil Engineering PH 6251 – ENGINEERING PHYSIC (Common to all Branches) (Regulation 2013)	
Time : Three Hour	8	Maximum: 100 Marks
	Answer ALL questions.	
	PART – A	(10×2=20 Marks)
1. Draw qualita temperature	atively Fermi-Dirac distribution function $\Gamma > 0$ K.	n at T = 0 K and at a
2. Calculate the area 5 mm <sup>2</sup> c 8.5 × 10 <sup>28</sup> /m <sup>3</sup>	drift velocity of conduction electrons in a copp carrying a current of 5 A. Conduction elect	per wire of cross-sectional cron density in copper is
3. What are ele	mental semiconductors and compound sem	iconductors?
	of tomporature the conductivity of a semicor	nductor increases. Why?

- electromagnet? Give examples.

  6. What is London penetration depth?
- 7. Define the terms dielectric susceptibility and polarizability.
- 8. In what way do ferroelectric materials differ from ordinary dielectric?

5. What are the properties required for a material to be suitable for making

- 9. What are shape memory alloys?
- 10. Mention any four methods to produce nano materials.

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PART – B (5×16:	=80 Marks)
<ol> <li>a) i) On the basis of free electron theory, derive an expression for electron conductivity of metals.</li> </ol>	ical
ii) What are the drawbacks of classical free electron theory of metals (OR)	(12)
b) i) Explain the concept of density of energy states. Derive an expression density of energy states.	on of
ii) Find the expression for carrier concentration in metals.	(12)
<ol> <li>a) Explain the electrical properties of an intrinsic semiconductor based on band Derive an expression for electron density in the conduction band and expla how it changes with temperature.</li> </ol>	theory.
(OR)	(10)
<ul> <li>b) Derive an expression for Fermi energy level in a n-type semicond Discuss the variation the Fermi level with temperature along with gray representation and show that n-type semiconductor behaves as an intrasemiconductor at high temperature.</li> <li>3. a) i) Explain the classification of motor is level.</li> </ul>	phical rinsic (16)
<ol> <li>a) i) Explain the classification of materials based on magnetic behaviour examples.</li> </ol>	
ii) What type of magnetic materials are used in magnetic tapes for data storage?	
(OR)	(4)
b) i) Explain the terms critical temperature, critical magnetic field and critical current density and their significance for superconductors.	HOUSE.
ii) Explain the interaction of type-I and type-II superconductors with external magnetic field.	(8)
magnetic neid.	(8)
	*

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11	HANNANA -	-3-	3	2074
1	materials		on in ionic crystals and polar	(12)
	ii) The atomic v	nic polarizability of sulph	hur are $32$ and $2080  \mathrm{kgm^{-3}}$ respectivel nur atom is $3.28 \times 10^{-40}  \mathrm{F m^2}$ . Solid ulate its dielectric constant.	y. (4)
		(OR)		
	b) i) Explain in transform	n detail the use of dielectr er cores.	ric materials in capacitors and	(12)
	ii) Explain di	ielectric loss and find an	expression for dielectric power loss.	(4)
		allic glasses? How are they	y prepared? Explain their use as	(16)
		(OR)		
	b) Evalain bion	naterial and its application	ons in the field of medicine.	(16)
	b) Explain bless	944		
i			- The second provided by the second provided	