MANAV RACHNA Vidyaparishad

MANAV RACHNA UNIVERSITY

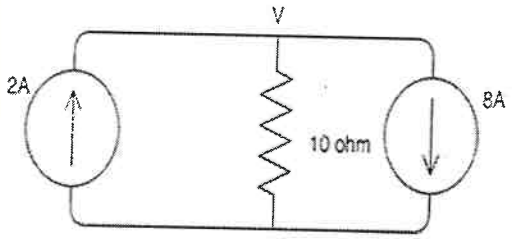
Declared as State Private University vide Haryana Act 26 of 2014

DEPARTMENT OF ECE

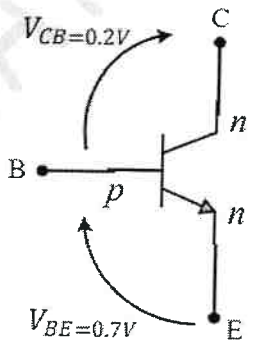
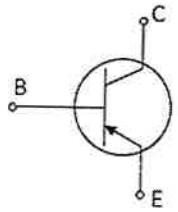
"End term Examination, May-2023"

SEMESTER	**II**	**DATE OF EXAM**	**29.05.2023**
SUBJECT NAME	**Basics of Electrical and Electronics Engineering**	**SUBJECT CODE**	**ECH103B-T**
BRANCH	**CSE A,B,C**	**SESSION**	**II**
TIME	**3 HOURS (01:00 - 04:00)**	**MAX. MARKS**	**100**
PROGRAM	**B.Tech**	**CREDITS**	**4**
NAME OF FACULTY	**Dr.K.Deepa, Ms.Krishna**	**NAME OF COURSE COORDINATOR**	**Dr.K.Deepa**

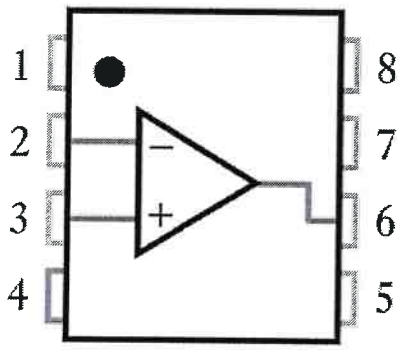
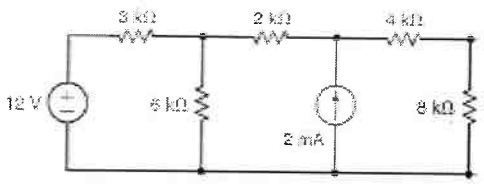
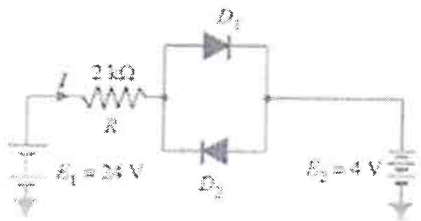
All questions are compulsory.

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-A	Q1(A)	Mesh analysis method uses (a) Kirchhoff's voltage law (b) Thevenin's theorem and Ohm's law (c) Kirchhoff's current law (d) The superposition theorem and Thevenin's theorem	1	CO1	BT1	1.4.1
	Q1(B)	The node voltage V is  (a) -60V (b) 60V (c) 40V (d) -40V	1	CO1	BT1	1.4.1, 3.2.2
	Q1(C)	The circuit whose properties are same in either direction is known as --------circuit (a)Bilateral (b) Unilateral (c) Reversible (d) None of these	1	CO1	BT1	1.4.1, 3.2.2
	Q1(D)	For the given Si NPN transistor, the base to emitter voltage (VBE) is 0.7V and	1	CO3	BT3	1.4.1, 3.2.2

****

	collector to base voltage (VCB) is 0.2V, identify in which region the transistor operates 				
Q1(E)	In an RLC circuit, the power factor is always _____ a) Positive b) Negative c) Depends on the circuit d) Zero	1	CO2	BT2	3.4.1
Q1(F)	This is ----------type of transistor 	1	CO3	BT1	1.4.1, 3.2.2
Q1(G)	For a BJT, the common – base current gain α = 0.98 and the collector base junction reverse bias saturation current $IC0 = 0.6\mu A$. This BJT is connected in the common emitter mode and operated in the active region with a base drive current $IB = 20\mu A$. The collector current IC for this mode of operation is----------	1	CO3	BT1	3.4.1
Q1(H)	An oscillator employs .....feedback (a)Positive (b)Negative (c) Neither positive nor negative (d)Data insufficient	1	CO4	BT1	3.2.2,3.4.1
Q1(I)	What signal corresponds to pin 3 of this operational amplifier?	1	CO4	BT1	1.4.1

****

		 (a)The non-inverting input (b) The non-inverting output. (c) The positive supply voltage.(d) The inverting input.				
	Q1(J)	The gain of an amplifier without feedback is 100 db. If a negative feedback of 3 db is applied, the gain of the amplifier will become--------dB (a)5 (b)300 (c) 103 (d) 97	1	CO4	BT1	1.4.1, 3.2.2
PART-B	Q2	Apply nodal analysis and calculate the node voltages 	10	CO1	BT3	1.4.1, 3.2.2
	Q3	(a) Draw DC load line on VI characteristics of PN junction diode to determine Q point (5 Marks) (b) Determine the current I in the circuit shown in figure. Assume the diodes to be of silicon and forward resistance of diodes to be zero. (5 marks) 	10	CO2	BT2	1.4.1, 3.2.2
PART-C	Q4	Illustrate the working of full wave rectifier with and without filter	10	CO2	BT2	1.4.1
	Q5	Explain the constructional details of LED	5	CO3	BT2	1.4.1, 3.2.2

****

Q6	Assume the transistor is operated in CE configuration and explain the process of amplification of a weak signal	10	CO3	BT4	1.4.1, 3.2.2
Q7	Classify and Explain in detail about the various feedback topologies	10	CO3	BT4	1.4.1, 3.2.2
Q8	Explain the pin configuration of an operational amplifier and discuss the concept of virtual ground.	5	CO4	BT2	3.4.1
Q9	What is an oscillator? Explain the working of LC oscillator in detail.	10	CO4	BT1	1.4.1, 3.2.2
Q10	Analyze how an Operational amplifier can be used as summing amplifier? Derive its gain	10	CO4	BT4	3.4.1
Q11	Define the following terms (a) Reactive power (b) Avalanche breakdown (c) Negative feedback (d) Gain (e) PSRR	10	CO4	BT1	1.4.1, 3.2.2

********** **END** **********

****

MANAV RACHNA Vidyaparishad

MANAV RACHNA UNIVERSITY
Declared as State Private University vide Haryana Act 26 of 2014

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

"T3 Examination, May-2023"

SEMESTER	**II**	**DATE OF EXAM**	29/05/2023
SUBJECT NAME	**DIGITAL LOGIC AND HARDWARE DESIGN**	**SUBJECT CODE**	**ECH110B-T**
BRANCH	**ROBOTICS AND AI**	**SESSION**	II
DURATION	**3 HRS**	**MAX. MARKS**	**100**
PROGRAM	**B.TECH ROBOTICS AND AI**	**CREDITS**	**4**
NAME OF FACULTY	**DR. CHARU PATHAK**	**NAME OF COURSE COORDINATOR**	**DR. CHARU PATHAK** Charu Pathak

