B.E. (Electronics Engineering) Eighth Semester (C.B.S.)

Elective-II : Nanotechnology

P. Pages : 2 **NRT/KS/19/3635**

Time : Three Hours * 0 7 8 8 * Max. Marks : 80

Notes :
1. All questions carry marks as indicated.
2. Solve Question 1 OR Questions No. 2.
3. Solve Question 3 OR Questions No. 4.
4. Solve Question 5 OR Questions No. 6.
5. Solve Question 7 OR Questions No. 8.
6. Solve Question 9 OR Questions No. 10.
7. Solve Question 11 OR Questions No. 12.
8. Assume suitable data whenever necessary.
9. Illustrate your answers whenever necessary with the help of neat sketches.

1. a) Explain scanning electron microscope with neat diagram. **6**

b) Discuss mechanical methods of Lithography. 7

OR

2. a) Give brief description about tools to measure nanostructures. 7

b) Discuss different applications of nanotechnology in detail. **6**

3. a) What are the types of nonvolatile memory? Explain floating gate in MOSFET. 7

b) Explain flash memory development with proper structure. 7

OR

4. a) Explain DIP - PEN lithography. 7

b) Draw Nanocrystal array based memory and explain Si-Nanocrystal based MOSFET. 7

5. a) Write a short note on carbon nanotubes and applications with diagram. 7

b) Explain probability clouds for electrons in small transistors with diagram. 7

OR

6. a) Explain quantum wells, quantum wires and quantum dots with diagram. 7

b) Explain Laser evaporation method for CNT. 7

7. a) Write a short note on nanoimprint lithography. **6**

b) How GEARS are made with benzene molecules and CNT? Explain in detail. 7

OR

8.	a)	Discuss molecular switch using GOLD electrode.	**7**
	b)	Explain how single walled carbon Nanotube can be used to a cantilever arm of an atomic force microscope.	**6**
9.	a)	Discuss 'Particle in a box' model.	**6**
	b)	Write short notes on different Nano sensors.	**7**

OR

10.	a)	Explain electrochemical sensors with neat diagram.	**7**
	b)	Discuss cross bar structure for storing data.	**6**
11.	a)	How Nano arrays are used as cross bars for 0's and 1's and explain addressing with the help of six nanowires.	**7**
	b)	Write a note on Biomedical nanoelectronics.	**6**

OR

12. Write short notes on **any two** **13**

a) Electronic Nose.

b) Applications of Nanotechnology in advanced communication.

c) Nano CAD and Nano Bricks

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