

3012-11.

(REVISED COURSE)

RK-4710

(3 Hours)

[Total Marks : 100

- ∴ (1) Question No. 1 is **compulsory**.
(2) Attempt any **four** questions out of remaining **six** questions.
(3) **Figures** to the **right** indicate **full** marks.
(4) Assume **additional** data wherever **necessary**.

1. (a) List materials used for MEMS and give any five properties of silicon. (5)
(b) Compare PVD and CVD. (5)
(c) Draw and explain block diagram of Biosensor. (5)
(d) What is PCR? Write all the steps involved in PCR. (5)
2. (a) Define surface micromachining. Explain in detail all the process steps involved. (10)
(b) Explain fabrication process of pressure sensor using bulk micromachining with neat diagrams. (10)
3. (a) Explain any two methods of doping in detail. (10)
(b) What is photolithography? Give all fabrication steps with neat sketches. (10)
4. (a) What is the difference between IC packaging and MEMS packaging. Explain MEMS packaging in detail. (10)
(b) Give the techniques used in Nanolithography. Explain any one in detail. (10)
5. (a) What is CVD? Explain any two techniques of CVD in detail. (10)
(b) Define LIGA. Explain the steps involved with diagrams. (10)
6. (a) List the drug delivery systems with advantages. Explain any one in detail. (10)
(b) What is softlithography? Explain microcontact printing in detail. (10)
7. Write short notes on (**any three**) of the following: (20)
(a) Microneedles (b) Micropumps
(c) Implantable device (any one) (d) μ - TAS detection techniques
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