***Note**: Part A and B : All questions are compulsory.*

	Q.NO.	QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART A	1(A)	Represent$(-17)_{10}$ in 1's complement form.	2	CO1	BT1-BT3	1.3.1, 1.4.1
	1(B)	Perform 2's complement subtraction for (+7-5)	2	CO1	BT1-BT3	1.3.1, 1.4.1, 2.3.1
	1(C)	Determine the hamming code of 0110 and 0111.	2	CO1	BT2,BT3	1.3.1, 1.4.1
	1(D)	"NAND gate is a universal gate" Justify the statement	2	CO1	BT2	1.3.1, 1.4.1
	1(E)	Expand the following expressions into standard POS form: $(A+B)(A+C)(B+\bar{C})$	2	CO1	BT3	1.3.1, 1.4.1
PART B	2(A)	What is the function of a Shift register? Give its applications.	2	CO2	BT1	1.3.1, 1.4.1, 2.3.1
	2(B)	Implement a Full Subtractor using only 2 input NOR gates.	2	CO2	BT2	1.3.1, 1.4.1, 2.3.1
	2(C)	Give the truth tables for 1-line to 16-line Demultiplexer.	2	CO2,	BT2,BT3	1.3.1, 1.4.1, 2.3.1
	2(D)	How is a FLIP FLOP different from a latch?	2	CO2	BT1	1.3.1, 1.4.1, 2.3.1
	2(E)	Compare a Demultiplexer and a decoder.	2	CO2	BT1,BT2	1.3.1, 1.4.1, 2.3.1

****

PART C	Q3(A)	Apply tabular method to simplify the following function: $f(A,B,C,D) = \Sigma\, m(0,1,2,3,5,7,8,9,11,14)$	10	CO1	BT2,BT3	1.3.1, 1.4.1
	3(B)	Implement the following expressions using K-Maps: (i) $f(A,B,C,D) = \Sigma\, m(1,3,7,11,15)+d(0,2,5)$ (ii) $f(A,B,C,D) = \Pi\, M(4,5,6,7,8,12).d(1,2,3,9,11,14)$	10	CO1	BT3-BT5	1.3.1, 1.4.1, 2.3.1
	Q4(A)	Design a 4 bit BCD to gray code converter	10	CO2,	BT3-BT5	1.3.1, 1.4.1, 2.3.1
	4(B)	Implement the boolean function using 8:1 MUX- $f(A,B,C,D) = \Sigma\, m(2,4,5,7,10,14)$	10	CO2,	BT3-BT5	1.3.1, 1.4.1, 2.3.1
PART D	Q5(A)	Convert the following: (i) SR Flip flop to D F/F. (ii) JK F/F to T F/F.	10	CO2	BT3-BT5	1.3.1, 1.4.1, 2.3.1
	5(B)	Design a Mod-10 synchronous up counter using T flip flop.	10	CO2	BT3-BT5	1.3.1, 1.4.1, 2.3.1
	Q6(A)	Define PLD. What are the advantages of PLD?	10	CO3	BT2	1.3.1, 1.4.1, 2.3.1
	6(B)	Implement the following expressions using PAL $f(A,B,C,D) = \Sigma m(1,3,7,11,13)$	10	CO3	BT3	1.3.1, 1.4.1, 2.3.1
	********** END **********					

****

MANAV RACHNA UNIVERSITY

MANAV RACHNA UNIVERSITY, FARIDABAD

DEPARTMENT OF ELECTRONICS AND COMMUNICATION

"T3 Examination, May-2023"

SEMESTER	**VITH**	**DATE OF EXAM**	03.06.2023
SUBJECT NAME	**INTRODUCTION TO WIRELESS SENSOR NETWORKS**	**SUBJECT CODE**	**ECH403B**
BRANCH	**SMA**	**SESSION**	II
DURATION	**3 HOURS** (01:00-04:00PM)	**MAX. MARKS**	**100**
PROGRAM	**B.TECH. ME**	**CREDITS**	**4**
NAME OF FACULTY	**DR. PIYUSH CHARAN**	**NAME OF COURSE COORDINATOR**	**DR. PIYUSH CHARAN**

***Note**: Attempt all Questions*

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-A	Q1(A)	What is WSN (Wireless Sensor Network)?	1	CO1	BT1	1.2.1, 2.1.2
	1(B)	Define the term "sensor" in wireless sensor networks.	2	CO1	BT1	1.2.1, 2.1.2
	1(C)	Briefly discuss some applications of wireless sensor networks.	2	CO1	BT2	1.4.1, 2.1.2
	1(D)	Discuss the optimization goals and figures of merit for WSNs	5	CO1	BT2	2.2.1, 2.2.2
PART-B	Q2(A)	Explain the concept of data aggregation in wireless sensor networks.	5	CO2	BT3	2.1.2, 2.3.1
	2(B)	What is AODV routing protocol? Discuss the various processes involved in this routing scheme.	5	CO2	BT2	1.2.1, 2.1.2, 2.3.1
PART-C	Q3(A)	What is hidden node problem in WSNs? Suggest a solution to overcome it.	10	CO3	BT4	2.1.2, 2.3.1
	3(B)	What are MAC Protocols? Discuss the S-MAC protocol in detail.	10	CO3	BT3	2.1.2, 2.3.1

****

	Q4(A)	Analyze the challenges faced in deploying wireless sensor networks in harsh environments.	10	CO3	BT4	2.3.1,
	4(B)	What are power aware MAC protocols? Discuss the PAMAS routing protocol in detail.	10	CO3	BT4	3.1.2,
PART-D	Q5(A)	Develop a wireless sensor network application for remote patient monitoring.	10	CO4	BT5	1.2.1, 2.1.2, 5.1.1
	5(B)	Discuss the various security challenges in Wireless Sensor Networks.	10	CO4	BT4	1.4.1
	Q6(A)	Evaluate the ethical and privacy implications of using wireless sensor networks in healthcare.	10	CO4	BT5	1.3.2,
	6(B)	List the various tools for WSN simulations. Which is the best open-source tool for evaluating the performance of a Wireless Sensor Network and Why?	10	CO4	BT3	1.3.1, 1.4.2

********** END **********

****

124

MANAV RACHNA UNIVERSITY

MANAV RACHNA UNIVERSITY
DEPARTMENT OF ECE
"End term Examination, May 2023"

SEMESTER	II	DATE OF EXAM	5.6.2023
SUBJECT NAME	NETWORK SECURITY AND CRYPTOGRAPHY	SUBJECT CODE	ECH518B
BRANCH	ECE	SESSION	I
DURATION	09:00 – 12:00PM	MAX. MARKS	80
PROGRAM	M.Tech	CREDITS	3
NAME OF FACULTY	DR.K.DEEPA	NAME OF COURSE COORDINATOR	DR.K.DEEPA

Note: All questions are compulsory

	Q.NO.	QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-A	1(A)	A -------- algorithm produces a signature for the document..	1	CO1	BT1	1.1.1,1.2.1
	1(B)	State the types of Digital Signature	2	CO1	BT1	1.3.1, 1.4.1
	1(C)	----------is the original intelligible message or data that is fed into the algorithm as input.	1	CO2	BT1	1.1.1,1.2.1
	1(D)	----------attack relies on the nature of the algorithm plus some knowledge of the general characteristics of the plaintext or some sample plaintext–cipher text pairs.	1	CO2	BT1	1.3.1, 1.4.1
	1(E)	What is digital signature in web security?	2	CO3	BT1	1.1.1
	1(F)	----------Create compliant, Trusted Digital Signatures.	1	CO3	BT1	5.1.2
	1(G)	What is serverless app vulnerability	2	CO2	BT1	5.3.2
	2	Discuss the model for Network security	10	CO1	BT2	5.3.2
	3	Discuss the essential elements of a symmetric encryption scheme	10	CO1	BT2	5.3.2
	4	Examine the important Cyber Security Challenges	10	CO2	BT4	5.3.2
	5	List and explain the Cyber Security Tools that can be implemented for Protecting our IT environment	10	CO2	BT4	5.3.2
	6	An old woman goes to market and a horse steps on her basket and crushes the eggs. The rider offers to pay for the damages and asks her how many eggs she had brought. She does not remember the exact number, but when she had taken them out two at a time, there was one egg left. The same happened when she picked them out three, four, five, and six at a time, but when she took them seven at a time they came out even. Evaluate the smallest number of eggs she could have had?	10	CO2	BT5	5.3.2
	7	Discuss about cyber security tools	10	CO3	BT3	1.3.1
	8	Explain in detail the Firewall Design Principles	10	CO3	BT2	1.4.1

