



# A.M. REDDY

Memorial College of Engineering and Technology

Approved by AICTE, New Delhi, Affiliated to JNTUK-Kakinada

SPONSORED BY

ATLURI MASTAN REDDY EDUCATIONAL SOCIETY, REG. NO. 450/2003

An ISO 9001:2015 Certified Institution

Web : [www.amreddyengineering.ac.in](http://www.amreddyengineering.ac.in)

E.mail: [principal.amreddyengineering@gmail.com](mailto:principal.amreddyengineering@gmail.com)

## 5.1.1 Internal Assessment Report

### Theory courses


The performance of the student in theory course is evaluated for **100 marks**. The distribution of marks shall be **30** for internal and **70** for external evaluation. For theory subjects, during a semester, there shall be two mid-term examinations. Each midterm examination consists of (i) one online objective examination (**10 marks**) (ii) one descriptive examination (**15 marks**) and (iii) one assignment (**5 marks**).

Evaluation is completed and the HOD randomly checks the corrected response scripts to make sure the evaluation procedure is done to a high quality. Students are given the revised answer scripts for self-verification, and any complaints are strictly resolved. Students are given assignments by the faculty members along with the deadline for submission. The institution follows the schedule and offers an online test with 20 multiple-choice questions on the same day as the descriptive exam. On the department notice board the internal examination results are displayed for the sake of students information.

### Laboratory courses:

The laboratory course is evaluated for **50 marks**. The distribution of marks shall be **15** for internal and **35** for external evaluation. The internal **15 marks** shall be awarded as follows: day to day work-**5 marks**, Record-**5 marks** and the remaining **5 marks** to be awarded by conducting an internal laboratory test.

*JNTUK*. If any student observes discrepancies in the internal evaluation, it will be solved by the concerned faculty. Again, if any discrepancies observed on the marks displayed on the department notice board, Head of the Department constitutes a two-member committee to resolve the issue.

  
Principal  
A.M REDDY MEMORIAL COLLEGE OF  
ENGINEERING & TECHNOLOGY  
PETLURIVARI PALEM  
Narasaraopet (Mdl), Guntur Dt -

  
PRINCIPAL  
Principal  
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ENGINEERING & TECHNOLOGY  
PETLURIVARI PALEM  
Narasaraopet (Mdl), Guntur




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Petlurivaripalem(V), Narasaraopet (Mdl.) Guntur (Dt.)-522601

III-BTECH-ECE-II-Sem-II- Mid Examination Question Paper, MAY-2023 Set-1

Year/Sem: III/II	Programme: BTECH	Course Code:R2032042	Regulation : R20	
Course Name: VLSI	Duration: 90 min.	Total Marks : 15	Min Passing Mark:	
Q.No	Answer All Questions	Marks	Levels of Bloom's taxonomy	CO
1	Explain the operation of single stage amplifier with resistive load.	5	Solve the equation	Co3
2	Design a NOR gate using pass transistor logic.	5	Solve the expression	CO4
3	Explain the step-by-step approach of the FPGA design process in the Xilinx environment.	5	Explanation	CO5

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III B.TECH II (R20) Semester MID-I EXAMINATIONS -MARCH 2023

HALL: 312

SUBJECT NAME: VLSI

BRNACH: ECE

DATE: 7/03/2023

S.No	Hall Ticket No	Name of student	Set no	signature
1	20HM1A0401	ANIMELA SUMA LATHA	1	A-Sumalatha
2	20HM1A0402	BADIGE MANOJ KUMAR	<del>Absent</del>	
3	20HM1A0403	BANDI VINOD KUMAR	01	B.Vinod kumar
4	20HM1A0404	BANDI VISWA NARAYANA	01	B.Viswa Narayana
5	20HM1A0405	BANDLA PALLI VIJAYA KUMAR REDDY	01	B.Vijaya Kumar Reddy
6	20HM1A0406	BELDAR SHAMEER	01	B.Shameer
7	20HM1A0407	BODAGALA VENUGOPAL	<del>Absent</del>	
8	20HM1A0408	BUSAGANI BALAPPA	01	B. Balappa
9	20HM1A0410	CHINNA GOWNI THARUN KUMAR	01	C.G. Tharun Kumar
10	20HM1A0411	CHIPPAGIRI MANOJU NATH REDDY	01	C.Manjunath Reddy
11	20HM1A0412	DEVANA SAI SANDEEP REDDY	01	D. Sai Sandeep Reddy
12	20HM1A0413	EEDIGA PRADEEP GOWD	01	E-Pradeep Gowd
13	20HM1A0415	GANDAM SANDEEPKUMAR	01	G.Sandeep Kumar
14	20HM1A0417	GULURU GOPAL REDDY	01	G.G.Reddy.
15	20HM1A0419	GUNDLAPALLI SRIKANTH REDDY	<del>Absent</del>	
16	20HM1A0420	JERRIPOTHULA MADHU	01	Jerripotula Madhu
17	20HM1A0421	KASUKURTHI AKHILA	01	K. Akhila
18	20HM1A0422	KAVUJULA THIRUPATHAMMA	01	K.Thirupattamma
19	20HM1A0423	KOSURU NAGA JOSHNA	01	K.Naga Joshna.
20	20HM1A0424	LOKEPALLI RAKESH REDDY	01	Lokapalli Rakesh Reddy
21	20HM1A0425	MADINENI MAHESH	01	Mahesh
22	20HM1A0426	MANGALI YASWANTH	01	Mangali Yaswanth
23	20HM1A0427	MULLAPUDI SUZEEL	01	M.Suzeel.
24	20HM1A0428	MYLAVARAM JAGAN MOHAN REDDY	01	Mylavaram Jagan Mohan Reddy

Total No of students : 24

Total No of Absents: 02

Total No of presents: 21  
*[Signature]*

**A.M.REDDY MEMORIAL COLLEGE OF ENGINEERING AND TECHNOLOGY**  
 III B.TECH II (R20) Semester MID-I EXAMINATIONS -MARCH 2023

HALL: 323

SUBJECT NAME: DMT -II

BRNACH: ECE

DATE: 07/03/2023

S.N o	Hall Ticket No	Name of student	Set no	signature
25	20HM1A0429	PALAPARTHI SUMANTH	1	P. Sumanth
26	20HM1A0430	PALETI PRABHU DHINAKAR	1	P. Prabhudhinakar
27	20HM1A0431	POBBATHI SAI TEJA	1	P. Sai Teja
28	20HM1A0433	SAKE PRAVEEN KUMAR	1	S. Praveen kumar
29	20HM1A0434	TUMMALAGUNTA ASMITHA	01	T. Asmita
30	20HM1A0435	UPPARA ANITHA	1	U. Anitha
31	20HM1A0436	VEERLA SRILAKSHMI	1	V. Srilakshmi
32	21HM5A0401	VAJRALA VEERA GOPAL REDDY	1	V. gopal

Total No of students : 8

Total No of Absents: 0

Total No of presents: 08

*P. Venk*  
 Invigilator signature 07/03/2023.

*[Signature]*  
 Principal

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*[Signature]*  
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# A.M. REDDY GROUP OF EDUCATIONAL INSTITUTIONS

Petlurivaripalem, Narasaraopet (Mdl.), Guntur (Dt.)- 522 601, A.P., India.

