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R-11/R-13

Code : 1G361

III B.Tech. II Semester Supplementary Examinations Nov/Dec 2016

VLSI Design

(*Electronics and Communication Engineering*)

Max. Marks: 70

Time: 03 Hours

Answer any five questions

All Questions carry equal marks (14 Marks each)

1. With neat sketches explain the fabrication process of p-well CMOS. 14M
2. Derive the $I_{ds} - V_{ds}$ relationship of MOS transistor in saturated and non-saturated regions 14M
3. Discuss in detail about scaling and derive scaling factors for various parameters 14M
4. Write short notes on
 - (a) Sheet resistance concept to MOS 7M
 - (b) Wiring capacitances 7M
5. Explain with neat sketches about
 - (a) Multipliers 7M
 - (b) Zero/ One detectors 7M
6. Discuss about the following in detail with neat diagrams
 - (a) CPLDs 7M
 - (b) PLAs 7M
7. Explain in detail about
 - (a) Design verification tools 7M
 - (b) Test principles 7M
8. Write short notes on the following
 - (a) Design strategies for test 7M
 - (b) Layout design for improved testability 7M

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Microwave Engineering

(Electronics and Communication Engineering)

Max. Marks: 70

Time: 03 Hours

Answer any five questions

All Questions carry equal marks (14 Marks each)

1. a) Prove that the rectangular waveguide is high pass filter. Define the terms cut-off frequency and cut-off wavelength. 7M
b) Show that the velocity of the wave in waveguides is a function of frequency. What is guide wavelength? 7M
2. a) What is the impact of skin effect on a micro strip line? 7M
b) Derive an expression for attenuation factor for ohmic skin loss. 7M
3. a) Describe and differentiate the E-plane tee and H-plane tee. How they are used to combine or divide the microwave power? 7M
b) Sketch a 4 port hybrid junction and justify that it is basically a 3 dB directional coupler. 7M
4. What is Faraday rotation? Explain the working of a ferrite circulator with neat sketches. How can it be used as an isolator? 14M
5. a) Explain the principle of operation of two cavity klystron amplifier and find an expression for the optimum length of the drift space. 10M
b) A two identical cavity klystron amplifier has the following parameters: Beam voltage is 1.2 KV, beam current is 40 mA, cavity gap is 1 mm, frequency is 8 GHz, drift region length is 3 Cm, and equivalent shunt resistance is 40 K . Find
 - I. Cavity gap transit time
 - II. Input voltage for maximum output voltage 4M
6. a) What are the salient features of TWT? How it is able to give large bandwidth. 6M
b) A TWT operates at $f = 3$ GHz. The slow wave structure has a pitch angle of 5° and the attenuation constant is 3 Np/m. Determine the propagation constant of the travelling wave in the tube. 8M
7. a) What are Gunn domains? Explain their formation using two valley model theory. 8M
b) Define parametric amplifier. What is their significance in the high frequency receivers? 6M
8. a) What is low VSWR and what is the range of high VSWR? Describe its measurement by using double minima method. 7M
b) Describe the measurement of frequency by Slotted line method. 7M

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III B.Tech. II Semester Supplementary Examinations Nov/Dec 2016

Digital and Data Communications*(Electronics & Communication Engineering)***Max. Marks: 70****Time: 03 Hours**Answer any **five** questions

All Questions carry equal marks (14 Marks each)