********** END **********

****

MANAV RACHNA UNIVERSITY

MANAV RACHNA UNIVERSITY

DEPARTMENT OF ECE

"END Term Examination, Jan-June-2023"

SEMESTER	**2**	**DATE OF EXAM**	**29.05.2023**
SUBJECT NAME	**VLSI DESIGN VERIFICATION AND TESTING**	**SUBJECT CODE**	**ECH513B-T**
BRANCH	**ECE**	**SESSION**	**I**
DURATION	**3 hrs (09:00AM – 12:00PM)**	**MAX. MARKS**	**80**
PROGRAM	**M.Tech.**	**CREDITS**	**3**
NAME OF FACULTY	**Dr. Nitika**	**NAME OF COURSE COORDINATOR**	**Dr. Nitika**

***Note**: All questions are compulsory.*

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-A	Q1	Design & explain Testbench with all the layers in System Verilog. **OR** Define simulation environment phases and how these phases coordinate with Test bench?	10	CO1	L4	1.4.1, 2.2.2, 2.2.3
	Q2	Design in system Verilog to Create memory using an associative array for a processor with a word width of 24 bits and an address space of 2 20 words. Assume the PC starts at address 0 at reset. Program space starts at 0x400. The ISR is at the maximum address.	10	CO2	L2	1.4.1, 2.2.2, 2.2.3
PART-B	Q3(A)	Create the System Verilog code with the following requirements: a) Create a 512-element integer array. b) Create a 9-bit address variable to index into the array. c) Initialize the last location in the array to 5. d) Call a task, my_task() , and pass the array and the address. e) Create my_task() that takes two inputs: a constant 512-element integer array passed by reference, and a 9-bit address. The task calls a function, print_int() , and passes the array element indexed by the address, pre-decrementing the address.	10	CO3	L2	1.4.1, 2.2.2, 2.2.3

****

		f) Create print_int() that prints out the simulation time and the value of the input. The function has no return value. **OR** Discuss Default value of an Argument in detail with example.				
	Q3(B)	Design code for Passing an array to a function as a ref argument.	10	CO3	L4	1.4.1, 2.2.2, 2.2.3, 3.2.4
	Q3(C)	Define Class Routines in the class with example.	10	CO3	L2	1.4.1, 2.2.2, 2.2.3
PART-C	Q4(A)	Create a class called MemTrans that contains the following members, then construct a MemTrans object in an initial block. a. An 8-bit data_in of logic type b. A 4-bit address of logic type c. A void function called print that prints out the value of data_in and address	15	CO4		

	Q4(B)	Complete the following code where indicated by the comments starting with //.
		
		`program automatic test;`
		`  import my_package::*;  // Define class Transaction`
		
		`  initial begin`
		`  // Declare an array of 5 Transaction handles`
		`  // Call a generator task to create the objects`
		`  end`
		
		`  task generator(…);  // Complete the task header`
		`  // Create objects for every handle in the array`
		`  // and transmit the object.`
		`  endtask`
		
		`  task transmit(Transaction tr);`
		`  .....`
		`  endtask : transmit`
		
		`endprogram`
			15	CO4		

********** END **********

****

MANAV RACHNA UNIVERSITY

MANAV RACHNA UNIVERSITY, FARIDABAD

DEPARTMENT OF ELECTRONICS AND COMMUNICATION

"T3 Examination, May-2023"

SEMESTER	**IIND**	**DATE OF EXAM**	31.05.2023
SUBJECT NAME	**MEMORY TECHNOLOGIES**	**SUBJECT CODE**	**ECH514B**
BRANCH	**VLSI & EMBEDDED**	**SESSION**	I
DURATION	**3 HOURS** (9:00-12:00PM)	**MAX. MARKS**	**80**
PROGRAM	**M.TECH. ECE**	**CREDITS**	**3**
NAME OF FACULTY	**DR. PIYUSH CHARAN**	**NAME OF COURSE COORDINATOR**	**DR. PIYUSH CHARAN**

***Note**: Attempt all Questions*

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-A	Q1(A)	What is a Semiconductor RAM?	1	CO1	BT1	1.2.1, 2.1.2
	1(B)	Differentiate between Volatile and Non-Volatile Memory Technologies.	2	CO1	BT1	1.2.1, 2.1.2
	1(C)	Comment upon the factors that affect the performance of memory technologies	2	CO1	BT2	1.4.1, 2.1.2
	1(D)	Draw and explain the circuit of a SRAM cell structure with four R-load NMOS. Define the cell structure and give its working in detail.	5	CO1	BT2	2.2.1, 2.2.2
PART-B	Q2(A)	Explain the architecture of a Bipolar SRAM	5	CO2	BT3	2.1.2, 2.3.1
	2(B)	Differentiate between ROM and PROM	5	CO2	BT2	1.2.1, 2.1.2, 2.3.1
PART-C	Q3(A)	What are the various types of faults encountered in modeling of a RAM?	10	CO3	BT3	2.1.2, 2.3.1
	3(B)	What is a Bridging fault in a RAM? Explain with a neat and suitable circuit diagram?	10	CO3	BT4	2.1.2, 2.3.1
	3(C)	What is a stuck-at fault, and how is it modeled in semiconductor memories?	10	CO3	BT4	2.3.1,

****

PART-D	Q4(A)	What is ferroelectric RAM (FRAM)? Explain its working.	10	CO4	BT3	1.2.1, 2.1.2, 5.1.1
	4(B)	What are Magneto Resistive Random-Access Memories (MRAMs)? Discuss the Architectures, advantages and disadvantages.	10	CO4	BT4	1.4.1
	4(C)	What is error-correcting code (ECC), and how is it used to improve memory reliability?	10	CO4	BT5	1.3.2
********** END **********						

****

MANAV RACHNA UNIVERSITY

13)

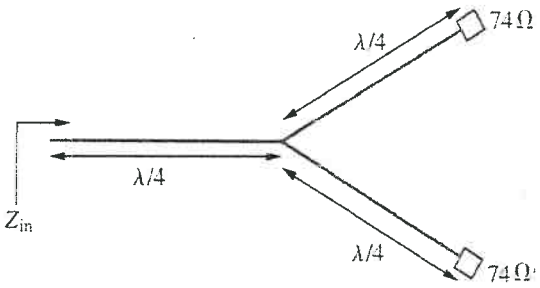
MANAV RACHNA UNIVERSITY
DEPARTMENT OF ECE
"End Term Examination, June-2023"

SEMESTER	**II**	**DATE OF EXAM**	**25.05.2023**
SUBJECT NAME	**Physics for Engineers**	**SUBJECT CODE**	**PHH102B-T**
BRANCH	**ECE**	**SESSION**	**II**
TIME	**3 HOURS (01:00-4:00 PM)**	**MAX. MARKS**	**100**
PROGRAM	**B.Tech ECE/B.Tech ECE VLSI**	**CREDITS**	**4**
NAME OF FACULTY	**Bhanu Pratap Chaudhary**	**NAME OF COURSE COORDINATOR**	**Bhanu Pratap Chaudhary**

All questions are compulsory.

