Seat No.: _____

Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

B.E. Sem-II [All Branch] examination June 2009

U	ect cod 08/06/2	e: 110011 Subject Name: Physics 2009 Time: 10:30am-1:00pm	
Instr	uction	IS: Total Marks: 70	
	1. Att	tempt all questions.	
		ike suitable assumptions wherever necessary.	
		gures to the right indicate full marks.	
Q.1	(a)	List and explain the characteristics of musical sound.	03
	(b)	Explain factor affecting acoustics of the building.	03
	(c)	Properly explain the advantage of the fiber optics.	03
	(d)	How properties of semi conducting materials are differed From	03
		conducting materials?	
	(e)	List the application of the LASER.	02
Q.2	(a)	Explain the arrangement of determine the velocity of ultrasonic	07
		Waves using required figures. Also explain the application of the	
	/L-\	ultrasonic.	
	(b)	Explain & derived the relation between the inter planar distance and	07
		cube edge.	
	(b)	What is Einstein coefficient? Derived the relation between the	07
	(D)	Einstein coefficient. Also give the difference between stimulated	U1
		Emission.	
Q.3	(a)	A rectangular semiconductor specimen of thickness 1 mm place the	05
	()	magnetic field of flux density 0.5 Wb/m ² . Current of 1.5 mA is	
		flowing through specimen in one direction. Calculate resulting hall	
		voltage. Here Hall coefficient of the material is 1×10^{-2} M ³ /C.	
	(b)	Explain the classical free electron theory of metal.	05
	(c)	Give the comparison of classI and classII super conductors.	04
		OR	
Q.3	(a)	Calculate the energy gap in Ge when it is transparent to radiation of	05
	(1.)	wavelength of 12000A [h= $6.625 \times 10^{-34} \text{ J C} = 3 \times 10^8 \text{ m/s}$].	
		Give the application of the super conductor.	04
0.4	(c)	Give the understanding of Thermal conductivity.	05 05
Q.4	(a)	Calculate the electrical conductivity of copper. Given atomic weight, density and relaxation time as 63.5, 8.9×10 ³ Kgm ⁻³ and 2.48×10 ⁻¹⁴ S	05
		respectively.	
	(b)	Give the difference between simple, zener, and varactor diode.	05
	(c)	Explain the hall effect.	04
	(-)	OR	•
Q.4	(a)	Calculate the change in wavelength of x-ray photon when it is	05
	()	scattered through an angle of 90^{0} by a free electron.	
	(b)	Give the classification of solids into metals, semiconductor, insulator	05
		on the basis of energy band theory.	
	(c)	Explain pulse echo system.	04
Q.5	(a)	List the various methods of Non Destructive testing and explainTwo	06
		of Them in details.	
	(b)	What is biomaterial? List them.	04
	(c)	What is dielectric loss? explain in details.	04
0 F	(0)	OR	07
Q.5	(a)	What is super conducting material? List the properties of super	07
	(b)	conducting materials and explain each in detail. What is nano technology? List the application of Nano technology.	04
	(c)	Explain the principal of pseudo elasticity.	03
	(-)	r ·· rr · r - r	