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(12ECM106E2)

M.TECH DEGREE EXAMINATIONS JUNE 2013

FIRST SEMESTER

Brach: ECE (DECS)

LOW POWER VLSI DESIGN : (ELECTIVE-I)

UNIT-I

1. (a) What are the various advantages and limitations of the Silicon–on-Insulator Technology?
   (b) Explain about shallow Trench Isolation (SIT) Technique.

(OR)

2. Describe the Low – Voltage, Low- power CMOS SOI process.

UNIT-II

3. (a) Describe the characteristics of Secondary MOS FET behavior.
   (b) Write notes on CMOS logic styles.

(OR)

4. (a) Explain Low power circuit Techniques?
   (b) Explain the concept "Power Dissipation" in Low Voltage Low Power VLSI CMOS circuit design

UNIT-III

5. Draw the circuit for common–Emitter Bi CMOS driver configuration and explain its characteristics.

(OR)

6. Explain about the characteristics of Bi CMOS
   (a) Circuits utilizing lateral p-n-p BJTs in PMOS structures.
   (b) Give the performance evaluation of merged Bi CMOS logic gates. How the weak points of conventional Bi CMOS logic gates are overcome by these circuits?

UNIT-IV

7. Explain the concepts: (a) Data Path (b) Register Structures

(OR)

8. (a) Define Multiplier & Design Parallel Multiplier by VLSI CMOS subsystem design.
   (b) Explain the concept Static RAM.

UNIT-V

9. (a). Explain the overview of Low Power VLSI design Methodology?
   (b). Why Low Power? Give the Applications of Low Power VLSI design.

(OR)

10. Write Notes on any TWO:
    a. Low Power Physical Design
    b. Gate Level Design
    c. Architecture Level Design

(12ECM103)

M.TECH DEGREE EXAMINATIONS, JUNE 2013

FIRST SEMESTER

BRANCH : ECE (DECS)

PAPER: EMBEDDED SYSTEM CONCEPTS

Time : 3 Hours

Max Marks :60

PART –A

Answer One question from each unit .Each Question Carries equal marks

UNIT-I

1. (a) Explain in detail about Embedded system design process with example
   (b) Write about the classification of embedded system.

(OR)

2. (a) Write about embedded software in a system
   (b) Write a short note on embedded system overview.

UNIT-II

3. (a) Explain about the networks for embedded systems
   (b) Explain about CPU bus

(OR)

4. (a) Write in detail about the interfacing of IEEE 488 bus
   (b) What are the characteristics of embedded computing applications?

UNIT-III

5. Write a short note on:
   (a) Interrupt Service Routine
   (b) Explain about Pipes

(OR)

6. (a) Explain about Round Robin Method
   (b) Explain about function queue scheduling.

UNIT-IV

7. (a) Write about embedded software development tools and a debugging technique.
   (b) What is meant by linker and explain its function with a schematic diagram.

8. (a) Write in detail about the architectural design of embedded software
   (b) Explain about the location of embedded software.

[P.T.O.]

UNIT-V

9. a)Describe about the ARM architecture
   b) Write a short on design of Telephone PBX

(OR)

10. a).Write about the system specifications of SHARC processor
    b) Write a short on water monitoring system.

M.TECH DEGREE EXAMINATION MAY 2013

FIRST SEMESTER

BRANCH ECE

PAPER : CODING THEORY & TECHNIQUES

Time : 3 hrs Max Marks : 60

UNIT – I

1. (a) Define average entropy and mutual entropy? How they are measured? Give its significance?

   (b) Distinguish between fixed length coding and variable length coding?

(OR)

2. (a) List out the properties of prefix codes?

   (b) Explain Huffman coding technique?

UNIT –II

3. Explain how encoding is implemented for linear block code?

(OR)

4. What is meant by syndrome testing? Discuss error detection and correction capability of linear block codes?

UNIT –III

5. (a) Estimate the probability of an undetected error for linear codes over a binary symmetric channel?

   (b) Explain weight enumerator with an example?

(OR)

6. (a) What is a perfect code ? Give any two applications of block codes?

   (b) Explain Mac-Williams identies?

UNIT – IV

7. (a) List out the structural properties of cyclic codes.

   (b) Design an encoder using (n-k) bit shift register?

(OR)

8. a) List out the structural properties of convolutional codes.

   b) Distinguish between Tree diagram and Trellis diagram?

UNIT – V

9. a) List out basic properties of Galois fields.

   b) Describe BCH codes?

(OR)

10 a) Explain stack sequential decoding algorithms?

   b) Give the application of Vitterbi and sequential decoding techniques?