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-A	Q1	A) Describe the difference between P-type and N-type semiconductor materials. B) Explain the term doping and its need.	5×2	CO1	BT2	1.1,1.2, 2.3
	Q2	A) Difference between Drift Current and Diffusion Currents. B) The intrinsic carrier density is 1.5×10^{16} m^{-3}. If the mobility of electron and hole are 0.13 and 0.05 m^2 V^{-1} s^{-1}, calculate the conductivity.	5×2	CO1	BT2	1.1,1.2, 1.3
PART-B	Q3	Draw the block diagram of basic CRO and explain the function of each block in detail.	10	CO2	BT2	1.1,1.2, 2.1
	Q4	The resistance of an unknown resistor is determined by the Wheatstone bridge method. The solution for the unknown resistor is stated as Rx= R1R2/R3, where R1= 500Ω ± 1%, R2 = 615Ω ± 1%, R3= 100Ω ± 0.5% Calculate (a) the nominal value of the unknown resistor; (b) the limiting error in ohms of the unknown resistor; (c) the limiting error in per cent of the unknown resistor.	10	CO2	BT3	1.1,1.2, 1.3
PART C	Q5	Write short note on the following: A) Advantages of digital meters over analog meters B) Resolution and sensitivity of digital	7.5 ×2	CO3	BT2	1.1,1.2, 1.3

****

		meters				
	Q6	Explain the construction and working of Q meter.	15	CO3	BT2	1.1,1.2 2.3
PART D	Q7	A 50 Ω transmission line, λ/4 in length, is connected to a λ/2 section of 100 V line terminated by a 60 Ω resistor. Calculate the input impedance to the 50 Ω line.	10	CO4	BT2	1.1,1.2, 1.3
	Q8	Two identical antennas, each with input impedance 74 Ω, are fed with three identical 50 Ω quarter-wave lossless transmission lines as shown in Figure. Calculate the input impedance at the source end. 	10	CO4	BT4	1.1,1.2, 2.3
	Q9	In free space ($Z \leq 0$), a plane wave with $\boldsymbol{H_i = 10\cos(10^8 t - \beta z)\, a_x\, mA/m}$ is incident normally on a lossless medium ($\boldsymbol{\varepsilon = 2\varepsilon_0, \mu = 8\mu_0}$) in region $z \geq 0$. Determine the reflected wave H_r, E_r and the transmitted wave H_t, E_t.	10	CO4	BT4	1.1,1.2, 2.3

END OF QUESTION PAPER

****

MANAV RACHNA UNIVERSITY

Declared as State Private University vide Haryana Act 26 of 2014

133

MANAV RACHNA UNIVERSITY
DEPARTMENT OF ECE
"End Term Examination, May-2023"

SEMESTER	**II**	**DATE OF EXAM**	**25.05.2023**
SUBJECT NAME	**Analog and Digital CMOS VLSI Design**	**SUBJECT CODE**	**ECH512B-T**
BRANCH	**ECE**	**SESSION**	**I**
TIME	**3 HOURS (9:00–12:00PM)**	**MAX. MARKS**	**80**
PROGRAM	**M. TECH**	**CREDITS**	**3**
NAME OF FACULTY	**Bhanu Pratap Chaudhary**	**NAME OF COURSE COORDINATOR**	**Bhanu Pratap Chaudhary**

All questions are compulsory.

	Q.NO.	QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-A	Q1	Explain the advantages of MOS technology over bipolar technology and why MOS devices gained predominance over bipolar devices.	10	CO1	BT2	1.1,1.2, 1.3
	Q2	Draw and Explain the VTC of a CMOS inverter with a neat diagram.	10	CO1	BT3	1.1,1.2, 1.3
PART-B	Q3	Distinguish between static MOS design and dynamic MOS design.	10	CO2	BT3	1.1,1.2, 2.3
	Q4	Compare the dynamic latch with the NMOS and PMOS latches. What are the advantages and disadvantages of the two latches?	10	CO2	BT2	1.1,1.2, 1.3
PART C	Q5	Explain the simplest forms of the current mirror and the Bipolar version of the current mirror?	10	CO3	BT2	1.1,1.2, 1.3,2.1
	Q6	Explain the difference between cascade current mirror and Wilson current mirror?	10	CO3	BT3	1.1,1.2, 2.3
PART D	Q7	Draw the block diagram of a general two stage Op-Amp and explain the functionality each block.	10	CO4	BT2	1.1,1.2, 2.3
	Q8	Design a CMOS current mirror load differential amplifier?	10	CO4	BT4	1.1,1.2, 1.3,2.1

END OF QUESTION PAPER

****

134

MANAV RACHNA UNIVERSITY

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

"End Term Examination, Jan - June 2023"

SEMESTER	**II**	**DATE OF EXAM**	07.06.2023
SUBJECT NAME	**PEDAGOGY STUDIES**	**SUBJECT CODE**	**ECS 521B**
BRANCH	**Electronics and Communication**	**SESSION**	I
DURATION	**90 Minutes** (9:00-10:30 AM)	**MAX. MARKS**	**50**
PROGRAM	**M.Tech**	**CREDITS**	**0**
NAME OF FACULTY	**Dr. Meenakshi Gupta**	**NAME OF COURSE COORDINATOR**	**Dr. Meenakshi Gupta**

***Note**:All the questions are compulsory*

PART -A

S. No	Questions	Marks	Course Outcomes	Blooms Taxonomy Level	Performance Indicator
Q1.	Explain the concept, nature and types of instructional aids and their uses for teaching English subject.	5	CO2	L2	4.2

PART – B

S. No	Questions	Marks	Course Outcomes	Blooms Taxonomy Level	Performance Indicator
Q2.	Define language and discuss the function approach, aim and objective language.	5	CO2	L3	3.2, 5.3

PART -C

S. No	Questions	Marks	Course Outcomes	Blooms Taxonomy Level	Performance Indicator
Q3.	Bring out the difference between 'Methods & Approaches'?	5	CO3	L3	3.1, 8.2

****

Q4.	Which are the aims and objectives of Teaching English Subject at level?	15	CO3	L4	7.1, 10.3

PART -D

S. No	Questions	Marks	Course Outcomes	Blooms Taxonomy Level	Performance Indicator
Q5.	What are the role, need and importance of Subject teacher association for teacher's profession?	20	CO4	L1	5.1

****

136

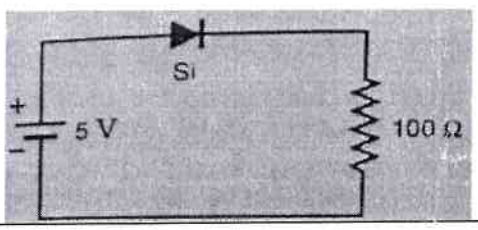
MANAV RACHNA UNIVERSITY

DEPARTMENT OF ELECTRONICS and COMMUNICATION

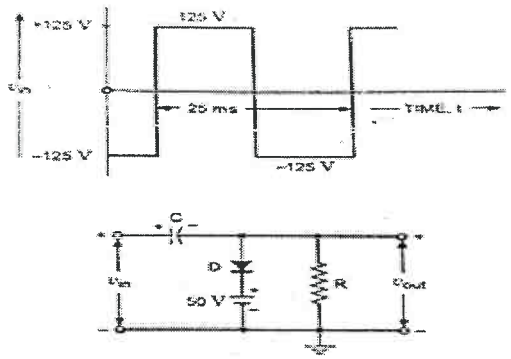
"End Term Examination, June-2023"

SEMESTER	**2nd**	**DATE OF EXAM**	07.06.2023
SUBJECT NAME	**Electronic Devices and Circuits**	**SUBJECT CODE**	**ECH106B-T**
BRANCH	**Electronics and Communication / Electronics and Communication with Specialization in VLSI Design and Verification**	**SESSION**	II
TIME	**3 hrs (01:00-4:00PM)**	**MAX. MARKS**	**100**
PROGRAM	**ECU02**	**CREDITS**	**5**
NAME OF FACULTY	**Dr. Shruti Vashist**	**NAME OF COURSE COORDINATOR**	**Dr. Shruti Vashist**

Note All questions are compulsory.