ENGINEERING (Approved by AICTE, Affiliated to J.N.T.U. K) PHARMACY (Approved by AICTE & PCI, Affiliated to A.N.U)



COURSE : B.Tech YEAR / SEM : 3/2 BRANCH : ECE  
 MID. NO : 1 SUBJECT : VLSI DATE : 7/03/2023  
 STUDENT NAME : U. Anitha REG. NO : 20HM100435  
 SIGNATURE OF THE INVIGILATOR : P. Venk

1A

Explain the P-well process

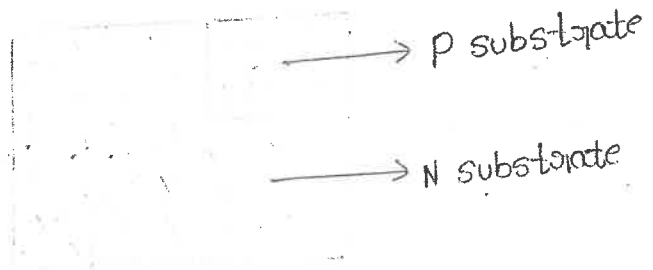
145  
15

C Mos fabrication there are two types of CMOS fabrication

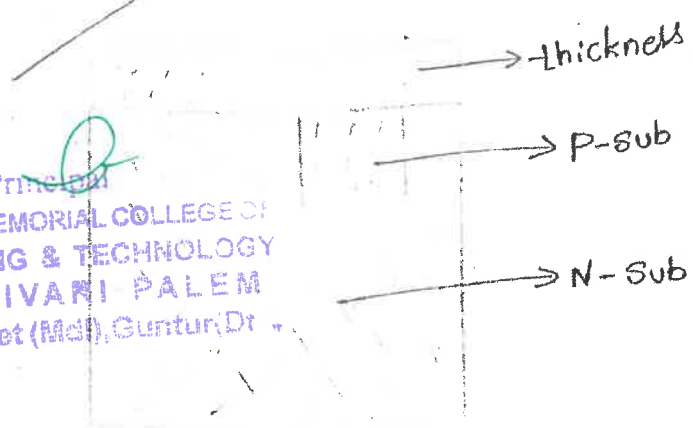
- (1) P-well process
- (2) N-well process

(1) P-well process

Step-1 :- from the p-well process design to the substrate  
 Consider the N type substrate diffuse in the P type

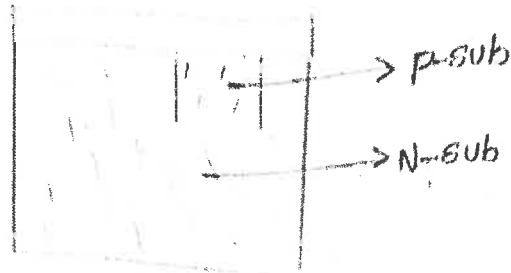


Step-2 :- from the growing the produce the top of the  
 N-type substrate 1um thickness of the layer of oxide layer

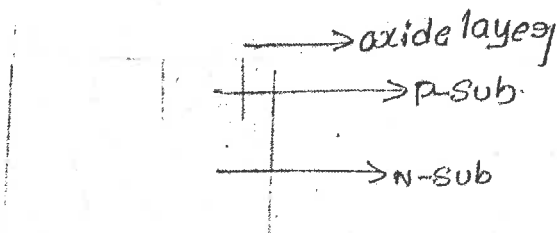


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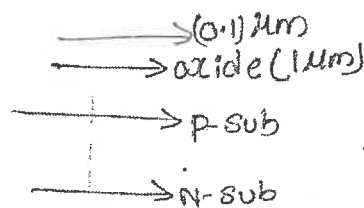
step 3 :- photo-resistance layer is produced. the top of the oxide layer is etched. the photo-resistance layer is removed.   
 → oxide layer  
 → photo-resistance layer  
 → masking layer



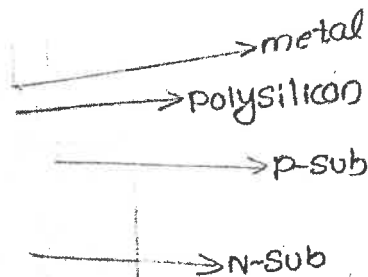
step 4 :- The uncovered position of the hard wafer is removed. the etching process



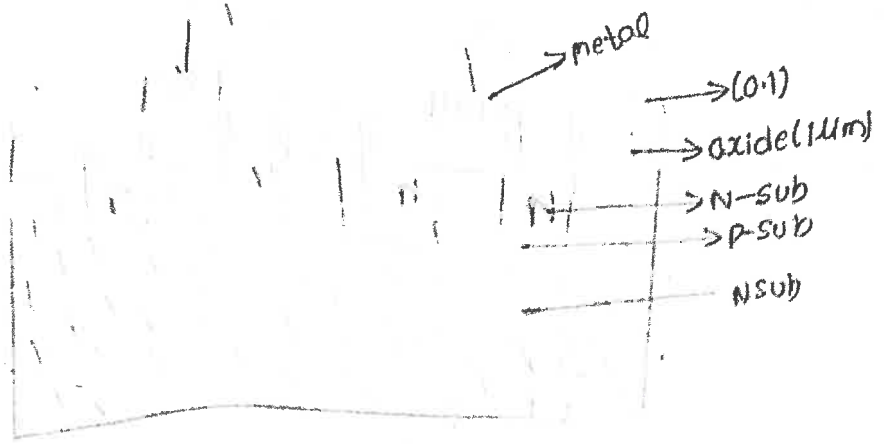
step 5 :- 0.1 micro meter thick of the layer applied the top of oxide layer



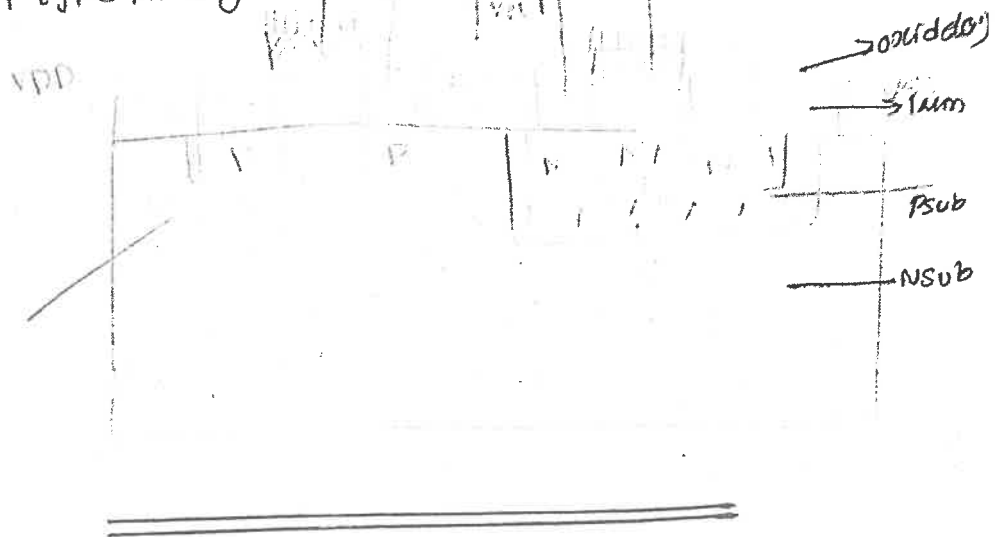
step 6 :- The pwell process diffuse the p-type is used to the polysilicon and metal.



Step-7: The P...



