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R-11

Code : 1G361

III B.Tech. II Semester Supplementary Examinations December 2015

VLSI Design

(Electronics & Communication Engineering)

Max. Marks: 70

Time: 03 Hours

Answer *any five* questions

All Questions carry equal marks (14 Marks each)

1. a) List out the processing steps involved in the manufacturing of an IC. 7M
b) With neat sketches explain BICMOS fabrication process. 7M
2. a) Derive an equation for I_{ds} of an n channel enhancement MOSFET operating in saturation region. 7M
b) Derive an equation for r_{ds} of an n channel enhancement MOSFET in linear region. 7M
3. What is stick diagram and explain about different symbols used for components in stick diagram. 14M
4. What are the main sources of delay through a single gate? Mention the two possible solutions for that delay and explain them with a neat diagram. 14M
5. a) Draw and explain circuit diagram of a one transistor with transistor capacitor dynamic RAM. 7M
b) Draw the schematic and logic diagram for a single bit adder and explain its operation with truth table 7M
6. a) Design an 8:1 multiplexer using dynamic CMOS NOR-NOR PLA implementation. 7M
b) Implement the 8:1 multiplexer using EPROM. 7M
7. Explain about the following EDA tools. 14M
 - i) Design rules verification
 - ii) Logout vs schematic verification
8. a) What are the objectives of BIST? 5M
b) Explain the working of signature analysis as one of the BIST technique. 9M

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III B.Tech. II Semester Supplementary Examinations December 2015

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 PCM transmission system 8M
 b) For a PCM system with the following parameters, determine (a) minimum sample rate, (b) minimum number of bits used in the PCM code, (c) resolution, and (d) quantization error.
 Maximum analog input frequency = 4 kHz
 Maximum decoded voltage at the receiver = ± 2.55 V
 Minimum dynamic range = 46 dB 6M
2. a) Draw neatly functional block diagram of QPSK modulator. For the QPSK modulator construct the truth table, phasor diagram, and constellation diagram 8M
 b) For a QPSK modulator with an input data rate (f_b) equal to 10 Mbps and a carrier frequency of 70 MHz, determine the minimum double-sided Nyquist bandwidth (f_N) and the baud. 6M
3. a) Discuss error performance of PSK systems. Draw the graph for error rates of 2, 4, 8 level PSK systems. 8M
 b) QPSK system parameters are: Carrier power = 10 pW Bit rate = 60 kbps
 Noise power = 120 pW Bandwidth = 120 kHz. Determine
 i. Carrier power in dBm.
 ii. Noise power in dBm.
 iii. Noise power density in dBm.
 iv. Energy per bit in dBJ.
 v. Carrier-to-noise power ratio in dB.
 vi. E_b/N_0 ratio. 6M
4. a) Explain Huffman encoding algorithm 6M
 b) Five symbols with their probability are shown in the table. Compute Entropy and codewords using Huffman algorithm

s0	0.4
s1	0.2
s2	0.2
s3	0.1
s4	0.1

8M
5. a) Explain Hamming code. 8M
 b) For a 12-bit data string of 101100010010, determine the number of Hamming bits required, arbitrarily place the Hamming bits into the data string, determine the logic condition of each Hamming bit, assume an arbitrary single-bit transmission error, and prove that the Hamming code will successfully detect the error. 6M
6. a) Explain OSI seven-layer protocol hierarchy. 10M
 b) Explain data transmission modes 4M
7. a) With suitable example, explain data terminal equipment and data communication equipment. 7M
 b) Draw neatly UART receiver block diagram 7M
8. a) Draw the structure of ATM cell for User-Network Interface and Network-Network Interface. Explain each field in the header. 10M
 b) Explain Primary Rate Interface of ISDN. 4M

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Code : 1G365

III B.Tech. II Semester Supplementary Examinations December 2015

Electronics Measurements and Instrumentation

(*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 static characteristics of instruments with examples? 7M
b) Explain D 'Arsonval movement in the process of designing instruments. 7M
2. a) What is meant by voltmeter sensitivity? Explains its relevance in circuit applications. 7M
b) Explain the range extension of ammeters? 7M
3. a) Discuss Square wave and Pulse generators with a neat block diagram? 7M
b) With a neat block diagram explain the working of random noise generator? 7M
4. a) Explain the following terms
i) fluorescence
ii) phosphorescence
iii) persistence 7M
b) Draw the block diagram of CRT and explain the function of each block? 7M
5. a) Explain the operation of Dual beam CRO with a neat block diagram? 7M
b) Explain the concept of the frequency measurement using Lissajous figures? 7M
6. a) Draw the circuit diagram of Maxwell's bridge and derive the conditions for balance? 7M
b) Explain the operation of Q-meter in detail? 7M
7. a) What is transducer? Write the classifications of transducers? 7M
b) With proper examples differentiate between active and passive transducers? 7M
8. Draw the block diagram of data acquisition system and explain the function of each block in detail with examples? 14M