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-A	1(A)	Draw the VI characteristics of Ideal diode.	2	CO1,CO2	BT1	1.1.1,1.1 1.3.1, 1.4.1
	1(B)	Define Diffusion and Shunt Capacitance	2	CO1,CO2	BT1	1.1.1,1.2,1.3.1, 1.4.1,2.1, 2.3.1
	1(C)	What is Reverse Recovery time of a diode	2	CO1,CO2	BT2	2.1.2,2.3
	1(D)	What is the ripple factor and its significance in rectification?	2	CO1,CO2	BT1	2.3.1,2.4.1
	1(E)	For the figure shown below, calculate the current in the circuit 	2	CO1,CO2 ,CO5	BT1	3.4.2
	1(F)	What is α,β and γ in a transistor and deduce the relation between α and β ?	2	CO3	BT1	4.2.1

****

	1(G)	Differentiate between BJT and JFET	2	CO3,CO5	BT1	4.1.4
	1(H)	Justify the need of transistor biasing	2	CO3,CO5	BT1	5.1.2
	1(I)	Differentiate between regulated and switched power supply	2	CO4,CO5	BT1	5.3.2
	1(J)	Sketch V_{out} for the following network 	2	CO1,CO2 ,CO5	BT3	5.3.2
PART-B	Q2a	Describe briefly the working of i.Schottky Diode ii.Varactor Diode or photodiode	5*2	CO1,CO2 ,CO5	BT3	**5.3.2**
	Q2b	Sketch the circuit for Full wave center tapped rectifier and explain its operation and analyse i.dc current and voltage,ii.rms current and voltage,iii.Efficiency,iv.PIV, v.form factor,vi.peak factor and vii.ripple factor	8	CO1,CO2 ,CO5	BT4	1.1.1,1.1 1.3.1, 1.4.1
	Q2c	A half wave rectifier employs a diode having forward resistance of 10 Ω.If the input to the rectifier is 12V r.m.s find the dc output voltage at load of 100 Ω	2	CO1,CO2 ,CO5	BT3	**1.1.1,1. .2,1.3.1 1.4.1,2. .1, 2.3.1**
PART-C	Q3a	Discuss the working of Transistor in CE **or** CB Configuration. Draw and explain the static characteristics and deduce the expression for input and output dynamic resistance, current gain and output current. **OR** Describe the working of Voltage divider bias configuration and express the stability factor	10	CO3,CO5	BT3	2.1.2,2.3
	Q3b	The collector and the base current of a NPN transistor are measured as I_c=5mA,I_B=50 μA and I_{CBO}=1μA .Determine β, α and emitter current. Determine new I_B to produce I_C=10mA.	6	CO3,CO5	BT3	**2.3.1,2.**1
	Q3c	If β=50,calculate γ	4	CO3,CO5	BT3	3.4.2
	Q4a	Sketch and explain the basic working of N channel JFET along with its circuit symbol,VI and transfer characteristics.	10	CO3,CO5	BT3	4.2.1
	Q4b	A JFET has V_P= - 4.5V, I_{DSS} = 10mA and I_D= 2.5mA.Determine Transconductance	6	CO3,CO5	BT4	4.1.4

****

	Q4c	Define following parameters of JFET: AC drain resistance and Transconductance	4	CO3,CO5	BT4	5.1.2
PART-D	Q5	Write a brief note on i.Transistor Series Voltage Regulator ii.IC Voltage Regulator iii. Transistor Shunt Voltage Regulator	5*3	, CO4,CO5	BT4	5.3.2
	Q5b	List few characteristics of Regulated power supply	5	, CO4,CO5	BT4	5.3.2
********** END **********						

****

MANAV RACHNA UNIVERSITY

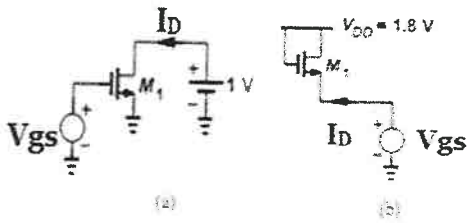
Declared as State Private University vide Haryana Act 26 of 2014

MANAV RACHNA UNIVERSITY
DEPARTMENT OF ECE
"End Term Examination, May-2023"

SEMESTER	**IV**	**DATE OF EXAM**	01.06.2023
SUBJECT NAME	**VLSI DESIGN**	**SUBJECT CODE**	**ECH209B**
BRANCH	**ECE**	**SESSION**	I
TIME	**3 HOURS**	**MAX. MARKS**	**100**
PROGRAM	**B.Tech ECE/B.Tech ECE VLSI**	**CREDITS**	**3**
NAME OF FACULTY	**Bhanu Pratap Chaudhary**	**NAME OF COURSE COORDINATOR**	**Bhanu Pratap Chaudhary**

15/5/2023

All questions are compulsory.

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-A	Q1	An arrangement of MOSFET in various connection is Shown in Figure 1. Sketch I_D as a function of V_{gs} for each case in the circuit shown in figure 1. Assume that V_{gs} goes from 0 to 1.8 volt and there is no channel length modulation (λ=0). Also determine the value of V_{gs} at which the device changes its region of operation. (Given V_T=0.4 V)  **Figure 1**	10	CO1	BT4	1.1,1.2, 2.3
	Q2	List all the factors affecting threshold voltage of MOSFET.	10	CO1	BT2	1.1,1.2, 1.3
PART-B	Q3	Implement $Y = (A + B)(C + D)$ using standard CMOS logic.	10	CO2	BT4	1.1,1.2, 2.3
	Q4	Draw and explain the DC transfer characteristics of a CMOS inverter with necessary conditions for the different region of operations.	10	CO2	BT3	1.1,1.2, 1.3

****

PART C	Q5	Write short note on the following: a) Etching b) Diffusion c) Dielectric and poly-silicon film deposition d) Ion implantation e) Yield and reliability	10	CO3	BT2	1.1,1.2, 1.3
	Q6	Consider a CMOS inverter, with the following device parameters: nMOS $V_{T0,n} = 0.8\,V$ $\mu_n C_{ox} = 50\,\mu A/V^2$ pMOS $V_{T0,p} = -1.0\,V$ $\mu_p C_{ox} = 50\,\mu A/V^2$ The power supply voltage is V_{DD}= 5 V. Both transistors have a channel length of 1 μm. The total output capacitance of this circuit is C_{out} = 2pF, which is independent of transistor dimensions. (a) Determine the channel width of the nMOS and the pMOS transistor such that the switching threshold voltage is equal to 2.2 V and the output rise time is 5 ns. (b) Calculate the average propagation delay time τ_P for the circuit designed in (a). (c) How do the switching threshold V_T and the delay times changes if the power supply is dropped from 5 V to 3.3 V. Provide and interpretation of the results.	20	CO3	BT4	1.1,1.2, 2.3
PART D	Q7	Describe the Behavioral, Structural Description and circuit operation of of **∂/LATCH.**	15	CO4	BT2	1.1,1.2, 1.3
	Q8	Design and explain the various versions of two-phase non-overlapping clock generator with buffered output on both phases.	15	CO4	BT4	1.1,1.2, 2.3

END OF QUESTION PAPER

****

143

MANAV RACHNA UNIVERSITY

DEPARTMENT OF Electronics and Communication

EVEN SEMESTER (MAY 2023)

