Total No. of Questions : 12]

SEAT No. :

P3692

[Total No. of Pages : 3

[4759]-119
B.E. (Electronics)
SYSTEM ON CHIP
(2008 Course) (Semester-I) (Elective-II) (404205)

Time : 3 Hours] *[Max. Marks : 100*

Instructions to the candidates:

1) ***Answer 3 questions from Section-I and 3 questions from Section-II.***
2) ***Answers to the two sections should be written in separate books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right indicate full marks.***
5) ***Use of electronic pocket calculator is allowed.***
6) ***Assume suitable data, if necessary.***

SECTION-I

Q1) a) What are the concepts of MEMS? Explain the working principles and applications of MEMS. **[8]**

b) What are the types of mechanical transducers? Explain the construction and working principle of gyroscopes. **[8]**

OR

Q2) a) Explain the following Processes: **[8]**

i) Lithography.

ii) CVD.

b) Explain the working principles of transconduction. What are the types of pressure sensors. **[8]**

Q3) a) Explain following control techniques used in MEMS, **[8]**

i) Analog Control.

ii) Digital Control.

b) Write short note on silicon piezoelectric crystal with respect to- **[8]**

i) Crystal mode.

ii) Piezoelectric materials.

iii) Deformation modes and operation.

OR

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Q4) a) What are the material properties of Silicon and Gallium arsenide. List out the differences in material properties of both the materials. **[8]**

b) Explain the concept of- **[8]**

i) Mobility

ii) Resistivity in context to Piezo crystal.

Q5) a) What is thermoresistor? Explain in detail **[10]**

i) Metal Film Thermoresistor.

ii) Semiconducting Thermoresistor.

b) Explain working principal of biosensor for measurement of blood Glucose concentration in a patient. **[8]**

OR

Q6) a) Write short note on, **[10]**

i) Cellular Biology.

ii) Cell based Biosensors.

b) With respect to Transconduction principle, Fabrication and Applications explain Molecule based Biosensors. **[8]**

SECTION-II

Q7) a) What do you mean by compilation? Explain the compilation techniques used in System on Chip applications. **[8]**

b) What are the differences between General Purpose Core and Reconfigurable System on Chip architectures? Explain each in detail. **[8]**

OR

Q8) a) Explain SoC architecture in detail. What are the advantages of SoC design over VLSI design. **[8]**

b) Write short note on: **[8]**

i) Design for Testability.

ii) Built in Self Test.

Q9) a) Explain the System on Chip design flow of FPGA and ASIC. What are the differences between both the design flows. **[8]**

b) Explain working principle of CVD? Which CVD process is used in MEMS and SoC fabrication. **[8]**

OR

Q10)a) What do you mean by synthesis in FPGA? What are the Pros and Cons of behavioral synthesis? **[8]**

b) What are the physical design automation tools used in System on Chip designs? Explain any one in detail. **[8]**

Q11)a) List and explain various packaging technologies used in Microsystem packaging. **[10]**

b) What are the concepts of Hardware and software co-design? Explain in detail Hardware and software co-design. **[8]**

OR

Q12)a) Write a short note on: **[10]**

i) Testable design.

ii) Testing of Microsystems.

b) What do you mean by mechanical Packaging? Explain in detail micro electronics micro system packaging. **[8]**

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