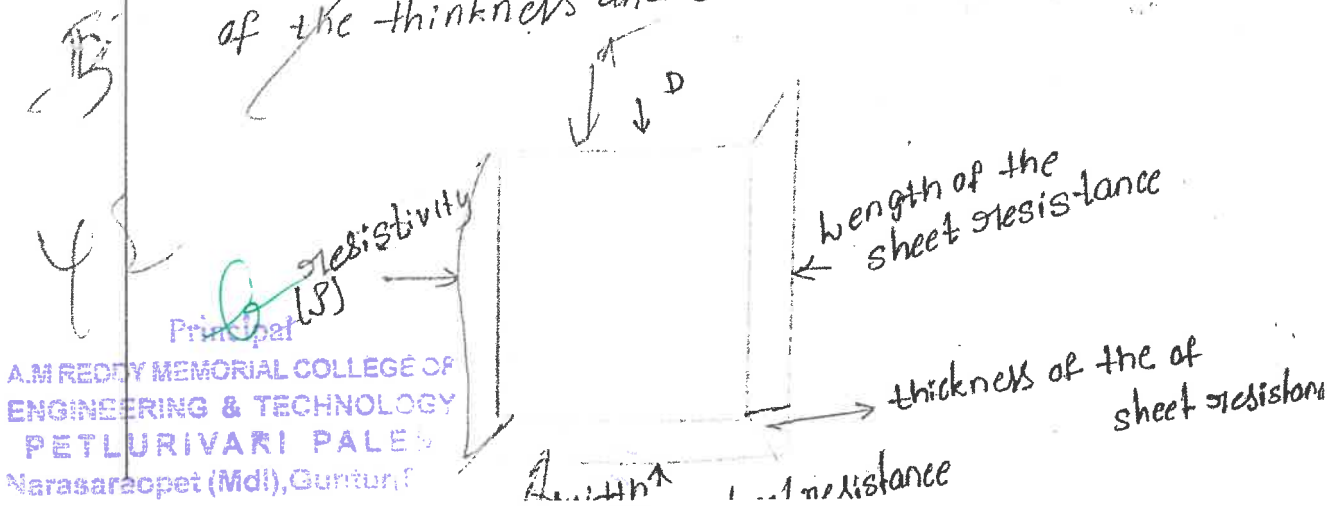
Step-8: The P-type added the N-type and N-type added to the P-type finally P and N substrate.



2A

Sheet resistance:

We can explain the sheet resistance, sheet resistance is the square of the constant mode of the sheet resistance. The arrangement of opposite side of the square resistance is sheet resistance usually measurement of the thickness and drain of the square.



sheet resistance is slab is consider the material of resistivity ( $\rho$ ) width of the sheet resistivity ( $\omega$ ) length of the sheet resistivity - the both part is opposite square the arrangement of in the figure the sheet resistance b/w the opposite square ohms, it acts

$$R_{AB} = \rho L / A$$

where  $\rho$  = resistivity

$L$  = length

$A$  = area of cross section

$$A = L \cdot \omega$$

$L$  = thickness

$\omega$  = width

The we can consider the when  $L = \omega$

The square resistance

$$R_{AB} = \rho L / A$$

$$= \rho L / L \cdot \omega$$

$$= \rho / \omega$$

$$R_{AB} = \rho / L \text{ square / ohm}$$

Note :- sheet resistance is always independent of the square

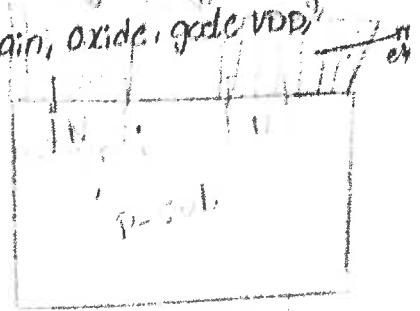


# The scaling factors and scaling model

The scaling model is mainly common used to the constant of the electric field to the constant voltage scaling model. One or more combined the scaling model. The scaling model is present resulting the figure indicate

scaling factor  $1/\alpha$  and  $1/\beta$  on word  $\alpha$  is chosen the one scaling factors of the linear dimension is both of the linear  $1/\alpha$  Dimension horizontal and vertical. Drain, oxide, gate, vdd, supply voltage

## The scaling factors and scaling mode



(1) Area of Gate  $A_g = L \cdot W$  (A<sub>g</sub>)

where  $L$  = length,  $W$  = width the area of scaled by

the  $1/\alpha$  so scaled is  $= 1/\alpha^2$

(2) Gate capacitance of per unit  $:- (C_0)$

$$C_0 = \epsilon_{ox} / D$$

where  $\epsilon_{ox}$  is permittivity of the drain to source and

$D$  is the drain to source

$$C_0 \text{ scaled is } = 1/\beta \cdot 1 = \beta$$

(3) Gate capacitance  $:- (C_g)$

$$C_g = C_0 \cdot W \cdot L$$

$$= \beta \cdot 1/\alpha \cdot 1/\alpha$$

$$\text{scaled by } C_g = \beta/\alpha^2$$

(4) parasitic capacitance

$$= A/\alpha D$$

around the core dissipation and drain drain is around

the dissipation

(c) mobility capacitance:  $C_{on}$ :

$$C_{on} = C_j \cdot \frac{W \cdot L}{L_{eff}} \cdot \mu \cdot \tau$$
$$\sim \frac{1}{\mu \tau}$$

(d) resistance capacitance:  $R_{on}$

$$R_{on} = \frac{C_j \cdot W \cdot L}{\mu \tau} \cdot R_{on}$$
$$\sim \frac{1}{\mu \tau}$$

(e) delay time:  $t_d$

~ the inverse proportion to the capacitance

$$\sim \frac{1}{\mu \tau}$$

(f) maximum operating frequency ( $f_0$ )

$$f_0 \propto \frac{1}{t_d} \propto \frac{1}{\mu \tau} \cdot \left(\frac{V_{DD}}{V}\right)^2 = \beta$$

~ the scaled by  $\frac{1}{V^2}$

(g) saturation current ( $I_{D0}$ )

$$I_{D0} = \frac{\mu_0 W}{2} (V_{GS} - V_L)^2$$
$$\sim \frac{1}{\beta}$$

(h) current channel:  $I_{D1}$

$$I_{D1} = \frac{(V_{DD})^2}{\mu \tau}$$

(i) switching  $E_a$

$$\sim \frac{1}{\beta \mu \tau}$$

12) Dissipation per unit area (Pa)

$$P_d = P_{js} + P_{ed}$$
$$= \frac{1}{\alpha}$$

13) Dissipation per unit capacitance (Pa)

$$\text{by scaled is} = (VOD) \cdot \epsilon_c = \frac{P_d}{\alpha_j}$$
$$= \frac{\alpha}{\beta^2} = \frac{1}{\beta^2 \alpha}$$

14) Power product (PT)

$$\text{by scaled is} = P_T \cdot P_d$$
$$= \frac{1}{\beta^2 \alpha}$$



**A.M.REDDY MEMORIAL COLLEGE OF ENGINEERING AND TECHNOLOGY**  
**III B.TECH II Semester(R20) - MID Examination Marks- ACEDAMIC YEAR -2022-2023**

