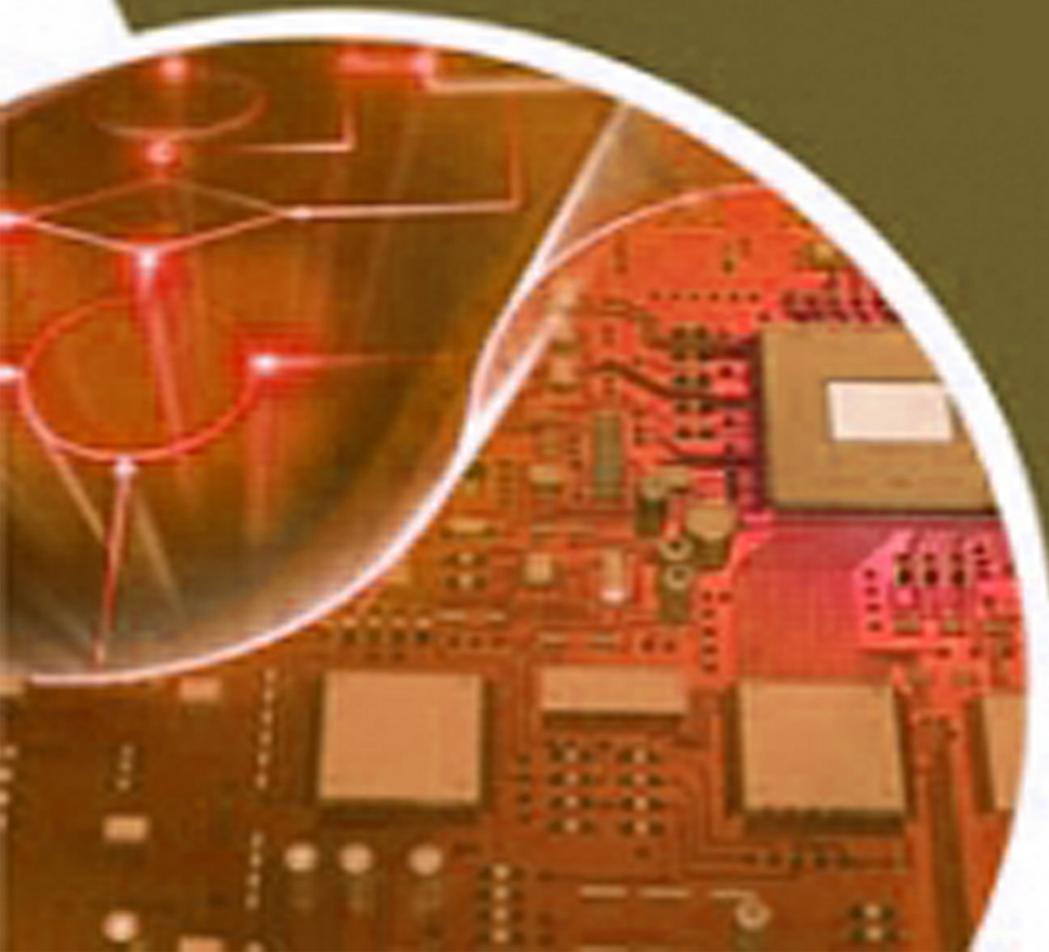


PUNE UNIVERSITY Question Papers

Bachelor of Engineering

Electronics & Telecommunication



UNIVERSITY OF PUNE

[4364]-542

B. E. (Electronics) Examination - 2013

VLSI Design

(2008 Pattern)

Total No. of Questions : 12

[Total No. of Printed Pages :3]

[Time : 3 Hours]

[Max. Marks : 100]

Instructions

- (1) Answer **any 3** questions from each section.
- (2) Answer **3** questions from Section I and Answer **3** questions from Section II
- (3) Answers to the **two sections** should be written in **separate answer-books**.
- (4) Neat diagrams must be drawn wherever necessary.
- (5) Black figures to the right indicate full marks.
- (6) Use of logarithmic tables, slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.
- (7) Assume suitable data, if necessary.

SECTION-I

Q1.

a) What is velocity saturation and hot electron effect?

What are their effects? [8]

b) Derive the expressions for Static and Dynamic power dissipations. Compare them. [8]

OR

Q2.

a) Design 4:1 multiplexer using Transmission gate and compare it with conventional method. [8]

b) Why is device sizing so important? Prove that $W_p=2.5W_n$ [8]

Q3.

- a) Explain read/write operation of 6T SRAM cell with the help of timing diagrams. [8]
- b) Differentiate between SRAM & DRAM technologies. [8]

OR

Q4.

- a) Draw the schematic of DRAM cell with the necessary peripherals and explain read/write cycles with the help of timing diagrams. [8]
- b) Give the classification of memory with the application each. [8]

Q5.

