

Code : 1G362

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET
(AUTONOMOUS)**III B.Tech. II Semester Regular Examinations, June 2014****Microwave Engineering***(Electronics & Communication Engineering)***Time: 3 hours****Max Marks: 70***Answer any FIVE of the following
All questions carry equal marks (14 Marks each)*

1. a) Derive the wave equation for a TE wave and obtain all the field components in a rectangular waveguide.
b) Sketch the field patterns for TE and TM dominant modes in a rectangular waveguide.
2. a) Explain why TEM wave cannot exist in a rectangular waveguide?
b) A circular waveguide has a radius of 3cm and is used as a resonator for TM_{011} mode at 10GHz by placing two perfectly conducting plates at its two ends. Determine the minimum distance between the two end plates. (consider $P_{01}=2.405$)
3. a) With neat sketches, Explain about different types of microwave attenuators
b) With a neat sketch explain the operation of directional coupler. Also justify why it is so called directional?
4. a) With neat sketch explain how faraday rotation principle is utilized for gyrator and isolator?
b) Describe in detail about wave guide discontinuities
5. a) What are the limitations of conventional tubes at microwave frequencies? Explain.
b) A two cavity Klystron is operated at 10GHz with $V_0=1200V$, $I_0=30mA$, $d=1mm$, $L=4cm$ and $R_{sh}=40K\Omega$. Neglecting beam loading, calculate
(i) Input RF Voltage V_1 for a maximum output voltage
(ii) Voltage Gain
(iii) Efficiency
6. a) What are slow wave structures? Explain how a helical TWT achieves amplification. List its performance characteristics.
b) Explain the operation of 8-cavity cylindrical travelling wave magnetron with neat sketches?
7. a) Explain Gunn effect using two valley model.
b) With neat sketch explain the operation of IMPATT and TRAPATT.
8. a) Describe different methods to measure attenuation. Determine the attenuation for the given attenuator, if the power meter reads 10mW with attenuator and 26mW after removing it.
b) With a neat sketch explain the frequency measurement techniques.

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ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET
(AUTONOMOUS)

III B.Tech. II Semester Regular Examinations, June 2014

VLSI Design

(*Electronics & Communication Engineering*)

Time: 3 hours

Max Marks: 70

*Answer any FIVE of the following
All questions carry equal marks (14 Marks each)*

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1. a) Compare between CMOS and Bipolar technologies. 6M
b) Explain BICMOS fabrication using N-well process with neat sketches 8M
2. a) Define threshold voltage of MOS device and explain its significance 6M
b) Find g_m and r_{ds} for an n-channel transistor with $V_{gs} = 1.2V$, $V_{tn} = 0.8v$, $W/L=10$, $\mu_n C_{ox} = 92\mu A/V^2$ and $V_{ds} = V_{eff}+0.5V$. The output impedance constant = $95.3 \times 10^{-3} V^{-1}$ 8M
3. a) Design a layout diagram for the PMOS logic $Y=(AB+CD)^1$ 7M
b) Discuss the design rules for wires (orbit $2\mu m$ CMOS) 7M
4. a) Calculate the gate capacitance value of 5mm technology minimum size transistor with gate to channel capacitance value is $4 \times 10^{-4} PF/\mu m^2$. 6M
b) Explain clocked CMOS logic and N-P CMOS logic 8M
5. a) Write a short note on ALUs 6M
b) Explain how a booth recoded multiplier reduces the number of adders 8M
6. Implement JK Flip-Flop using PLA 14M
7. a) Explain the following process in the ASIC design flow 14M
1. Post-layout timing simulation 2. Post synthesis simulation
8. a) Explain the gate level and function level testing 6M
b) Write short notes on 8M
i. Test architecture
ii. TAP controller

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ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET
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III B.Tech. II Semester Regular Examinations, June 2014

Digital and Data Communications

(ECE)

Time: 3 hours

Max Marks: 70

*Answer any FIVE of the following
All questions carry equal marks (14 Marks each)*

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1. a) What is meant by Aliasing? Illustrate the aliasing effect by drawing the message spectrum and its two frequency shifted replicas? 6M
- b) What is Delta modulation and compare it with PCM? Explain the working of Delta modulation system with neat block diagram? 8M
2. a) Explain the coherent demodulator for a binary FSK wave? And Explain its working? 7M
- b) What is DPSK? Using a block diagram describe how does a DPSK modulator reconstruct binary information. 7M
3. a) A PCM system is to have a signal-to-noise ratio of 35dB. For the speech signal an RMS to peak ratio of -10dB is allowed. Find the number of bits required for coding? 6M
- b) Draw the block diagram of a base band signal receiver and Explain? 8M
4. a) State and explain Shannon - Hartley law and derive an expression for maximum capacity of a noisy channel? 9M
- b) Explain the term mutual information and state the properties? 5M
5. a) Explain the advantages and disadvantages of Cyclic codes? 4M
- b) Construct the (7,4) linear code word for the generator polynomial $G(D)=1+D^2+D^3$ for the message bits 1001 and find the checksum for the same? 10M
6. a) Explain ISO, ITU-T and ANSI in detail? 7M
- b) Briefly describe the layered network architectures? 7M
7. a) Explain about various network topologies? Also give a brief description of network classifications? 6M
- b) Define open systems Interconnection? Explain about OSI seven layer international protocol hierarchy? 8M
8. a) Explain the different services in ISDN connections for end-to-end communication? 8M
- b) Compare frame relay and ATM networks? 6M

**ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET
(AUTONOMOUS)**

III B.Tech. II Semester Regular Examinations, June 2014

Electronic Measurements and Instrumentation

(ECE)

Time: 3 hours

Max Marks: 70

*Answer any FIVE of the following
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1. a) What are errors? Define the following errors with examples
(i) Instrumental Errors (ii) Limiting Error (iii) Calibration Error 6M
- b) Define the following
(i) Accuracy (ii) Precision (iii) Sensitivity (iv) Resolution 8M
2. a) Explain the construction and operation of series type ohmmeter. 7M
- b) A basic d'Arsonval movement with an internal resistance $R_m = 100 \Omega$ and full scale deflection current $I_{fsd} = 1 \text{ mA}$ is to be converted in to a multirange DC voltmeter with voltage ranges $0 - 10 \text{ V}$, $0 - 50 \text{ V}$, $0 - 250 \text{ V}$ and $0 - 500 \text{ V}$. Calculate the resistance values required to achieve corresponding ranges. 7M
3. a) Draw the block schematic of AF Wave analyzer and explain its principle and Working? 7M
- b) Explain the working of the harmonic distortion analyzer. 7M
4. a) With a neat block diagram, Explain the Cathode Ray Oscilloscope. 7M
- b) Explain the delay line in triggered sweep circuit? 7M
5. a) With neat block diagram, explain the storage oscilloscope. 7M
- b) Explain in detail about the Digital read out oscilloscope. 7M
6. a) Explain the working of Wheatstone bridge and derive the equation for balance condition and unbalance condition. 8M
- b) An unbalanced Wheatstone bridge is supplied with a 8 V DC and the resistances are $7 \text{ K}\Omega$, $2 \text{ K}\Omega$, $4 \text{ K}\Omega$ and $20 \text{ K}\Omega$ in the clockwise direction starting from the junction of resistors connected to positive terminal of the DC supply. If the galvanometer has an internal resistance of 200Ω , calculate the current through the meter. 6M
7. a) What is Displacement? How LVDT can be used for measurement of displacement. 7M
- b) Explain how pressure is measured using Piezoelectric transducer. 7M
8. a) Explain general Data Acquisition System (DAS) with a neat block diagram. 7M
- b) What is GPIB bus? Explain the features and functionality of GPIB. 7M

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ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET
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III B.Tech. II Semester Regular Examinations, June 2014

Management Science

(*Electronics & Communication Engineering*)

Time: 3 hours

Max Marks: 70

*Answer any FIVE of the following
All questions carry equal marks (14 Marks each)*

* * * * *

1. Define Management? Explain its nature and features.
2. Product Layout is better than Process Layout? Do you agree with this statement? Support your answer.
3. Discuss the various stages in Product PLC. Why is it essential for the Marketers to know about the stages in product life cycle of his product or service?
4. Define the concept of HRM? Explain its significant functions.
5. Explain the concept of corporate Planning. Discuss the essential steps in corporate planning through a flow chart.
6. Consider a project consisting of nine Jobs with the following precedence relations and average time estimates

Job	Predecessor	Time(days)
A	-	30
B	-	20
C	A,B	20
D	A,B	20
E	B	10
F	D,E	10
G	C,F	40
H	D,E	20
I	G,H	30

(a) Draw the Project Network

(b) Identify the critical path

Answer the following (each is an independent issue by itself)

- (i) What is the effect on critical path if Job E is delayed and it takes 30 days for its Completion?
- (ii) Does the project duration get affected if job is delayed by 20 more days?
- (iii) What difference does it make if Jobs F and G are completed 2 days ahead of schedule?

7. Describe the need and importance of ERP

8. Discuss the Nature and objectives of Management Ethics

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III B.Tech. II Semester Regular Examinations, June 2014

Microprocessors and Interfacing
(Electronics & Communication Engineering)

Time: 3 hours

Max Marks: 70

Answer any FIVE of the following
All questions carry equal marks (14 Marks each)

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1. a) Draw the 8086 microprocessor pin diagram and explain the functions of all the pins. 12M
b) What are the other functions of CX and DX general purpose registers in 8086 processor? 2M
2. a) Write assembly language program to check a given number is, odd or even using
i.) Bitwise logical operator ii.) Shift operator. 7M
b) Tabulate the differences between Macro and Procedure. 7M
3. a) Explain how memory mapped I/O is different from I/O mapped I/O. What are its merits and demerits? 7M
b) Explain how a common emitter seven segment display can be interfaced. Write assembly language program to display 0 to 9 numbers sequentially with 1 second delay. 7M
4. a) What is the necessity of RAM and EPROM in computer system? Explain how they are different in their functionalities? Is it possible to build computer system only with EPROM? Justify. 7M
b) Explain how DMA method is advantageous over other methods when huge data to be transferred. 7M
5. a) Write note on interrupt structure, vector interrupt table and interrupt service routines of 8086 processor 9M
b) What is 8259? Explain how it can be used to handle multiple I/O devices. 5M
6. a) Explain the internal architecture of 8279. 7M
b) Explain how 8253 can be used as square wave generator of required frequency. 7M
7. a) Write note on 8251 USART architecture and interfacing 7M
b) Write short notes on USB. 7M
8. a) Write note on salient features of 80386. 7M
b) Explain the concept of segmentation in detail. 7M