SUBJECT NAME : VLSI

SUBJECT CODE: R2032042 BRANCH: ECE

S.No	Hall Ticket No	MID-1				MID-2				BEST1
		Desc-15M	Online-10 M	Ass-1-5M	SUM1	Desc-15M	Online-10 M	ASS-2-5M	SUM2	BEST1(80from 20)
1	20HM1A0401	15	03	5	23	15	03	05	23	
2	20HM1A0402	<del>09</del>	04	5	098	14	03	05	22	
3	20HM1A0403	09	3	5	17	14	04	05	23	
4	20HM1A0404	14	3	5	22	14	02	05	21	
5	20HM1A0405	13	2	5	20	13	03	05	21	
6	20HM1A0406	13	3	5	21	13	02	05	20	
7	20HM1A0407	<del>AB</del>	-	5	05	13	02	05	20	
8	20HM1A0408	04	4	5	13	05	0	05	10	
9	20HM1A0410	09	2	5	16	13	03	05	21	
10	20HM1A0411	14	3	5	22	10	03	05	18	
11	20HM1A0412	0	3	5	08	02	03	05	10	
12	20HM1A0413	14	5	5	24	15	05	05	25	
13	20HM1A0415	10	3	5	18	12	04	05	21	
14	20HM1A0417	14	3	5	22	14	02	05	21	
15	20HM1A0419	<del>AB</del>	-	-	-	-	-	-	-	
16	20HM1A0420	<del>0</del>	2	5	07	AB	0	05	05	
17	20HM1A0421	11	3	5	19	13	03	05	21	
18	20HM1A0422	14	4	5	23	15	03	05	23	
19	20HM1A0423	09	4	5	18	<del>AB</del>	0	05	17	
20	20HM1A0424	11	3	5	19	13	03	05	21	
21	20HM1A0425	15	3	5	23	13	01	05	21	

		online	Assim	Sum	Der	online	Ass	Sum	
22	20HM1A0426	15	04	5	24	15	03	05	23
23	20HM1A0427	10	3	5	18	12	04	05	21
24	20HM1A0428	0	3	5	08	05	0	05	10
25	20HM1A0429	09	6	5	20	AB	0	05	05
26	20HM1A0430	08	5	5	18	11	02	05	18
27	20HM1A0431	10	01	5	16	14	02	05	21
28	20HM1A0433	14	02	5	21	14	03	05	22
29	20HM1A0434	10	01	5	16	12	04	05	21
30	20HM1A0435	15	3	5	23	15	04	05	24
31	20HM1A0436	14	6	5	25	15	05	05	25
32	21HM5A0401	12	2	5	19	AB	0	05	05

Fapdfy signature

HOD

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# JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

FINAL PDF for III B.Tech II Semester Internal Marks (R20) August - 2023

College: A.M.REDDY MEMORIAL COLL. OF ENGG.,PETLURIVARIPALEM, NARSARAO:HM

Date:16-08-2023

HTNO	SUBJECT	MID_1	Q1	assign_1	MID_2	Q2	assign_2	Total	SUB_TYPE	MC_EX1
20HM1A0102	R2032011	0	0	0	0	0	0	18	TD	0
20HM1A0103	R2032011	0	0	0	0	0	0	15	TD	0
20HM1A0104	R2032011	0	0	0	0	0	0	20	TD	0
20HM1A0106	R2032011	0	0	0	0	0	0	15	TD	0
20HM1A0107	R2032011	0	0	0	0	0	0	19	TD	0
20HM1A0108	R2032011	0	0	0	0	0	0	18	TD	0
20HM1A0109	R2032011	0	0	0	0	0	0	15	TD	0
20HM1A0110	R2032011	0	0	0	0	0	0	15	TD	0
20HM1A0111	R2032011	0	0	0	0	0	0	20	TD	0
20HM1A0112	R2032011	0	0	0	0	0	0	20	TD	0
20HM1A0113	R2032011	0	0	0	0	0	0	19	TD	0
20HM1A0114	R2032011	0	0	0	0	0	0	15	TD	0
20HM1A0115	R2032011	0	0	0	0	0	0	20	TD	0
20HM1A0116	R2032011	0	0	0	0	0	0	15	TD	0
21HM5A0101	R2032011	0	0	0	0	0	0	20	TD	0
21HM5A0102	R2032011	0	0	0	0	0	0	20	TD	0
21HM5A0103	R2032011	0	0	0	0	0	0	20	TD	0
20HM1A0102	R2032012	12	3	5	12	2	5	20	T	0
20HM1A0103	R2032012	9	3	5	11	3	5	19	T	0
20HM1A0104	R2032012	15	3	5	14	2	5	23	T	0
20HM1A0106	R2032012	10	3	5	10	4	5	19	T	0
20HM1A0107	R2032012	12	3	5	15	3	5	23	T	0
20HM1A0108	R2032012	12	5	5	4	5	5	21	T	0
20HM1A0109	R2032012	6	4	5	13	2	5	19	T	0
20HM1A0110	R2032012	14	3	5	13	1	5	22	T	0
20HM1A0111	R2032012	15	4	5	15	2	5	24	T	0
20HM1A0112	R2032012	15	4	5	15	2	5	24	T	0
20HM1A0113	R2032012	10	3	5	14	3	5	22	T	0
20HM1A0114	R2032012	9	4	5	14	3	5	22	T	0
20HM1A0115	R2032012	15	2	5	15	4	5	24	T	0
20HM1A0116	R2032012	14	2	5	10	3	5	21	T	0
21HM5A0101	R2032012	10	0	5	15	0	5	19	T	0
21HM5A0102	R2032012	12	0	5	15	0	5	20	T	0
21HM5A0103	R2032012	10	0	5	15	0	5	19	T	0
20HM1A0102	R2032013	11	2	5	14	2	5	21	T	0
20HM1A0103	R2032013	8	2	5	14	2	5	20	T	0
20HM1A0104	R2032013	14	3	5	14	4	5	23	T	0
20HM1A0106	R2032013	10	2	5	13	4	5	21	T	0
20HM1A0107	R2032013	8	3	5	14	2	5	20	T	0
20HM1A0108	R2032013	7	2	5	14	3	5	21	T	0
20HM1A0109	R2032013	8	3	5	12	3	5	20	T	0
20HM1A0110	R2032013	10	3	5	11	2	5	18	T	0

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Narasaraopet (Mdi), Guntur Dt.,