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(12ECM105)

M.TECH. DEGREE EXAMINATION, JUNE 2013
FIRST SEMESTER
Branch: ECE (DECS)
DETECTION & ESTIMATION OF SIGNALS

Time: 3 Hours **Max. Marks: 60**

UNIT-I

1. (a). Explain the Neymen-Pearson criterion for detection of constant amplitude signals. Derive necessary relations.
   (b). A random variable X has density function defined by $fX(x) = 5e^{-5x}$ for $0 \leq x \leq \infty$ find E(X) and $P(1 \leq X \leq 5)$.

(OR)

2. Explain the procedure to detect the signal from the received signal which is afunction of unknown parameters.

UNIT-II

3. Explain Neyman Pearson criterion for RADAR and find detection probability in the presence of Gaussian noise.

(OR)

4. Describe about:
   (a) Vector observations
   (b) The general Gaussian problem.

UNIT-III

5. (a) Compare the linear and non-linear estimates.
   (b) Prove that conditional mean is the best estimate of the parameters in MAP estimates.

(OR)

6. a. Explain how ML estimator is used to estimate signal parameter 's'.
   b. Explain Matched filter detection of signals in additive white Gaussian noise.

UNIT-IV

7. Define the following terms with respect to estimators:
   (a) Bias (b) efficiency (c) sensitivity (d) uniform cost function

(OR)

8. a. Write a kalman filter algorithm for discrete time signals.
   b. What are the applications of kalman filter?

[P.T.O.]

UNIT-V

9. (a) Explain the concept of Sufficient Statistics.
   (b) Describe Exponential families of Distributions.

(OR)

10. Write short notes on the following
   (a) Maximum Likelihood Estimation.
   (b) Uniformly Minimum Variance Unbiased Estimation.

(12ECM101)

M.TECH DEGREE EXAMINATIONS JUNE 2013

FIRST SEMESTER

Branch: ECE (DECS)

DIGITAL SYSTEM DESIGN

UNIT-I

1.a) What are the basic building blocks of an ASM Chart ? Explain about these blocks.

b) Describe the Rules for State assignment. Give an example.

(OR)

2.a) Discuss in detail about reduction of State tables and State assignments.

UNIT-II

3.a) Describe some important features of an FPGA and a CPLD.

b) With an example, explain how an FPGA is useful in the design of a digital circuit.

(OR)

4.a) Explain about the following types of Faults.
i) Stuck at faults ii) Bridge faults iii) Temporary faults.

UNIT-III

5.a) Describe the algorithmic steps involved in PODEM.

b) Explain the procedure involved in D-Algorithm with an example.

(OR)

6.a) What are the different faults found in Combinational circuits ? How can they be categorized.

b) With an example, explain the Transition count testing method.

UNIT-IV

7. a) Distinguish between Mealy and Moore Machines.

b) Convert the following Mealy Machine into a corresponding Moore Machine.

Ps		
A	B,O	E,O
B	E,O	D,O
C	D,I	A,O
D	C,I	E,O
E	B,O	D,O

(OR)

8. Explain the Design of fault Detection experiment.

[P.T.O.]

UNIT-V

9. a) Describe various faults that may occur in PLAs.

b) Discuss briefly about Testable PLA design.

(OR)

10. a) Explain the different types of fault models and fault types in a PLA.

b) Define the Races and Cycles in Sequential circuits.

(12ECM102)

M.Tech DEGREE EXAMINATION JUNE 2013
FIRST SEMESTER
BRANCH: ECE
PAPER : ADVANCED DIGITAL SIGNAL PROCESSING

Time: 3 hours Max. Marks: 60

PART-A
Answer One question from each unit
Each Question carries equal marks
(Marks: 12x5=60 Marks)

UNIT-I

1. (a) Explain the significance of Discrete Fourier Transform.
   (b) Obtain the energy density spectrum of Discrete Time Sequence

OR

2. (a) Explain about Band limited Discrete Time signals
   (b) What is an LTI system? Obtain the frequency Response.

UNIT-II

3. (a) What is Linear Phase ? Explain the different types of Linear Phase Transfer Functions
   (b) Write short notes on Inverse Systems

OR

4. (a) Explain about Simple Digital Filter.
   (b) What do you mean by Algebraic Stability Test

UNIT-III

5. (a) Explain about Tunable IIR Digital Filter
   (b) Write Short notes on Polyphase Structures

OR

6. (a) With a neat sketch explain about IIR Tapped Cascade Lattice Structure
   (b) What is a Digital Sine-Cosine Generator

UNIT-IV

7. (a) Explain the significance of Fast DFT algorithms
   (b) Explain how DFT can be computed over a narrow Frequency Band

OR

8. (a) Explain chirp-Z Transform.
   (b) Bring out the disadvantages of DFT compared to FFT

[P.T.O.]

UNIT-V

9. (a) Explain about Bartlett and Welch Method

   (b) Obtain the relation between autocorrelation and model parameters

OR

10. (a) Explain Parametric methods for Power spectrum Estimation

    (b) What are the methods for Power Spectrum Estimation