

Total No. of Questions : 8]

SEAT No. :

P3630

[4959]-1119

[Total No. of Pages : 2

B.E. (Electronics)

b-NANO ELECTRONICS AND MEMS

(2012 Course End Sem.) (Elective-IV) (Semester-II)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8.*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Figures to the right indicates full marks.*
- 4) *Assume suitable data, if necessary.*

- Q1)** a) Explain fundamental science behind Nano technology. [7]
b) Differentiate between nanoscale material and macroscale material. [7]
c) Explain applications of Nanoelectronics as a sensor material with suitable example. [6]

OR

- Q2)** a) Justify nanotechnology will change the world. [7]
b) Write electrical and mechanical properties of CNTs. [7]
c) Explain biomedical applications of Nanoelectronics. [6]

- Q3)** a) What are scaling laws of miniaturization? Explain with example scaling law in geometry of a MEMS Device. [9]
b) Explain in detail wet etching process in MEMS fabrication. [9]

OR

- Q4)** a) Write general desirable characteristics of MEMS. [9]
b) Explain following micro machining technique with neat diagram [9]
i) Sputtering.

P.T.O.

Q5) a) Explain concept of sliding mode control. **[8]**

b) What are different material which are used in MEMS. **[8]**

OR

Q6) a) Justify “Silicon-an ideal substrate material for MEMS”. **[8]**

b) Compare GaAs Vs silicon. **[8]**

Q7) a) What are the benefits of MEMS in medical applications. **[8]**

b) Write a short note on chemical sensors. **[8]**

OR

Q8) a) What are the applications of a portable blood analyzer? Explain it in brief. **[8]**

b) Write a short note on gyroscope. **[8]**