HTNO	SUBJECT	MID_1	Q1	assign_1	MID_2	Q2	assign_2	Total	SUB_TYPE	MC_EXT
20HM1A0301	R203203A	14	2	5	15	4	5	24	PE2	0
20HM1A0302	R203203A	11	2	5	14	3	5	22	PE2	0
20HM1A0303	R203203A	13	3	5	15	7	5	26	PE2	0
20HM1A0304	R203203A	12	1	5	14	4	5	22	PE2	0
20HM1A0305	R203203A	5	2	5	14	2	5	20	PE2	0
20HM1A0307	R203203A	15	2	5	15	3	5	23	PE2	0
21HM5A0301	R203203A	0	0	0	15	3	5	19	PE2	0
20HM1A0301	R203203I	13	2	5	15	4	5	24	OE2	0
20HM1A0302	R203203I	14	3	5	14	3	5	22	OE2	0
20HM1A0303	R203203I	12	2	5	14	5	5	23	OE2	0
20HM1A0304	R203203I	14	3	5	15	4	5	24	OE2	0
20HM1A0305	R203203I	13	4	5	15	5	5	25	OE2	0
20HM1A0307	R203203I	14	3	5	14	6	5	25	OE2	0
21HM5A0301	R203203I	8	3	0	15	3	5	21	OE2	0
20HM1A0401	R2032041	13	5	5	15	4	5	24	T	0
20HM1A0402	R2032041	0	4	5	14	1	5	18	T	0
20HM1A0403	R2032041	7	6	5	14	2	5	21	T	0
20HM1A0404	R2032041	10	4	5	15	4	5	23	T	0
20HM1A0405	R2032041	0	1	5	14	4	5	20	T	0
20HM1A0406	R2032041	1	3	5	14	1	5	18	T	0
20HM1A0407	R2032041	0	2	5	13	4	5	19	T	0
20HM1A0408	R2032041	4	4	5	0	3	5	12	T	0
20HM1A0410	R2032041	0	4	5	15	1	5	19	T	0
20HM1A0411	R2032041	4	4	5	15	2	5	21	T	0
20HM1A0412	R2032041	0	3	5	3	2	5	10	T	0
20HM1A0413	R2032041	13	4	5	14	3	5	22	T	0
20HM1A0415	R2032041	0	4	5	14	4	5	21	T	0
20HM1A0417	R2032041	6	3	5	14	4	5	22	T	0
20HM1A0419	R2032041	0	0	5	0	0	5	5	T	0
20HM1A0420	R2032041	0	0	5	0	0	5	5	T	0
20HM1A0421	R2032041	6	1	5	15	4	5	22	T	0
20HM1A0422	R2032041	14	4	5	15	2	5	23	T	0
20HM1A0423	R2032041	10	3	5	12	0	5	18	T	0
20HM1A0424	R2032041	5	3	5	13	1	5	18	T	0
20HM1A0425	R2032041	11	4	5	15	1	5	21	T	0
20HM1A0426	R2032041	10	3	5	15	3	5	22	T	0
20HM1A0427	R2032041	0	4	5	13	1	5	17	T	0
20HM1A0428	R2032041	0	3	5	0	3	5	8	T	0
20HM1A0429	R2032041	3	3	5	8	3	5	15	T	0
20HM1A0430	R2032041	1	2	5	13	3	5	19	T	0
20HM1A0431	R2032041	1	2	5	14	3	5	20	T	0
20HM1A0433	R2032041	12	5	5	15	2	5	22	T	0
20HM1A0434	R2032041	5	4	5	14	4	5	22	T	0
20HM1A0435	R2032041	9	4	5	15	5	5	24	T	0
20HM1A0436	R2032041	12	5	5	15	4	5	24	T	0
21HM5A0401	R2032041	5	4	5	13	3	5	20	T	0
20HM1A0401	R2032042	15	3	5	15	3	5	23	T	0
20HM1A0402	R2032042	0	4	5	14	3	5	20	T	0

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PETLURIVANKA PALEM  
Narasaraopet (M.D.)  
Guntur, Dr

HTNO	SUBJECT	MID_1	Q1	assign_1	MID_2	Q2	assign_2	Total	SUB_TYPE	MC_EXT
20HM1A0403	R2032042	9	3	5	14	4	5	22	T	0
20HM1A0404	R2032042	14	3	5	14	2	5	22	T	0
20HM1A0405	R2032042	13	2	5	13	3	5	21	T	0
20HM1A0406	R2032042	13	3	5	13	2	5	21	T	0
20HM1A0407	R2032042	0	0	5	13	2	5	17	T	0
20HM1A0408	R2032042	4	4	5	5	0	5	13	T	0
20HM1A0410	R2032042	9	2	5	13	3	5	20	T	0
20HM1A0411	R2032042	14	3	5	10	3	5	22	T	0
20HM1A0412	R2032042	0	3	5	2	3	5	10	T	0
20HM1A0413	R2032042	14	5	5	15	5	5	25	T	0
20HM1A0415	R2032042	10	3	5	12	4	5	21	T	0
20HM1A0417	R2032042	14	3	5	14	2	5	22	T	0
20HM1A0419	R2032042	0	0	5	0	0	5	5	T	0
20HM1A0420	R2032042	0	2	5	0	0	5	7	T	0
20HM1A0421	R2032042	11	3	5	13	3	5	21	T	0
20HM1A0422	R2032042	14	4	5	15	3	5	23	T	0
20HM1A0423	R2032042	9	4	5	12	0	5	18	T	0
20HM1A0424	R2032042	11	3	5	13	3	5	21	T	0
20HM1A0425	R2032042	15	3	5	15	1	5	23	T	0
20HM1A0426	R2032042	15	4	5	15	3	5	24	T	0
20HM1A0427	R2032042	10	3	5	12	4	5	21	T	0
20HM1A0428	R2032042	0	3	5	5	0	5	10	T	0
20HM1A0429	R2032042	9	6	5	0	0	5	17	T	0
20HM1A0430	R2032042	8	5	5	11	2	5	18	T	0
20HM1A0431	R2032042	10	1	5	14	2	5	20	T	0
20HM1A0433	R2032042	14	2	5	14	3	5	22	T	0
20HM1A0434	R2032042	10	1	5	12	4	5	20	T	0
20HM1A0435	R2032042	15	3	5	15	5	5	25	T	0
20HM1A0436	R2032042	14	6	5	15	3	5	25	T	0
21HM5A0401	R2032042	12	2	5	0	0	5	17	T	0
20HM1A0401	R2032043	15	4	5	15	3	5	24	T	0
20HM1A0402	R2032043	0	1	5	12	3	5	18	T	0
20HM1A0403	R2032043	12	2	5	14	3	5	22	T	0
20HM1A0404	R2032043	11	3	5	15	4	5	23	T	0
20HM1A0405	R2032043	11	2	5	14	2	5	21	T	0
20HM1A0406	R2032043	11	3	5	0	0	5	17	T	0
20HM1A0407	R2032043	9	2	5	5	3	5	16	T	0
20HM1A0408	R2032043	0	4	5	0	0	5	9	T	0
20HM1A0410	R2032043	14	3	5	13	4	5	22	T	0
20HM1A0411	R2032043	11	3	5	11	3	5	19	T	0
20HM1A0412	R2032043	2	4	5	0	2	5	11	T	0
20HM1A0413	R2032043	11	2	5	14	3	5	22	T	0
20HM1A0415	R2032043	10	4	5	8	6	5	19	T	0
20HM1A0417	R2032043	6	2	5	14	1	5	19	T	0
20HM1A0419	R2032043	0	0	5	0	0	5	5	T	0
20HM1A0420	R2032043	1	3	5	0	0	5	9	T	0
20HM1A0421	R2032043	6	3	5	13	4	5	21	T	0
20HM1A0422	R2032043	15	1	5	15	4	5	24	T	0

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Narasaraopet (Machilipatnam), Guntur Dist.





# JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

FINAL PDF for III B.Tech II Semester Internal Marks (Re-Admit) August - 2023

College: A.M.REDDY MEMORIAL COLL. OF ENGG.,PETLURIVARIPALEM, NARSARAO:HM

Date:16-08-2023

HTNO	SUBJECT	MID_1	MID_2	Total	SUB_TYPE
------	---------	-------	-------	-------	----------

Verified by: *[Signature]* **PRINCIPAL**

Principal

*[Signature]*  
**Controller of Examinations**

A.M.REDDY MEMORIAL COLLEGE OF ENGINEERING & TECHNOLOGY  
 PETLURIVARI PALEM  
 NARSARAO PET  
 Date: 16-08-2023

*[Signature]*  
Principal

A.M REDDY MEMORIAL COLLEGE OF  
ENGINEERING & TECHNOLOGY  
PETLURIVARI PALEM  
Narasaraopet (Mdl), Guntur(Dt)



A.M.REDDY MEMORIAL COLLEGE OF ENGINEERING & TECHNOLOGY  
NARASARAOPET.