END TERM EXAMINATION

FACULTY NAME: Dr. Yogita Gupta			NAME OF COURSE COORDINATOR: Dr. Yogita Gupta		
COURSE NAME:EMFW	COURSE CODE: ECH206B	CREDIT:3	MAX. MARKS:100	TIME DURATION: 180min	DATE OF EXAM: 22.05.2023
PROGRAM: ECU02		SEMESTER: 4th			

PART	Q.NO.	QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART - A	1(A)	Given the potential V=10(x^2+xy) at a point P(2,-1,3) on a conductor and free space boundary. Determine V, E and D at a point P.	5	CO1, CO2	BT2	1.3.1,2.3.1, 3.1.1
	1(B)	Explain each of maxwells equation and physical significance.	5	CO1, CO2	BT2	1.3.1,2.3.1, 3.1.1
	1(C)	A transmission line has characteristic impedance of 100 ohms and is terminated by a resistance of 150 ohms. Calculate (i) Voltage standing wave ratio of the transmission line (ii) Impedance at voltage maximum and minimum positions.	5	CO3, CO4	BT2	1.3.1,2.3.1, 3.1.1
	1(D)	Derive a wave equation for rectangular wave guide and explain the physical significance of the equation.	7	CO3, CO4	BT2	1.3.1,2.3.1, 3.1.1
PART - B	2(A)	Explain power flow and pointing Vector with suitable equation.	5	CO3, CO4	BT2	1.3.1,2.3.1, 3.1.2
	2(B)	Describe the propagation modes of a rectangular wave guide.	7	CO3, CO4	BT2	1.3.1,2.3.1, 3.1.3
	2(C)	Calculate the cut off frequency and operating frequency with dimensions a=2, b=4. Assuming it is operating in dominant TE10 mode.	7	CO3, CO4	BT2	1.3.1,2.3.1, 3.1.4
PART - C	3(A)	For a Electromagnetic wave given that H(z,t)=10 cos (2x10^6t+20z)ay(A/m). Determine the amplitude, frequency, phase consant and wavelength.	7	CO3, CO4	BT3	1.3.1,2.3.1, 3.1.6
	3(B)	Explain phase and group velocity of EM wave and write expression of both.	5	CO3, CO4	BT2	1.3.1,2.3.1, 3.1.7
	3(C)	Explain wave guide attenuation and it is physical significance.	5	CO1, CO2	BT3	1.3.1,2.3.1, 3.1.8
	3(D)	Explain how reflection coefficient of a rectangular wave guide can be calculated and how it is related to standing wave equation.	7	CO3, CO4	BT2	1.3.1,2.3.1, 3.1.9
PART - D	4(A)	Explain difference between attenuation constant and phase constant wave guide and how they are related to propagation of EM wave ?	7	CO1, CO2	BT3	1.3.1,1.4.1, 2.3.1,3.1.1
	4(B)	What are TEM waves and how they are different from TE and TM waves. Does TEM exist in hollow conductor and why?	6	CO1, CO2	BT3	1.3.1,2.3.1, 3.1.1
	4(C)	A plane electromagnetic wave having a frequency of 30Mhz has an average pointing vector of 3 W/sqm . If the medium is lossless with relative permeability 1.4 to relative permeability 3.4, find a. The velocity of propagation b. The wavelength c. The impedance of the medium d. The r.m.s. electric field E	10	CO1, CO2	BT2	1.3.1,2.3.1, 3.1.1
	4(D)	Write short note on: a) antenna gain b) antenna radiation pattern c) impedence of antenna d)bandwidth of antenna	12	CO1, CO2	BT2	1.3.1,2.3.1, 3.1.1

****************** END ******************

MANAV RACHNA Vidyaparishad

MANAV RACHNA UNIVERSITY

Declared as State Private University vide Haryana Act 26 of 2014

144

DEPARTMENT OF ECE

"End-Semester Examination, May. -2023"

SEMESTER	**4th**	**DATE OF EXAM**	**30.05.2023**
SUBJECT NAME	**MICROPROCESSORS & INTERFACING**	**SUBJECT CODE**	**ECH215B-T**
BRANCH	**ECE/ECE-VLSI**	**SESSION**	**I**
TIME	**3 Hrs. (9:00 – 12:00 PM)**	**MAX. MARKS**	**100**
PROGRAM	**B.Tech.**	**CREDITS**	**4**
NAME OF FACULTY	**Dr. Nitika**	**NAME OF COURSE COORDINATOR**	**Dr. Nitika**

***Note**: Part A : All questions are compulsory.*

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-A	1(A)	Programme in assembly language to find the largest number in an array of 8 numbers stored in memory location 4100.	10	CO2	L4	1.4.1, 2.2.2, 2.2.3
	1(B)	Draw the architecture of 8085 microprocessor and explain the function of Flag Register with example.	10	CO1	L3	1.4.1, 2.2.2, 2.2.3
PART-B	Q2(a)	Draw the timing Diagram for Memory Read Machine cycle.	10	CO1	L3	1.4.1, 2.2.2, 2.2.3
	Q2(b)	Connect 8K byte EPROM with the systems lines of 8085 microprocessor. The memory ICs available is 2K x 8 EPROM	10	CO3	L4	1.4.1, 2.2.2, 2.2.3
PART-C	Q3(A)	Draw and explain the Block diagram of 8257 in detail.	10	CO4	L3	1.4.1, 2.2.2, 2.2.3
	3(B)	Perform the Physical Address calculation for the following instructions. a) MOV CX, [BX] [SI] BX=1573H, SI= A1C2, DS= 1723 b) MOV DX, [BP+SI+9FH] BP=1823, SI= 2910, SS=8100	10	CO1	L4	1.4.1, 2.2.2, 2.2.3
	Q3(c)	Define Memory Segmentation and discuss the segment registers in detail.	10	CO1	L3	1.4.1, 2.2.2, 2.2.3

****

PART-D	Q4(a)	Draw the Block Diagram of 8253 and discuss in detail.	10	CO4	L3	2.2.2, 3.2.4
	Q4(b)	Draw the block diagram of 8251 and explain each block.	10	CO4	L3	
	Q4(c)	Discuss Different modes of 8055 PPI in detail.	10	CO4	L3	2.2.2, 3.2.4

********** END **********

****

146

MANAV RACHNA UNIVERSITY

MANAV RACHNA UNIVERSITY
DEPARTMENT OF ECE
"End Term Examination, May-2023"

SEMESTER	**IV**	**DATE OF EXAM**	03.06.2023
SUBJECT NAME	**Digital Hardware Modeling using VHDL**	**SUBJECT CODE**	**ECH214B-T**
BRANCH	**ECE VLSI**	**SESSION**	I
TIME	**3 HOURS** (9:00 – 12:00 PM)	**MAX. MARKS**	**100**
PROGRAM	**B. TECH**	**CREDITS**	**5**
NAME OF INDUSTRY PARTNER: Truechip Solutions Pvt. Ltd., Noida			

All questions are compulsory.

Q1. Explain the library declaration in VHDL. (5M)

Q2. What is the difference between BIT and STD_LOGIC data type. (5M)

Q3. List the arithmetic operators available in VHDL. (5M)

Q4. List 4 packages of VHDL library and their application. (5M)

Q5. Write VHDL code for 3 to 8 decoder using when-else statement. (10M)

Q6. Discuss VHDL code structure in details by taking proper example (10M)

Q7(a) Differentiate between when statement and case statement.