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Code : 1G363

III B.Tech. II Semester Supplementary Examinations December 2015

Microprocessors and Interfacing
(*Electronics & Communication Engineering*)

Max. Marks: 70

Time: 03 Hours

Answer *any five* questions

All Questions carry equal marks (14 Marks each)

1. a) Discuss about memory organization in 8086 microprocessor. 7M
b) With a diagram, explain about maximum mode operation of 8086. 7M
2. a) Discuss about assembler directives with examples. 7M
b) Write an ALP in 8086 to add two 8- bit decimal numbers. Result is 16-bit. 7M
3. a) Explain about modes of operation of 8255 with neat diagrams. 7M
b) Write an ALP to control a stepper motor through 8255 interface. 7M
4. a) Interface 8k x 8 SRAM and 8k x 8 EPROM to 8086. Use 74138 decoder. 7M
b) Discuss about mode control word to program 8257 with an example. 7M
5. a) Discuss about DOS and BIOS interrupts with necessary examples. 6M
b) Explain about the control words of 8259 with their formats. 8M
6. Write in detail about 8253 programmable interrupt controller with a neat internal diagram. Also discuss about modes of operation. 14M
7. a) Discuss about programming of 8251USART in sync and async modes. 10M
b) Discuss about high speed serial communication standards using USB. 4M
8. Compare and contrast between 80286 and 80386 processors with respect to architectures. 14M

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Code : 1GA62

III B.Tech. II Semester Supplementary Examinations December 2015

Management Science

(Electronics & Communication Engineering)

Max. Marks: 70

Time: 03 Hours

Answer *any five* questions

All Questions carry equal marks (14 Marks each)

1. a) What are the principles and elements of scientific management?
b) Why is the systems approach to Management more appropriate today?
2. a) Explain the various methods of production.
b) What is statistical quality control?
3. a) Define Marketing. Explain the functions of marketing.
b) Who are the intermediaries involved in the channel of distribution?
4. a) What do you understand by Recruitment?
b) What is Performance Appraisal?
5. What is Critical Path Method (CPM)?
6. a) What is environmental scanning?
b) List out various steps involved in process of strategy implementation
7. a) What is Management Information System?
b) Give an overview of supply chain management.
8. Discuss the ethical issues in Human Resource Management

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III B.Tech. II Semester Supplementary Examinations December 2015

Microwave Engineering
(*Electronics & Communication Engineering*)

Max. Marks: 70

Time: 03 Hours

Answer *any five* questions

All Questions carry equal marks (14 Marks each)

1. a) Derive an expression for the cut off frequency of a rectangular waveguide in TE mode. 7M
b) A rectangular waveguide is filled by dielectric material of $\nu_r = 9$ and has inside dimensions of 7x3.5 cm. It operates in the dominant TE_{10} mode. Determine the cutoff frequency, phase velocity and the guide wavelength in the guide at 2 GHz 7M
2. a) What is TEM mode of propagation? Explain in detail why a TEM mode is impossible in a waveguide. 7M
b) What is a cavity resonator? What are its applications? Derive an expression for the Q factor of a rectangular cavity resonator. 7M
3. a) What is S matrix? What is its significance? Write its properties. 7M
b) Obtain the S matrix of a E plane Tee and H plane Tee 7M
4. a) What is Faraday rotation? Where is it used? Explain the working principle of Gyrator with a neat sketch. 7M
b) What are irises? What is their purpose? Explain with suitable diagrams. How are irises comparable with posts and tuning screws? 7M
5. a) Compare O type tubes with M type tubes. List out the devices in O type and M type tubes. 7M
b) Explain with a neat diagram, how a two cavity Klystron Amplifier amplifies a microwave signal? Why a reentrant cavity is used in this? How is velocity modulation converted into current modulation? 7M
6. a) Draw the structure of TWT amplifier. Explain the function of each block. What are the applications of a TWT amplifier? 7M
b) Write a short note on
(i) Hartree conditions
(ii) f mode operation 7M
7. a) Explain the working principle of a TRAPATT diode with a neat sketch? What are the applications of TRAPATT diode? 7M
b) What is a Gunn Oscillation mode? What are three possible domain modes in this? Explain in brief. 7M
8. a) Explain how an unknown impedance is measured using a microwave bench setup. 7M
b) What are the various precautions to be taken while performing a microwave experiment using a microwave bench setup? Justify them. 7M