INTERNAL LAB

Name of the Lab: VLSI DESIGN LAB

Branch: III/II ECE

Date: 12/5/23

Max.Marks: 15

\*\*\*\*\*

1. Write VHDL code for Logic Gates and verify the timing waveforms
2. Write VHDL code for 4-bit ripple carry and carry look ahead adder using behavioral, dataflow and structural modeling.
3. Write VHDL code for 3:8 decoder realization through 2:4 decoder and verify the timing waveforms
4. Write VHDL code for 8 to 3 Encoder and verify the timing waveforms
5. Write VHDL code for 16:1 MUX through 4:1 MUX and verify the timing waveforms
6. Write VHDL code for Design of 8-bit parity generator and checker and verify the timing Waveforms
7. Write VHDL code for 8-bit synchronous up-down counter and verify the timing waveforms
8. Write VHDL code for D Flip-Flop-7474 and verify the timing waveforms
9. Design and Implementation CMOS Inverter using Microwind.
10. Design and Implementation D Flip-Flop using Microwind.
11. Design and Implementation Universal Gates using Microwind
12. Design and Implementation Full Adder using Microwind.
13. Design and Implementation Full Subtractor using Microwind

Internal Examiner

Principal

HOD

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PETLURIVARI PALEM  
Narasaraopet (Mdi), Guntur(Dt)

**A.M.REDDY MEMORIAL COLLEGE OF ENGINEERING AND TECHNOLOGY**  
**III B.TECH II (R20) Semester INTERNAL LAB EXAMINATIONS- MAY 2023**

SUBJECT NAME: VLSI Design LAB

BRNACH: ECE

DATE: 12/5/23

S.No	Hall Ticket No	Name of student	EXPT NO	signature
1	20HM1A0401	ANIMELA SUMA LATHA	4	A: Sumalatha
2	20HM1A0402	BADIGE MANOJ KUMAR	6	B. Manoj Kumar.
3	20HM1A0403	BANDI VINOD KUMAR	07	B. Vinod kumar
4	20HM1A0404	BANDI VISWA NARAYANA	10	B. Viswa Narayana
5	20HM1A0405	BANDLA PALLI VIJAYA KUMAR REDDY	12	B Vijaya kumar Reddy
6	20HM1A0406	BELDAR SHAMEER	06	B. Shameer
7	20HM1A0407	BODAGALA VENUGOPAL	8	B. VENUGOPAL.
8	20HM1A0408	BUSAGANI BALAPPA	06	B. Babappa
9	20HM1A0410	CHINNA GOWNI THARUN KUMAR	04	C.G. Tharun Kumar
10	20HM1A0411	CHIPPAGIRI MANOJU NATH REDDY	03	C-Manjunath Reddy
11	20HM1A0412	DEVANA SAI SANDEEP REDDY	05	D Sai Sandeep Reddy
12	20HM1A0413	EEDIGA PRADEEP GOWD	09	E. Pradeep Gowd
13	20HM1A0415	GANDAM SANDEEPKUMAR	05	G. Sandeep Kumar
14	20HM1A0417	GULURU GOPAL REDDY	06	G. G. Reddy.
15	20HM1A0419	GUNDLAPALLI SRIKANTH REDDY	← A21 →	
16	20HM1A0420	JERRIPOTHULA MADHU	* A21 →	
17	20HM1A0421	KASUKURTHI AKHILA	07	K. Akhila.
18	20HM1A0422	KAVUJULA THIRUPATHAMMA	10	k. Thirupattamma
19	20HM1A0423	KOSURU NAGA JOSHNA	07 04	K. Naga Joshna Lokapalli Rakesh Reddy
20	20HM1A0424	LOKEPALLI RAKESH REDDY	07	Lokapalli Rakesh Reddy.
21	20HM1A0425	MADINENI MAHESH	08	M. Mahesh.
22	20HM1A0426	MANGALI YASWANTH	06	Mangali Yaswanth
23	20HM1A0427	MULLAPUDI SUZEEL	07	M. Suzeel
24	20HM1A0428	MYLAVARAM JAGAN MOHAN REDDY	06	M. Jagannath
25	20HM1A0429	PALAPARTHI SUMANTH		S. Sumanth

# A.M. REDDY GROUP OF EDUCATIONAL INSTITUTIONS

Petlurivaripalem, Narasaraopet (Mdl.), Palnadu (Dt.)- 522 601, A.P., India.

ENGINEERING (Approved by AICTE, Affiliated to J.N.T.U. K) PHARMACY (Approved by AICTE & PCI, Affiliated to A.N.U)



COURSE: Electch YEAR / SEM: 2/2 BRANCH: ECE  
MID. NO: Dulcarnae SUBJECT: VLSI Design Lab DATE: 12/05/2023  
STUDENT NAME: U Anitha Roll No: 2011M1A0435  
SIGNATURE OF THE INVIGILATOR: \_\_\_\_\_

ii Design and Implementation universal Gate using microwind.

Aim :- Design and Implementation universal Gate using micro wind

Apparatus :- personal computer  
window microwind EDA Tools

Procedure :-

↳ on window, launch the microwind by picking  
start → All program → microwind

→ According to the circuit design the layout by layer  
picking the from the palette

→ ~~once~~ the design is completed check for scaling error

as follow

→ Tool Bar → compile → design rule checker

⇒ if no design rules error find go for simulation

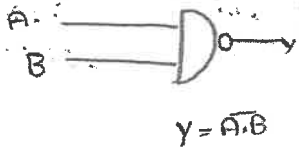
Tool Bar → simulation → run simulation → voltage vs time

observe the wave forms, truth table, logic diagram,

layout design.

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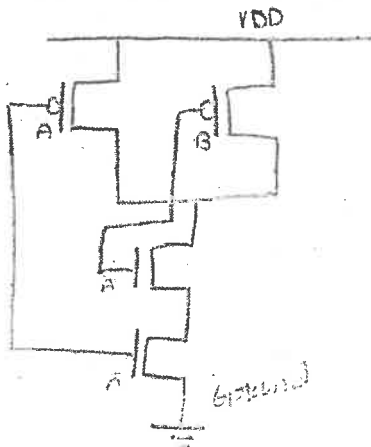
NAND gate symbol