(b) Explain the Signal Attribute and Data Attribute in VHDL. (10M) 15

Q8. Explain the different types of modeling styles in VHDL with proper examples. (10M) 15

Q9. Explain the code convertors? Draw the truth table of 3-bit binary to gray code convertor. Obtain the output expressions and write VHDL code for it. (10M) 20

Q10. Explain the steps involved in digital system design with proper description. (10M)

****

MANAV RACHNA UNIVERSITY

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

END TERM EXAMINATION (JAN-JUNE 2023)

FACULTY NAME: DR. NIHARIKA THAKUR			**NAME OF COURSE COORDINATOR: DR. NIHARIKA THAKUR**		
COURSE NAME: ANALOG AND DIGITAL COMMUNICATION	**COURSE CODE: ECH207B-T**	**CREDIT: 4**	**MAX. MARKS: 100**	**TIME DURATION: 3 HRS**	**DATE OF EXAM: 26.05.2023**
PROGRAM: B.TECH ECE		**SEMESTER: 4TH**			**SESSION- I**

Note: **Part A: All Questions are compulsory** | **Part B: All Questions are compulsory**

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-A	Q1(A)	A 400 Watts of carrier is modulated to a depth of 75 percent. Find the total power in the AM Wave assuming the modulated signal to be modulated one.	5	CO1	BT3	1.3.1,1.4.1, 5.2.2
	Q1(B)	Demonstrate the degeneration of an AM Wave for high power.	5	CO1	BT3	1.3.1,1.4.1, 2.3.1, 5.2.2
	Q1(C)	What is the need of Modulation in Communication Systems? Explain S/N Ratio.	5	CO1	BT2	1.3.1,1.4.1, 2.3.1, 5.2.2
	Q1(D)	How do you generate a DSB SC Signal? Explain.	5	CO1	BT3	1.3.1,1.4.1, 2.3.1, 5.2.2
PART-B	Q2(A)	Describe the method of generating a Narrowband FM wave.	5	CO2	BT3	1.3.1,1.4.1, 2.3.1, 5.2.2
	Q2(B)	What is the modulation index of FM Signal having a carrier of 100kHz when the modulating signal has a frequency of 8kHz?	5	CO2	BT4	1.3.1,1.4.1, 2.3.1, 5.2.2
	Q3(A)	What is the significance of Frequency Mixing?	5	CO2	BT4	1.3.1,1.4.1, 5.2.2
	Q3(B)	Demonstrate the operation of TRF Reciever.	5	CO2	BT4	1.3.1,1.4.1, 5.2.2
PART-C	Q4A	Describe the Nyquist Theory of Anaog to Digital Conversion. Explain Pulse Position Modulation.	10	CO3	BT3	1.3.1,1.4.1, 5.2.2
	Q4B	What is the significance of Pulse Width Modulation Technique?	10	CO3	BT6	1.3.1,1.4.1, 5.2.2
	Q5	Describe Pulse Code Modulation? Explain Quantisation Noise.	10	CO3	BT5	1.3.1,1.4.1, 5.2.2
PART-D	Q6A	Describe the method of Frequency Shift Keying.	10	CO4	BT4	1.3.1,1.4.1, 5.2.2
	Q6B	Write Short Notes On: 1. PSK 2. ASK	20	CO4	BT2	1.3.1,1.4.1, 5.2.2

********** END **********

148

MANAV RACHNA UNIVERSITY

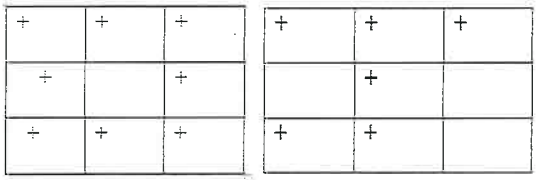
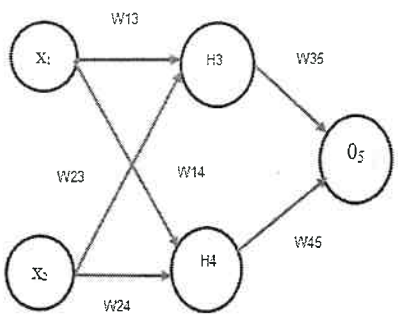
MANAV RACHNA UNIVERSITY
DEPARTMENT OF ECE
"End Term Examination, May -2023"

SEMESTER	**VI**	**DATE OF EXAM**	19.05.2023
SUBJECT NAME	**INTRODUCTION TO NEURAL NETWORKS AND FUZZY LOGIC**	**SUBJECT CODE**	**ECH310B-T**
BRANCH	**ECE**	**SESSION**	II
TIME	**3 HOURS** (01:00 – 04:00PM)	**MAX. MARKS**	**100**
PROGRAM	**B.Tech**	**CREDITS**	**4**
NAME OF FACULTY	**Dr.K.Deepa**	**NAME OF COURSE COORDINATOR**	**Dr.K.Deepa**

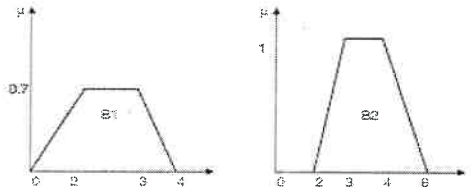
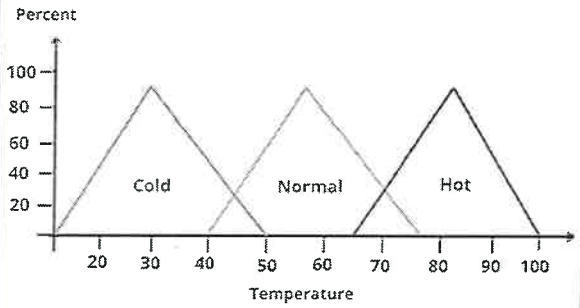
All questions are compulsory.

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-A	Q1(A)	Positive sign of weight indicates? a) excitatory input b) inhibitory input c) can be either excitatory or inhibitory as such d) none of the mentioned	1	CO1	BT1	1.4.1
	Q1(B)	Supervised learning may be used for? a) temporal learning b) structural learning c) both temporal & structural learning d) none of the mentioned	1	CO1	BT1	1.4.1, 3.2.2
	Q1(C)	Activation value is associated with? a) potential at synapse b) cell membrane potential c) all of the mentioned d) none of the mentioned	1	CO2	BT1	1.4.1, 3.2.2
	Q1(D)	On what parameters can change in weight vector depend? a) learning parameters b) input vector c) learning signal d) all of the mentioned	1	CO1	BT1	1.4.1, 3.2.2
	Q1(E)	The first model which can perform weighted sum of inputs? a) McCulloch-Pitts neuron model b) Marvin Minsky neuron model c) Hopfield model of neuron d) none of the mentioned	1	CO2	BT2	3.4.1
	Q1(F)	What is the form of Fuzzy logic? a) Many-valued logic b) Crisp set logic c) Two-valued logic d) Binary set logic	1	CO2	BT1	1.4.1, 3.2.2

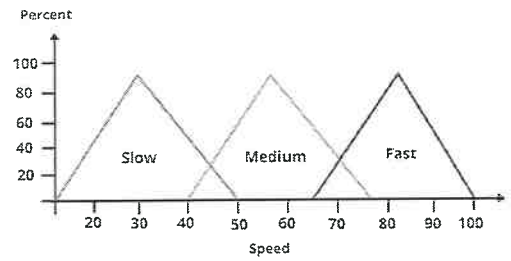
****

	Q1(G)	The truth values of traditional set theory is _____ and that of fuzzy set is _____ a) Either 0 or 1, between 0 & 1 b) Between 0 & 1, either 0 or 1 c) Between 0 & 1, between 0 & 1 d) Either 0 or 1, either 0 or 1	1	CO3	BT2	3.4.1
	Q1(H)	Fuzzy logic is usually represented as ----- a) IF-THEN rules b) IF-THEN-ELSE rules c) Both IF-THEN-ELSE rules & IF-THEN rulesd) None of the mentioned	1	CO3	BT2	3.2.2, 3.4.1
	Q1(I)	What is the other name of feedback layer in competitive neural networks? a) feedback layer b) feed layer c) competitive layer d) no such name exist	1	CO4	BT1	1.4.1
	Q1(J)	In competitive learning, node with highest activation is the winner, is it true? a) yes b) no	1	CO4	BT1	1.4.1, 3.2.2
PART-B	Q2	Analyze an AND function using MC Pitt model and sketch the structure	10	CO1	BT4	4.2.1
	Q3	Given the two dimensional pattern, Apply HEBB rule and find the weights required to perform classification 	10	CO2	BT3	1.4.1, 3.2.2
	Q4	Assume that the neurons have a sigmoid activation function perform a forward pass and compute error. Assume that the actual output Y=0.6 and learning rate is 1. Given that X_1=0.35, X_2=0.9, W13=0.1. W14=0.4, W23=0.8, W24=0.6, W35=0.3, W45=0.9. Comment the expected output 	10	CO1	BT2	1.4.1