- a) Write a VHDL code for MOD 6 UP/DOWN counter. Also write test bench for it. [9]
- b) With suitable examples explain delta delay, inertial delay and transport delay. [9]

OR

Q6.

- a) Write a VHDL code for 4:16 DECODER using structural modeling. Also write test bench for it. [9]
- b) Explain the utilities of package declaration and package body. Give suitable example. [9]

SECTION II

Q7.

- a) Draw the block diagram of CPLD and explain in detail its architecture. [8]
- b) Differentiate between FPGA & CPLD. [8]

(2)

OR

Q8.

- a) Draw the block diagram of FPGA and list its specifications. [8]
- b) Explain how half adder logic gets implemented in FPGA and CPLD differently. Explain with suitable schematic [8]

Q9.

- a) Explain with block diagrams: Full & Partial Scan path arrangements. [8]
- b) What are the different fault models? Explain in detail. [8]

OR

Q10.

- a) What is the need of design for testability? With schematic explain different Faults. [8]
- b) What is meta-stability? What are the solutions? Draw the necessary schematic. [8]

Q11.

- a) What are the challenges in routing? Explain global routing. [9]
- b) Draw and explain the off chip connectivity. Why is it so important? What are the techniques? [9]

OR

Q12. Write short notes on the following: [18]

- a) Power distribution and optimization.
- b) Two phase clocking and clock distribution.

UNIVERSITY OF PUNE

[4364]-551

B. E. (Electronic Engineering) Examination - 2013

Robotics & Industrial Automation

(2008 Course) (Elective-IV)

[Total No. of Questions: 12]

[Total No. of Printed Pages :3]

[Time : 3 Hours]

[Max. Marks : 100]

Instructions :

- (1) Answer any 3 question from each section.
- (2) Answers to the **two sections** should be written in **separate answer-books**.
- (3) Neat diagram must be drawn wherever necessary.
- (4) Figures to the right indicate full marks.
- (5) Use of logarithmic tables, slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.
- (6) Assume suitable data, if necessary.

SECTION-I

Q1	A	Explain the term Work envelop & Work Volume For the following types of robot.	
	1	Cartesian robot	
	2	Cylindrical robot	
	3	Spherical robot	
		Explain the significance of these terms with respect to industrial applications.	10
	B	Explain six degree of freedom associated with the robot?	8
OR			
Q2	A	Draw neat sketch showing basic components of Robot system & Explain function of each. Explain the term Degree of freedom related to Robot.	10
	B	Discuss various specification of Robot system in details (any 2)?	8
Q3	A	Explain in details what do you mean by forward kinematics &	8

reserve kinematics?

B Define Dynamics? Explain the term robot arm dynamics explain advantages of Kane's method used for formulation of dynamical equations. 8

OR

Q4 A What is D-H representation? Discuss D-H Algorithm 8

B Write short note on Newton's equation, Euler's equation? 8

Q5 A List different types of sensors used in robotics? Explain any 2 with neat diagram 8

B Write short note on different types of grippers used in robotics? 8

OR

Q6 A Draw & explain four bar mechanism, rack & pinion mechanism? 8

B Write short note on (any-2) 8

1) Gyroscopes

2) Accelerometer

3) Proximity sensors

SECTION-II

Q7 A Draw the block diagram of fuzzy controller & explain. 8

B Discuss Jacobian for robotics 8

OR

Q8 A Explain with the block diagram different parameters involved in trajectory planning problem? Explain different Steps in Trajectory planning. 8

B Explain pick & place operation for robot? 8

Q9 A Discuss design consideration for vision sensors used in robotics? 8

B Explain industrial applications of vision controlled robotics system. 8

OR

Q10 A With the help of block diagram explain components of video analytics system. 8

B Write short notes on 8

1) Object recognition

2) Motion detection

Q11 Write short notes on 18

A Different feedback sensors used in robotics.

B Welding automation using robot.

C Inspection system using robot

OR

Q12 A Write short note on roll of robotics in industrial automation. 8

B Write short note on 10

1) Need of automation in industry & relation of automation with productivity.

2) Automatic part inspection using robot.

Instructions:

- 1 Answer 3 questions from Section I and 3 questions from Section II
- 2 Answers to the two sections should be written in separate answer-books.
- 3 Neat diagrams must be drawn wherever necessary.
- 4 Use of logarithmic tables, slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.
- 5 Assume suitable data, if necessary.