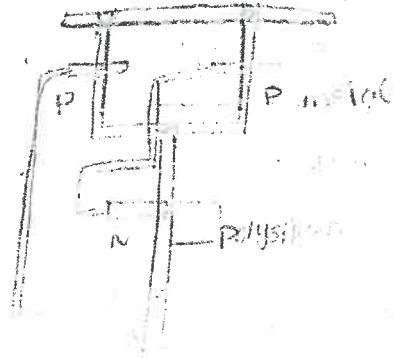
NAND gate truth table

A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

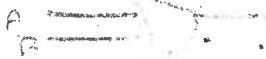
NAND circuit diagram



NAND layout design

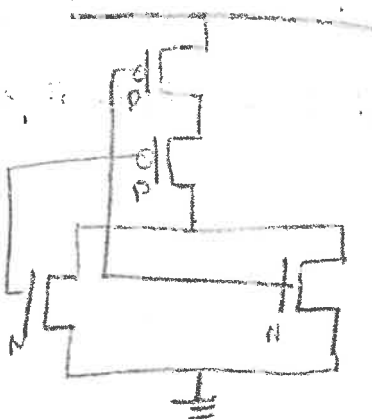


NOR gate symbol

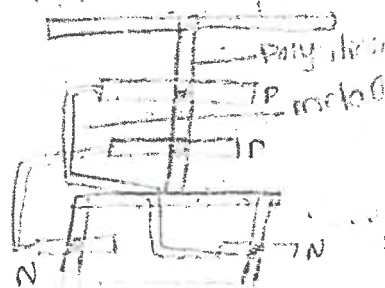


NOR gate truth table

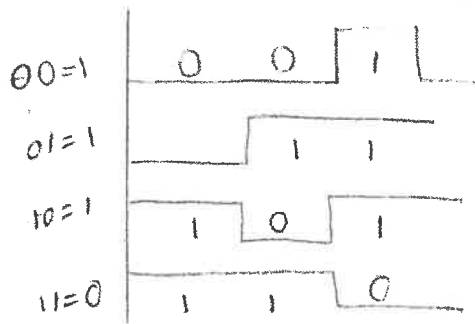
NOR circuit diagram



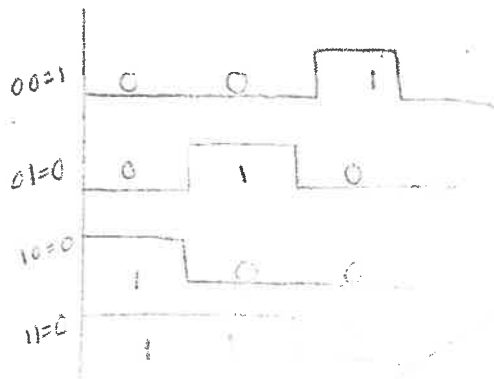
NOR layout design



### NAND gate wave form



### NOR gate wave form



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Results:- Hence verified and observe the Implementation  
Universal Gate using microwind.

✓

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Narasaraopet (Midi), Guntur (Dt. )

A.M.REDDY MEMORIAL COLLEGE OF ENGINEERING AND TECHNOLOGY

III B.TECH II Semester (R20) INTERNAL LAB MARKS – MAY 2023

LABNAME: VLSI LAB CODE: R2032045

Branch: ECE

Design Lab

S.No	Hall Ticket No	DAY TO DAY WORK(5 M)	RECORD-(5 M)	LABORATORY TEST-(5 M)	TOTAL MARKS (15 M)
1	20HM1A0401	05	05	05	15
2	20HM1A0402	05	04	04	13
3	20HM1A0403	05	05	05	13
4	20HM1A0404	05	04	05	14
5	20HM1A0405	04	05	05	14
6	20HM1A0406	04	05	05	14
7	20HM1A0407	03	03	04	10
8	20HM1A0408	03	03	04	10
9	20HM1A0410	04	04	04	12
10	20HM1A0411	04	05	05	14
11	20HM1A0412	04	04	04	12
12	20HM1A0413	05	05	05	15
13	20HM1A0415	04	04	05	13
14	20HM1A0417	04	05	05	14
15	20HM1A0419	AB	AB	AB	AB
16	20HM1A0420	AB	AB	AB	AB
17	20HM1A0421	04	04	05	13
18	20HM1A0422	05	05	05	15
19	20HM1A0423	03	04	04	11
20	20HM1A0424	05	04	05	14
21	20HM1A0425	05	05	05	15
22	20HM1A0426	05	05	05	15
23	20HM1A0427	05	04	04	13
24	20HM1A0428	04	03	04	11





# JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

FINAL PDF for III B.Tech II Semester Internal Marks (R20) August - 2023

College: A.M.REDDY MEMORIAL COLL. OF ENGG.,PETLURIVARIPALEM, NARSARAO:HM

Date:16-08-2023

HTNO	SUBJECT	MID_1	Q1	assign_1	MID_2	Q2	assign_2	Total	SUB_TYPE	MC_EXT
20HM1A0102	R2032011	0	0	0	0	0	0	18	TD	0
20HM1A0103	R2032011	0	0	0	0	0	0	15	TD	0
20HM1A0104	R2032011	0	0	0	0	0	0	20	TD	0
20HM1A0106	R2032011	0	0	0	0	0	0	15	TD	0
20HM1A0107	R2032011	0	0	0	0	0	0	19	TD	0
20HM1A0108	R2032011	0	0	0	0	0	0	18	TD	0
20HM1A0109	R2032011	0	0	0	0	0	0	15	TD	0
20HM1A0110	R2032011	0	0	0	0	0	0	15	TD	0
20HM1A0111	R2032011	0	0	0	0	0	0	20	TD	0
20HM1A0112	R2032011	0	0	0	0	0	0	20	TD	0
20HM1A0113	R2032011	0	0	0	0	0	0	19	TD	0
20HM1A0114	R2032011	0	0	0	0	0	0	15	TD	0
20HM1A0115	R2032011	0	0	0	0	0	0	20	TD	0
20HM1A0116	R2032011	0	0	0	0	0	0	15	TD	0
21HM5A0101	R2032011	0	0	0	0	0	0	20	TD	0
21HM5A0102	R2032011	0	0	0	0	0	0	20	TD	0
21HM5A0103	R2032011	0	0	0	0	0	0	20	TD	0
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20HM1A0103	R2032012	9	3	5	11	3	5	19	T	0
20HM1A0104	R2032012	15	3	5	14	2	5	23	T	0
20HM1A0106	R2032012	10	3	5	10	4	5	19	T	0
20HM1A0107	R2032012	12	3	5	15	3	5	23	T	0
20HM1A0108	R2032012	12	5	5	4	5	5	21	T	0
20HM1A0109	R2032012	6	4	5	13	2	5	19	T	0
20HM1A0110	R2032012	14	3	5	13	1	5	22	T	0
20HM1A0111	R2032012	15	4	5	15	2	5	24	T	0
20HM1A0112	R2032012	15	4	5	15	2	5	24	T	0
20HM1A0113	R2032012	10	3	5	14	3	5	22	T	0
20HM1A0114	R2032012	9	4	5	14	3	5	22	T	0
20HM1A0115	R2032012	15	2	5	15	4	5	24	T	0
20HM1A0116	R2032012	14	2	5	10	3	5	21	T	0
21HM5A0101	R2032012	10	0	5	15	0	5	19	T	0
21HM5A0102	R2032012	12	0	5	15	0	5	20	T	0
21HM5A0103	R2032012	10	0	5	15	0	5	19	T	0
20HM1A0102	R2032013	11	2	5	14	2	5	21	T	0
20HM1A0103	R2032013	8	2	5	14	2	5	20	T	0
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20HM1A0106	R2032013	10	2	5	13	4	5	21	T	0
20HM1A0107	R2032013	8	3	5	14	2	5	20	T	0
20HM1A0108	R2032013	7	2	5	14	3	5	21	T	0
20HM1A0109	R2032013	8	3	5	12	3	5	20	T	0
20HM1A0110	R2032013	10	3	5	11	2	5	18	T	0