****

Q5	Define the following terms related to fuzzy set (1) Core (2) Support (3) Boundary	5	CO3	BT3	1.4.1, 3.2.2
Q6	For the fuzzy relation $\underset{\sim}{R} = \begin{bmatrix} 1 & 0.2 & 0.3 \\ 0.5 & 0.9 & 0.6 \\ 0.4 & 0.8 & 0.7 \end{bmatrix}$. find the λ cut relations for the following values of $\lambda = 0^+, 0.2, 0.9, 0.5.$	10	CO3	BT2	1.4.1, 3.2.2
Q7	List the methods to perform fuzzification process	5	CO4	BT1	1.4.1, 3.2.2
Q8	Two companies bid for a contract. The fuzzy set of B1(input) and B2((output) is shown in the following figure. Find the defuzzified value z* for B1=2.6 	10	CO4	BT4	3.4.1
Q9	With a suitable block diagram, explain the construction and working of fuzzy inference system and the two fuzzy inference methods?	10	CO4	BT2	3.4.1
Q10	Consider the following case with Temperature as the input and the fan speed as the output where input and output is defined as 	10	CO4	BT1	1.4.1, 3.2.2

****

	 The model has fuzzy rules as follows **Rule 1**: If the temperature is hot then the speed will be fast. **Rule 2**: If the temperature is warm then the speed will be medium. **Rule 3**: If the temperature is cold then the speed will be slow. For an input value of 42 degrees, identify the output				
Q11	Explain the role of Fuzzy Logic in Power Plants	10	CO4	BT1	1.4.1, 3.2.2

********** **END** **********

****

152

MANAV RACHNA UNIVERSITY

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

"End Term Examination, Jan - June 2023"

SEMESTER	**VI**	**DATE OF EXAM**	24.05.2023
SUBJECT NAME	**CMOS VLSI DESIGN**	**SUBJECT CODE**	**ECH314B-T**
BRANCH	**Electronics and Communication**	**SESSION**	II
DURATION	**3 hours (01:00-04:00PM)**	**MAX. MARKS**	**100**
PROGRAM	**B.Tech**	**CREDITS**	**3**
NAME OF FACULTY	**Dr. Meenakshi Gupta**	**NAME OF COURSE COORDINATOR**	**Dr. Meenakshi Gupta**

***Note**:All the questions are compulsory*

PART -A

S. No	Questions	Marks	Course Outcomes	Blooms Taxonomy Level	Performance Indicator
Q1.	Discuss the impact of capacitance coupling.	5	CO2	L2	2.1
Q2.	Analyze various challenges face with Ldi/dt.	5	CO2	L4	5.2

PART – B

S. No	Questions	Marks	Course Outcomes	Blooms Taxonomy Level	Performance Indicator
Q3.	Discuss the design techniques of dealing with clock skew and Jitter.	5	CO1	L2	2.2, 3.1, 7.1
Q4.	Explain distributed clocking using DLL's with the help of block diagram as well as Signal waveforms.	5	CO2	L4	2.2, 4.3

PART -C

****

S. No	Questions	Marks	Course Outcomes	Blooms Taxonomy Level	Performance Indicator
Q5. (a)	Implementing a look ahead adder in dynamic logic.	10	CO3	L3	8.1, 10.1
(b)	Specify the ripple carry adder expressed by using the dot operators.	5	CO3	L1	2.1, 10.2
Q6. (a)	Define shifter & design the barrel shifter with the help of diagram.	15	CO3	L4	8.1, 11.3
(b)	Explain dynamic supply voltage scaling and also draw the block diagram.	10	CO2	L4	2.1, 10.2

PART -D

S. No	Questions	Marks	Course Outcomes	Blooms Taxonomy Level	Performance Indicator
Q7. (a)	Discuss the operation of SRAM in detail.	10	CO2	L2	3.3, 7.1, 10.1
(b)	Comparison between SRAM active power reduction and DRAM active power Reduction.	10	CO2	L2	3.1, 7.2
Q8.	Write the short notes on any two: (i) Sense Amplifier (ii) Non Volatile Read – Write Memories (iii) PLA	20	CO1	L2	7.1

****

MANAV RACHNA UNIVERSITY

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

END TERM EXAMINATION (JAN-JUNE 2023)

FACULTY NAME: DR. NIHARIKA THAKUR			**NAME OF COURSE COORDINATOR: DR. NIHARIKA THAKUR**		
COURSE NAME: DATA COMMUNICATION	**COURSE CODE: ECH315B**	**CREDIT: 4**	**MAX. MARKS: 100**	**TIME DURATION: 3 HRS (01:00–04:00)**	**DATE OF EXAM: 22.05.2023**
PROGRAM: B.TECH ECE		**SEMESTER: 6TH**			**SESSION- II**

Note: **Part A: All Questions are compulsory** | **Part B: All Questions are compulsory**

Q.NO.		QUESTIONS	MARKS	CO ADDRESSED	BLOOM'S LEVEL	PI
PART-A	Q1(A)	What are the various Parellel Interfaces available? Demonstrate any one.	5	CO1	BT1	1.3.1,1.4.1, 5.2.2
	Q1(B)	Demonstrate various Switching Techniques with Examples.	5	CO1	BT3	1.3.1,1.4.1, 2.3.1, 5.2.2
	Q1(C)	Describe the role of Data Modems in data communication.	5	CO1	BT2	1.3.1,1.4.1, 2.3.1, 5.2.2
	Q1(D)	Differentiate between RS232 and RS449.	5	CO1	BT2	1.3.1,1.4.1, 2.3.1, 5.2.2
PART-B	Q2(A)	Explain Character Oriented Protocols.	5	CO2	BT3	1.3.1,1.4.1, 2.3.1, 5.2.2
	Q2(B)	Describe the technique of Link State Routing.	5	CO2	BT3	1.3.1,1.4.1, 2.3.1, 5.2.2
	Q3(A)	How do you control the flow and error in data communication?	5	CO2	BT4	1.3.1,1.4.1, 5.2.2
	Q3(B)	Explain the role of Sub netting ?	5	CO2	BT4	1.3.1,1.4.1, 5.2.2
PART-C	Q4A	What do you understand by Time Division Multiplexing? Explain the process in detail.	10	CO3	BT3	1.3.1,1.4.1, 5.2.2
	Q4B	Demonstrate the formation of a Master Group in FDM?	10	CO3	BT6	1.3.1,1.4.1, 5.2.2
	Q5	What do you understand by Frame Synchronization? Explain the process of Line Encoding.	10	CO3	BT5	1.3.1,1.4.1, 5.2.2
PART-D	Q6A	Demonstrate the role of Cloud Computing in Data Communication Network.	10	CO4	BT4	1.3.1,1.4.1, 5.2.2
	Q6B	Write Short Notes On: (Any two) 1. Data Encryption and Decryption 2. Application Layer Services 3. SMTP	20	CO4	BT2	1.3.1,1.4.1, 5.2.2

********** END **********