

**Code : 1G354**ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET  
(AUTONOMOUS)**III B.Tech. I Semester Supplementary Examinations June/July 2014*****Antennas and Wave propagation****( Electronics & Communication Engineering )***Time: 3 hours****Max Marks: 70***Answer any FIVE Questions from the following  
All questions carry equal marks (14 Marks each)*

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1. a) Explain the terms related to antenna
  - i. Directivity
  - ii. Beam Area
  - iii. Radiation Intensity
  - iv. Effective height 10M
- b) An antenna has a field pattern given by  $E(\theta) = \cos \theta \cos^2 \theta$  for  $0^\circ \leq \theta \leq 90^\circ$ . find
  - (i) the half power bandwidth
  - (ii) the beamwidth between first nulls 4M
2. a) Describe the principle of direction finding by means of loop antenna and derive the expression for the induced EMF in the loop. 14M
3. a) What is the folded dipole? What property does it have that sometimes makes it more useful than an ordinary dipole in television reception applications 7M
- b) Sketch and describe the end-fire array and its radiation patterns. Under what conditions will the pattern be unidirectional? 7M
4. a) Explain the design considerations for helical antenna in Axial mode. 8M
- b) Describe V- antenna. 6M
5. a) Explain the operation of parabolic reflectors in detail. Give applications. 8M
- b) The parabolic antenna having a circular mouth is to have a power gain of 1000 at  $\lambda = 10\text{cm}$ . estimate the diameter of the mouth and half power beam width of antenna. 6M
6. a) Explain the ground wave propagation with neat diagrams. 10M
- b) Derive the expression for ground wave attenuation factor. 4M
7. Write short notes on
  - a. Skip distance
  - b. Virtual height
  - c. Maximum Usable frequency 14M
8. a) What is Line of Sight in space wave propagation? 7M
- b) What is duct propagation? 7M

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**Code : 1G457**ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET  
(AUTONOMOUS)**III B.Tech I Semester Supplementary Examinations June/July 2014****Computer System Architecture***( Electronics & Communication Engineering )***Time: 3 hours****Max Marks: 70***Answer any FIVE Questions from the following  
All questions carry equal marks (14 Marks each)***\* \* \* \* \***

1. a) Why error detection codes are required? Derive 3-bit parity generator and checker using odd parity bit. 8M
- b) The gray code is sometimes called as Reflected code. Using this property write gray code numbers for 16 through 31. 3M
- c) What is r's complement and (r-1)'s complement? 3M
2. a) What is Bus? Construct bus system for four registers. 7M
- b) With neat diagram explain Binary 4-bit adder and subtractor. Determine the values of the outputs :  $S_3, S_2, S_1, S_0$  and  $C_4$  for the following inputs.
  - a)  $M = 0, A = 0111$  and  $B = 0110$
  - b)  $M = 1, A = 0101$  and  $B = 1010$  7M
3. a) With neat diagram explain the Bus organization for seven CPU registers. 10M
- b) Specify a control word for the following microoperations
  - a)  $R1 \leftarrow R2 - R3$
  - b)  $R1 \leftarrow R2 + R3$  4M
4. a) Discuss in detail about computer configuration. 10M
- b) Write microinstruction code format(20bits) for the control memory 4M
5. a) Explain with example the binary division with digital hardware 7M
- b) Discuss in detail about BCD adder 7M
6. a) What is virtual memory? What is the relation between address space and memory space in virtual memory system? Explain with an example. 7M
- b) What is cache memory? Explain different Mapping organization of cache memory. 7M
7. What is Direct Memory Access (DMA)? With neat diagram explain the operation of DMA controller. 7M  
Draw the flowchart of CPU-IOP communication. 7M
8. a) What is pipelining? Explain about four segment Instruction pipelining. 7M
- b) Briefly explain about all inter connection structures. 7M

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**Code : 1G352**ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET  
(AUTONOMOUS)**III B.Tech I Semester Supplementary June/July 2014*****Linear IC Applications****( Electronics & Communication Engineering )***Time: 3 hours****Max Marks: 70***Answer any FIVE Questions from the following  
All questions carry equal marks (14 Marks each)***\* \* \* \* \***

1. a) Discuss in detail about Cascode amplifier with neat sketch. 7M  
b) Explain the basic principle of operation of FET differential amplifier. 7M
2. a) Draw the pin diagram and schematic symbol of a typical Op-Amp. and explain the function of each pin. 7M  
b) Discuss about the classification of Integrated Circuits. 7M
3. a) Explain how an Op-Amp. acts as Differentiator, with necessary diagrams. 7M  
b) Explain the operation of Inverting Summing amplifier with neat sketch. 7M
4. a) What is a Comparator? Explain its characteristics. 7M  
b) List out the applications of Comparator and explain in brief. 7M
5. Explain in detail about various types of Active Filters with their ideal and practical characteristics. 14M
6. a) Explain about 565 IC .Why it is known as PLL? Give four important specifications of it. 8M  
b) Draw and explain 555 timer functional block diagram. 6M
7. a) Explain about Successive Approximation ADC with neat sketch. 7M  
b) Explain about Monolithic DAC with pin diagram. 7M
8. a) Explain the operation of IC 1496 Balanced Modulator. 7M  
b) Explain any two applications of Multipliers. 7M