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PETLURIVARIPALEM

HTNO	SUBJECT	MID_1	Q1	assign_1	MID_2	Q2	assign_2	Total	SUB_TYPE	MC_EXT
20HM1A0403	R2032045	0	0	0	0	0	0	13	L	0
20HM1A0404	R2032045	0	0	0	0	0	0	14	L	0
20HM1A0405	R2032045	0	0	0	0	0	0	14	L	0
20HM1A0406	R2032045	0	0	0	0	0	0	14	L	0
20HM1A0407	R2032045	0	0	0	0	0	0	10	L	0
20HM1A0408	R2032045	0	0	0	0	0	0	10	L	0
20HM1A0410	R2032045	0	0	0	0	0	0	12	L	0
20HM1A0411	R2032045	0	0	0	0	0	0	14	L	0
20HM1A0412	R2032045	0	0	0	0	0	0	12	L	0
20HM1A0413	R2032045	0	0	0	0	0	0	15	L	0
20HM1A0415	R2032045	0	0	0	0	0	0	13	L	0
20HM1A0417	R2032045	0	0	0	0	0	0	14	L	0
20HM1A0419	R2032045	0	0	0	0	0	0	0	L	0
20HM1A0420	R2032045	0	0	0	0	0	0	0	L	0
20HM1A0421	R2032045	0	0	0	0	0	0	13	L	0
20HM1A0422	R2032045	0	0	0	0	0	0	15	L	0
20HM1A0423	R2032045	0	0	0	0	0	0	11	L	0
20HM1A0424	R2032045	0	0	0	0	0	0	14	L	0
20HM1A0425	R2032045	0	0	0	0	0	0	15	L	0
20HM1A0426	R2032045	0	0	0	0	0	0	15	L	0
20HM1A0427	R2032045	0	0	0	0	0	0	13	L	0
20HM1A0428	R2032045	0	0	0	0	0	0	11	L	0
20HM1A0429	R2032045	0	0	0	0	0	0	10	L	0
20HM1A0430	R2032045	0	0	0	0	0	0	10	L	0
20HM1A0431	R2032045	0	0	0	0	0	0	12	L	0
20HM1A0433	R2032045	0	0	0	0	0	0	13	L	0
20HM1A0434	R2032045	0	0	0	0	0	0	13	L	0
20HM1A0435	R2032045	0	0	0	0	0	0	15	L	0
20HM1A0436	R2032045	0	0	0	0	0	0	15	L	0
21HM5A0401	R2032045	0	0	0	0	0	0	13	L	0
20HM1A0401	R2032046	0	0	0	0	0	0	14	L	0
20HM1A0402	R2032046	0	0	0	0	0	0	13	L	0
20HM1A0403	R2032046	0	0	0	0	0	0	13	L	0
20HM1A0404	R2032046	0	0	0	0	0	0	14	L	0
20HM1A0405	R2032046	0	0	0	0	0	0	13	L	0
20HM1A0406	R2032046	0	0	0	0	0	0	12	L	0
20HM1A0407	R2032046	0	0	0	0	0	0	11	L	0
20HM1A0408	R2032046	0	0	0	0	0	0	10	L	0
20HM1A0410	R2032046	0	0	0	0	0	0	11	L	0
20HM1A0411	R2032046	0	0	0	0	0	0	11	L	0
20HM1A0412	R2032046	0	0	0	0	0	0	10	L	0
20HM1A0413	R2032046	0	0	0	0	0	0	12	L	0
20HM1A0415	R2032046	0	0	0	0	0	0	11	L	0
20HM1A0417	R2032046	0	0	0	0	0	0	14	L	0
20HM1A0419	R2032046	0	0	0	0	0	0	0	L	0
20HM1A0420	R2032046	0	0	0	0	0	0	0	L	0
20HM1A0421	R2032046	0	0	0	0	0	0	13	L	0
20HM1A0422	R2032046	0	0	0	0	0	0	13	L	0

HTNO	SUBJECT	MID_1	Q1	assign_1	MID_2	Q2	assign_2	Total	SUB_TYPE	MC_EXT
20HM1A0423	R2032046	0	0	0	0	0	0	11	L	0
20HM1A0424	R2032046	0	0	0	0	0	0	12	L	0
20HM1A0425	R2032046	0	0	0	0	0	0	14	L	0
20HM1A0426	R2032046	0	0	0	0	0	0	15	L	0
20HM1A0427	R2032046	0	0	0	0	0	0	10	L	0
20HM1A0428	R2032046	0	0	0	0	0	0	10	L	0
20HM1A0429	R2032046	0	0	0	0	0	0	10	L	0
20HM1A0430	R2032046	0	0	0	0	0	0	11	L	0
20HM1A0431	R2032046	0	0	0	0	0	0	11	L	0
20HM1A0433	R2032046	0	0	0	0	0	0	12	L	0
20HM1A0434	R2032046	0	0	0	0	0	0	14	L	0
20HM1A0435	R2032046	0	0	0	0	0	0	15	L	0
20HM1A0436	R2032046	0	0	0	0	0	0	15	L	0
21HM5A0401	R2032046	0	0	0	0	0	0	13	L	0
20HM1A0401	R2032048	0	0	0	0	0	0	30	MC	70
20HM1A0402	R2032048	0	0	0	0	0	0	30	MC	67
20HM1A0403	R2032048	0	0	0	0	0	0	30	MC	65
20HM1A0404	R2032048	0	0	0	0	0	0	30	MC	66
20HM1A0405	R2032048	0	0	0	0	0	0	30	MC	66
20HM1A0406	R2032048	0	0	0	0	0	0	29	MC	66
20HM1A0407	R2032048	0	0	0	0	0	0	25	MC	65
20HM1A0408	R2032048	0	0	0	0	0	0	20	MC	65
20HM1A0410	R2032048	0	0	0	0	0	0	26	MC	65
20HM1A0411	R2032048	0	0	0	0	0	0	30	MC	66
20HM1A0412	R2032048	0	0	0	0	0	0	20	MC	65
20HM1A0413	R2032048	0	0	0	0	0	0	30	MC	67
20HM1A0415	R2032048	0	0	0	0	0	0	27	MC	65
20HM1A0417	R2032048	0	0	0	0	0	0	30	MC	66
20HM1A0419	R2032048	0	0	0	0	0	0	0	MC	0
20HM1A0420	R2032048	0	0	0	0	0	0	0	MC	0
20HM1A0421	R2032048	0	0	0	0	0	0	30	MC	68
20HM1A0422	R2032048	0	0	0	0	0	0	30	MC	68
20HM1A0423	R2032048	0	0	0	0	0	0	20	MC	70
20HM1A0424	R2032048	0	0	0	0	0	0	22	MC	70
20HM1A0425	R2032048	0	0	0	0	0	0	30	MC	70
20HM1A0426	R2032048	0	0	0	0	0	0	30	MC	70
20HM1A0427	R2032048	0	0	0	0	0	0	20	MC	65
20HM1A0428	R2032048	0	0	0	0	0	0	23	MC	65
20HM1A0429	R2032048	0	0	0	0	0	0	24	MC	65
20HM1A0430	R2032048	0	0	0	0	0	0	26	MC	65
20HM1A0431	R2032048	0	0	0	0	0	0	30	MC	65
20HM1A0433	R2032048	0	0	0	0	0	0	30	MC	66
20HM1A0434	R2032048	0	0	0	0	0	0	30	MC	64
20HM1A0435	R2032048	0	0	0	0	0	0	30	MC	70
20HM1A0436	R2032048	0	0	0	0	0	0	30	MC	70
21HM5A0401	R2032048	0	0	0	0	0	0	25	MC	68
20HM1A0401	R203204C	13	4	5	15	2	5	22	PE2	0
20HM1A0402	R203204C	0	2	5	14	2	5	19	PE2	0



# JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

FINAL PDF for III B.Tech II Semester Internal Marks (Re-Admit) August - 2023


College: A.M.REDDY MEMORIAL COLL. OF ENGG.,PETLURIVARIPALEM, NARSARAO:HM

Date:16-08-2023

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HTNO	SUBJECT	MID_1	MID_2	Total	SUB_TYPE
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Verified by: **PRINCIPAL**

  
**Controller of Examinations**

Date :16-08-2023

Principal  
A.M REDDY MEMORIAL COLLEGE OF  
ENGINEERING & TECHNOLOGY  
PETLURIVARI PALEM  
Narsaraopet, (Machilipatnam Dist.)