1. a) Explain the working of Delta Modulation and list its drawbacks. 7M
b) Draw the block diagram of Differential Pulse Code Modulation system and explain its working. 7M
2. a) Write in detail about M-ary FSK 6M
b) Explain the generation of DPSK signals with a neat block diagram. 8M
3. a) Derive the expression for the probability of error for the Matched filter. 7M
b) Explain non-coherent detection of FSK system. 7M
4. a) Five source messages are probable to appear as $m_1=0.4$, $m_2=0.2$, $m_3=0.2$, $m_4=0.1$ and $m_5=0.1$. Find i) Average code word length ii) Coding efficiency by using Huffman coding. 8M
b) Explain the trade-off between band width and signal to noise ratio. 6M
5. a) Explain about BCH codes. 6M
b) Design an encoder for (7, 4) cyclic code generated by $G(P) = P^3 + P + 1$. Find the code word if data word is i) 0101 and ii) 1100. 8M
6. a) List and explain different standards organizations for data communications. 7M
b) With neat sketches explain encapsulation and decapsulation in layered network architecture. 7M
7. a) Draw the OSI seven layer protocol hierarchy and list the functions of each layer. 8M
b) List and describe the basic network models. 6M
8. a) Explain about X.25 interface protocol. 7M
b) Explain about B-ISDN. 7M

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III B.Tech. II Semester Supplementary Examinations Nov/Dec 2016

Electronic Measurements and Instrumentation

(*Electronics and Communication Engineering*)

Max. Marks: 70

Time: 03 Hours

Answer any **five** questions

All Questions carry equal marks (14 Marks each)

1. a) How do we determine the performance of an instrument?
b) Explain about D' Arsonval galvanometer in detail and list out two applications of it.
2. a) Explain the basic principle of a digital voltmeter.
b) Explain with the help of circuit diagram the construction and working of a series type ohm meter.
3. a) Discuss briefly about operation of Logic Analyzer.
b) Explain in detail about the principle and operation of Arbitrary Wave Generator with the help of neat block diagram.
4. a) Differentiate between Dual trace CRO and Dual beam CRO.
b) Explain the concept of Lissajous figures.
5. a) How does the sampling oscilloscope increase the apparent frequency response of an oscilloscope?
b) (b) What is the relationship between the period of a waveform and its frequency?
How is an oscilloscope used to determine frequency?
6. a) Explain about various noise reduction techniques.
b) Explain how a Maxwell bridge can be used for measuring an unknown inductance.
7. a) Write short notes on LVDT and mention any two applications of its mechanism.
b) List three types of temperature transducers and describe the applications of each.
8. a) Explain about the X-Y recording procedure with a neat schematic diagram.
b) Write short notes on RS232 and USB.

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III B.Tech. II Semester Supplementary Examinations Nov/Dec 2016

Microprocessors and Interfacing

(Electronics and Communication Engineering)

Max. Marks: 70

Time: 03 Hours

Answer any **five** questions

All Questions carry equal marks (14 Marks each)

1. a) Explain the function of following registers 8086 microprocessor.
 - i. AX, BX, CX, DX
 - ii. CS, DS, SS, ES
 - iii. BP, SP, SS, ES
 - iv. IP and instruction queue. 8M
- b) With a neat pin diagram, explain the maximum mode operation of 8086. 6M
2. a) Discuss various branch instructions of 8086 microprocessor that are useful for relocation. 8M
- b) What is a procedure? Give an example to declare a procedure as near. Make this procedure as PUBLIC procedure. 6M
3. a) Describe the Memory mapped I/O Interfacing. 6M
- b) Explain about interfacing of a DAC with 8086 using 8255. 8M
4. a) With the help of basic cell, explain SRAM and DRAM. Discuss the advantages of the memories. 8M
- b) Explain need of DMA. Discuss in detail about DMA transfer method. 6M
5. a) Discuss the Interrupt structure of 8086. 6M
- b) Describe the 8259 PIC architecture and interfacing, cascading of interrupt controller and its importance. 8M
6. a) Specify handshaking signals and their functions if port A of 8255 is set-up as input port in mode 1. 20. .explain mode 0 and mode 1 of 8253. 6M
- b) Describe the Architecture and interfacing of 8279 with a neat block diagram. 8M
7. a) Discuss the types of serial communication. 6M
- b) Draw the circuit of TTL to RS232 and explain the necessity of this interface. 8M
8. a) Explain the concept of segmentation in 80386 processor. 8M
- b) Discuss the salient features of Pentium and Pentium pro processors. 6M