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

**III B.Tech I Semester Supplementary Examinations June/July 2014**  
**Managerial Economics and Financial Analysis**  
**( Common to ME & ECE)**

Time: 3 hours

Max Marks: 70

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

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1. What is Demand? Explain various factors that influence the demand for a computer? 14M
2. Define Elasticity of Demand? Explain its types and significance? 14M
3. From the following particulars calculate?
  - a) Breakeven point in terms of sales value and in units
  - b) No of units that must be sold to earn a profit of Rs 90,000
 

Fixed factory overhead cost	=	Rs 60,000	
Fixed Selling overhead cost	=	Rs 12,000	
Variable Manufacturing cost per unit	=	Rs 12	
Variable selling cost per unit	=	Rs 3	
Selling price per unit	=	Rs 24	14M
4. What are the features of perfect competition? How Price and output are determined under perfect competition? 14M
5. Discuss are the characteristics of a Business unit? 14M
6. Explain the components of working Capital? 14M
7. Prepare trading, profit and loss account and Balance sheet as on that date

	Credit Rs	Debit Rs	
Drawings and capital	=18,000	1,00,000	
Furniture	=32,500		
Equipment	=15,000		
Loan payable		15,000	
Interest on loan	=900		
Sales		1,00,000	
Purchases	= 75,000		
Opening stock	= 25,000		
Trade Expenses	=15,000		
Wages	=2,000		
Insurance	=1,000		
Commission Received		4,500	
Sundry Debtors	=28,100		
Cashed bank	=20,000		
Sundry creditors		10,000	
Interest received		3,000	
	=2,32,000	=2,32,000	

Adjustments :-

- a) closing stock = Rs 60,000
  - b) Wages outstanding = Rs 500
  - c) Depreciation on Furniture = 10 %
8. Explain Significance and computation of Liquidity Ratios and activity ratios? 14M

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**Code : 1G351**ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET  
(AUTONOMOUS)**III B.Tech. I Semester Supplementary Examinations June/July 2014**  
**Analog Communications**

( Electronics &amp; Communication Engineering )

**Time: 3 hours****Max Marks: 70***Answer any FIVE Questions from the following*  
*All questions carry equal marks (14 Marks each)*

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1. a) Derive an expression for power of a single-tone amplitude modulated (AM) signal? 7M  
b) With the help of block diagram explain the elements of communication system? 7M
2. a) Draw the circuit diagram for balance ringmodulator and explain its operation indicating all the wave forms and spectrums? 8M  
b) Evaluate the effect of a small frequency error in the local oscillator on synchronous DSB demodulation? 6M
3. a) What are the advantages and disadvantages of generating AMSSB using filter method? 6M  
b) Discuss in details about VSB System? 8M
4. a) What is the bandwidth required for FM signal, give the necessary reasons? 7M  
b) Distinguish between NBFM and WBFM? 7M
5. a) What are the limitations of slope detector? 6M  
b) Explain the pre-emphasis and de-emphasis? 8M
6. a) Explain the operation of amplitude modulated transmitter using modulation at high carrier power level? 7M  
b) Draw the block diagram of FM stereobroadcast transmitter and explain its operation? 7M
7. a) Draw the block diagram of super heterodyne receiver and functionality of each block? 10M  
b) What are the merits of super-heterodyne receiver over tuned radio frequency receiver? 4M
8. a) What is the need for pulse modulation systems? 7M  
b) Describe the generation of PWM & PPM? 7M

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**Code : 1G353**ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET  
(AUTONOMOUS)**III B.Tech I Semester Supplementary Examinations June/July 2014*****Digital IC Applications****( Electronics & Communication Engineering )***Time: 3 hours****Max Marks: 70***Answer any FIVE Questions from the following  
All questions carry equal marks (14 Marks each)*

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1. a) Design a CMOS transistor circuit for 2-input EX-NOR gate and explain its operation? 6M
- b) Explain steady state electrical behavior of CMOS? 8M
2. a) Explain CMOS/TTL interfacing? 6M
- b) Draw and explain the circuit diagram of two-input LS-TTL NAND gate? 8M
3. a) Discuss VHDL operators with an example of each? 8M
- b) Write short notes on VHDL libraries and packages? 6M
4. a) With an example explain structural design elements of VHDL? 8M
- b) Explain time dimension of VHDL? 6M
5. a) Write the VHDL program for IC 74x138 with its pin diagram? 7M
- b) Design 4-to-16 decoder with IC 74x138s? 7M
6. a) Define barrel shifter? Write the VHDL program for 16 bit barrel shifter and draw the neat diagram? 14M
7. Discuss the following
- a) Synchronous design methodology? 7M
- b) Impediments to synchronous design? 7M
8. a) Design 32Kx8 ROM? 8M
- b) Explain Static-RAM timing? 6M

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