

15EC551

Visvesvaraya Technological University, Belagavi

MODEL QUESTION PAPER II5th Semester, B.E (CBCS) EC/TC**Course: 15EC551- NANO ELECTRONICS****Time: 3 Hours****Max. Marks: 80****Note: (i) Answer Five full questions selecting any one full question from each Module.****(ii) Question on a topic of a Module may appear in either its 1st or 2nd question.**

Module 1			
1	a	Demonstrate advantage and disadvantage of Top Down and Bottom up approach with an example for each.	10M
	b	Define Moore's law and connect the law to the continued miniaturization in the electronics today.	6M
OR			
2	a	Deduce the equation for London Dispersion forces.	8M
	b	What is meant by Vander waals and Ionic Banding? Write down the expression for Lenard - Jones Potential.	8M
Module 2			
3	a	Explain the Quantum Confinement in Semiconductor Nanostructures.	8M
	b	Illustrate the single Electron Transistor with a neat sketch.	8M
OR			
4	a	Define Braggs Law. Explain the working principle of X-ray Diffractometer with a neat sketch.	10M
	b	Elaborate the scanning probe microscopy principles with a neat sketch.	6M
Module 3			
5	a	Discuss the Photolithography technique with a neat sketch.	8M
	b	How to synthesis colloidal Quantum dots using e-beam lithography? Explain.	8M
OR			
6	a	Demonstrate the Electron transport without scattering in Semiconductor nano structures.	8M
	b	Deduce the equation for Quantum hall effect.	8M
Module 4			
7	a	Design experiment to synthesis Carbon nanotubes using Chemical Vapor deposition technique and discuss.	10M
	b	Classify different types of Carbon nano tubes and evaluate their properties.	6M
OR			
8	a	Discuss the significance of multiwall carbon nano tubes in different applications.	8M
	b	How to synthesis Carbon clusters using chemical methods? Explain.	8M
Module 5			
9	a	Describe the working principle of Quantum cascade lasers with a neat sketch.	8M

	b	Explain the working principle of Injection lasers and its applications.	8M
OR			
10	a	Give an example of Nano sensors based on Quantum size effects.	8M
	b	Describe briefly Electrochemical sensors with an example.	8M