

Reg.No. _____



Karunya UNIVERSITY

(Karunya Institute of Technology & Sciences)
(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

End Semester Examination – Nov/Dec – 2016

Code : 14EC2075
Sub. Name : NANO ELECTRONICS

Semester : 2016-17 ODD
Duration : 3hrs
Max. marks : 100

ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)

Q. No.	Sub Div.	Questions	Course Outcome	Marks
1.	a.	Write schrodinger wave equation for electron.	CO1	4
	b.	Explain different types of transistors based on leakage current control and explain its operation detail.	CO1	16
(OR)				
2.	a.	List out the electrical parameters involved in nanodevice analysis.	CO1	4
	b.	Discuss the various types of physical fundamentals in nanoelctronics and also explain the limits of integrated electronics?	CO1	16
3.	a.	Why MOSFET is called a field effect transistor?	CO1	4
	b.	Discuss in detail about tunnel effect and explain the tunneling process with an example.	CO1	16
(OR)				
4.	a.	What is mean by vertical MOSFET? Explain the same in detail?	CO1	4
	b.	Explain the operation of resonant tunneling diode in detail with relevant diagrams?	CO1	16
5.	a.	Differentiate between quantum dot and quantum wire.	CO2	4
	b.	Define Electron spin Transistors? Explain the operation of the spin transistor in detail.	CO3	16
(OR)				
6.	a.	List various types of quantum structures with different dimensions.	CO3	4
	b.	Explain various types of optoelectronic integrated circuits with its operational principles.	CO3	16
7.	a.	What is mean OEIC and list few applications of OEIC?	CO2	4
	b.	Explain the operation of multigate transistor with neat diagram?	CO2	16
(OR)				
8.	a.	List the applications of integrated optoelectronics	CO3	4
	b.	Draw the various types of molecular memory structure and explain its operation in detail.	CO3	16
<u>Compulsory:</u>				
9.	a.	Write the steps involved in the synthesis of carbon nanotubes?.	CO2	4
	b.	With a neat sketch explain the working principle of CNT Field effect transistors?	CO2	16

Course Outcome:

CO1: The students will understand the concepts of nano regime such as coulomb blockade , electron tunnelling and the necessity of Nanodevices.

CO 2: They will know the domains in which nanodevices play a major role and are inevitable.

CO3: They would be able to widen their knowledge about spintronic devices.

ALL THE BEST