

Total No. of Questions : 10]

SEAT No. :

P3537

[Total No. of Pages : 2

[4959] - 1211

**B.E. Instrumentation & Control
Smart Materials and System
(2012 Pattern) (Semester-II)**

Time : 2.30 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, Q9 or Q10*
- 2) *Neat diagrams must be drawn whenever necessary.*
- 3) *Figures to the right side indicate full marks.*
- 4) *Assume Suitable data if necessary*

Q1) a) Compare advantages of smart sensor over Conventional sensor. [5]

b) Explain in detail what smart system is. [5]

OR

Q2) a) list out different types of smart materials & its property. [5]

b) Explain in detail Ferro electricity of material. [5]

Q3) a) Explain in detail piezoelectricity property .list out the piezoelectric material [5]

b) Explain in detail wide scope of shape Memory alloy [5]

OR

Q4) a) Explain in detail wide scope of self-healing material [5]

b) Explain in detail about superconductor and list out its application [5]

P.T.O.

- Q5)** a) Explain with neat sketch working of Piezoresistive pressure sensor. [8]
b) Explain with neat sketch working of capacitive sensor. [8]

OR

- Q6)** a) Explain with neat sketch principle of Electro thermal Actuator. [8]
b) Explain with neat sketch Magnetostrictive actuator [8]

- Q7)** a) Explain with neat sketch different steps of lithography process. [8]
b) Explain with neat sketch etching process. [8]

OR

- Q8)** a) Explain with neat sketch physical vapor deposition technique. [8]
b) Explain with neat sketch Sputtering process used for material deposition. [8]

- Q9)** a) Explain with neat sketch the working of different elements of Lab on chip. [9]
b) Explain with neat sketch the working of Air bag control used in automotive. [9]

OR

- Q10)** a) Explain with neat sketch the working dosing system in health care. [9]
b) What are the advantages of Lab on chip. Also mention the applications of lab on chip. [9]