SECTION - I

- Q.1 A Define Soft Computing? Compare the performance of a computer and that of a biological neural network in terms of speed, processing, size and complexity, storage, fault tolerance and control mechanism. 8
- B Write short notes on- 8
- i) Hybrid Systems
 - ii) Neuro - Fuzzy and soft Computing characteristics
- OR**
- Q.2 A Describe in detail fuzzy sets and membership functions. What are different set theoretic operations. 8
- B Consider the fuzzy sets X and Y. find algebraic sum, algebraic product, bounded sum and bounded difference 8
- $$X = \left\{ \frac{0.1}{0} + \frac{0.2}{1} + \frac{0.3}{2} + \frac{0.4}{3} + \frac{0.5}{4} \right\}$$
- $$Y = \left\{ \frac{0.5}{0} + \frac{0.4}{1} + \frac{0.3}{2} + \frac{0.2}{3} + \frac{0.1}{4} \right\}$$
- Q.3 A Consider the fuzzy sets given by- 10
- $$A = \left\{ \frac{1}{low} + \frac{0.2}{medium} + \frac{0.5}{high} \right\}$$
- $$B = \left\{ \frac{0.9}{positive} + \frac{0.4}{zero} + \frac{0.9}{negative} \right\}$$
- Find the fuzzy relation R for the Cartesian product of A and B. $A \times B$
- If fuzzy set C given by-
- $$C = \left\{ \frac{0.1}{low} + \frac{0.2}{medium} + \frac{0.7}{high} \right\}$$
- Find fuzzy relation S between C and B using Cartesian product. $C \times B$ Also find relation between R and C using max-min composition.
- B Define and explain following terms for fuzzy sets- 6
- i) Crossover point
 - ii) Bandwidth

iii) Linguistic variable iv) open left, open right, closed.

OR

- Q. 4 A Explain any four fuzzy membership functions with their transfer characteristics. 8
- B What is Fuzzy Reasoning? Discuss in detail the fuzzy reasoning for 8
- i) Multiple rules with multiple antecedents
 - ii) Single rule with multiple antecedents

- Q. 5 A Draw and explain block diagram of fuzzy logic controller. What are the steps involved in designing a fuzzy logic controller. 10
- B What are the advantages of fuzzy logic controller over that of a conventional controller 8

OR

- Q. 6 A Write notes on (any three) 18
- i) Synthesis and validation of fuzzy controller
 - ii) Mamdani inference system
 - iii) Sugeno Model
 - iv) Tsukamoto model

SECTION II

- Q. 7 A State the various learning rules in neural networks. 8
- B Using Mc-Culloch-Pitts neuron, implement XOR function. (Consider binary data) 8

OR

- Q. 8 A Train a perceptron for learning binary AND gate function. 8
- B Explain the architecture and training algorithm used in Adaline 8

- Q. 9 A Explain the application of neural network in communication field. 8
- B Describe the self organizing map architecture and explain the Kohonen model. 8

OR

- Q. 10 A List the applications of artificial neural networks and explain any two in detail. 16

- Q. 11 A Explain the equivalence between ANFIS and RBFN with conditions. 8
- B Explain adaptive neuro fuzzy inference system (ANFIS) with architecture. 10

OR

- Q. 12 A Write short notes on (any three) 18
- i) Use of ANN in process control
 - ii) Hybrid learning algorithm
 - iii) Advantages of ANFIS over FIS
 - iv) Radial basis function network.

UNIVERSITY OF PUNE
[4364]-541
B. E. Examination - 2013
Electronics System Design
(2008 Course)

Total No. Of Questions: 12
[Time: 3 Hours]

[Total No. Of Printed Pages: 3]
[Max. Marks: 100]

Instructions:

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

SECTION-1

Q. 1. A) Explain the Pilot Production. Why it is necessary in Electronics Product design. (8)

B) State the criteria for selection of frequency bands requirements of Voice and multimedia application. (8)

OR

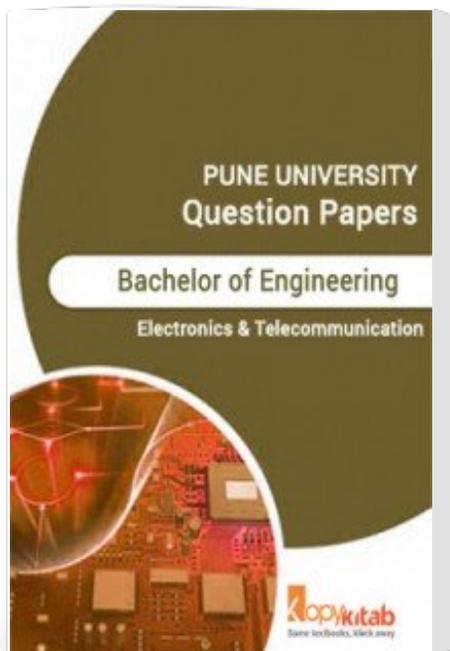
Q. 2. A) How will you increase the reliability of the system. Difference MTBT and MTTF (8)

B) Explain Industrial product design with the help of case study in detail Explain their classification. (8)

Q. 3. A) Explain different performance factor of DAC. (10)

B) Explain following ADC characteristic: (10)

Pune University Question Papers Electronics And Telecommunication



Publisher : Faculty Notes

Author : Faculty Notes

Type the URL : <http://www.kopykitab.com/product/3825>



Get this eBook