

**KANDULA SRINIVASA REDDY MEMORIAL COLLEGE OF
ENGINEERING (AUTONOMOUS)**

KADAPA-516003. AP

(Approved by AICTE, Affiliated to JNTUA, Ananthapuramu,

Accredited by NAAC)

(An ISO 9001-2008 Certified Institution)

**DEPARTMENT OF ELECTRICAL AND ELECTRONICS
ENGINEERING**



**CERTIFICATION COURSE
ON
“MATLAB/SIMULINK”**

Resource Person : Mr.T Kishore Kumar, Assistant Professor, Dept. of EEE,
KSRMCE

Course Coordinator: Mr. P Durga Prasad, Assistant Professor, Dept. of EEE,
KSRMCE

Duration: 10-01-2020 to 06-02-2020

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**DEPARTMENT OF ELECTRICAL AND ELECTRONICS
ENGINEERING**



**VALUE ADDED COURSE
ON
“MATLAB/SIMULINK”**

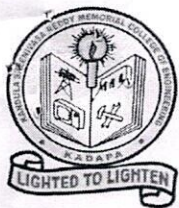
Resource Person : Mr. T Kishore Kumar, Assistant Professor,

Dept. of EEE, KSRMCE

Course Coordinator :Mr. P Durga Prasad, Assistant Professor, Dept. of EEE,

KSRMCE

Duration: 10-01-2020 to 06-02-2020



K.S.R.M. COLLEGE OF ENGINEERING

(UGC-AUTONOMOUS)

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Lr./KSRMCE/ME/2019-20/

Date:03-01-2020

To
The Principal,
KSRMCE,
Kadapa.

Respected Sir,

Sub: Permission to Conduct Certification Course on “MATLAB/SIMULINK”
10/1/2020 to 6/2/2020–Req- Reg.

The Department of Electrical and Electronics Engineering is planning to offer a Certification Course on “MATLAB/SIMULINK” to B. Tech. students. The course will be conducted from 10/1/2020 to 6/2/2020. In this regard, I kindly request you to grant permission to conduct a Value Added Course.

Thanking you sir,

*Forwarded to
Principal Sir
Vignesh
03/01/2020*

Yours faithfully

P. Duga Prasad
(P.Duga Prasad,

Asst.professor,Dept. EEE)

Permitted

U. S. S. Murali



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Cr./KSRMCE/ME/2019-20/

Date: 05/01/2020

Circular

The Department of Electrical and Electronics Engineering is offering a Certification Course on "MATLAB/SIMULINK" from **10/1/2020 to 6/2/2020** to B.Tech students. In this regard, interested students are requested to register their names for the Value Added Course with Course Coordinator.

For further information contact the Course Coordinator.

Course Coordinator: Mr. P.Durga Prasad. Asst.professor, Dept. of EEE.-KSRMCE.

P. Durga Prasad
HOD 05/01/2020

Dept. of EEE
HEAD

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Report of
Certification Course on "MATLAB/SIMULINK"
From 10/1/2020 to 6/2/2020

Target Group	:	B.Tech Students
Details of Participants	:	80 Students
Co-coordinator(s)	:	Sri P.Durga Prasad
Resource Person(s)	:	Sri T. Kishore Kumar
Organizing Department	:	Electrical and Electronics Engineering
Venue	:	SJ-111(Seminar Hall)

Description:

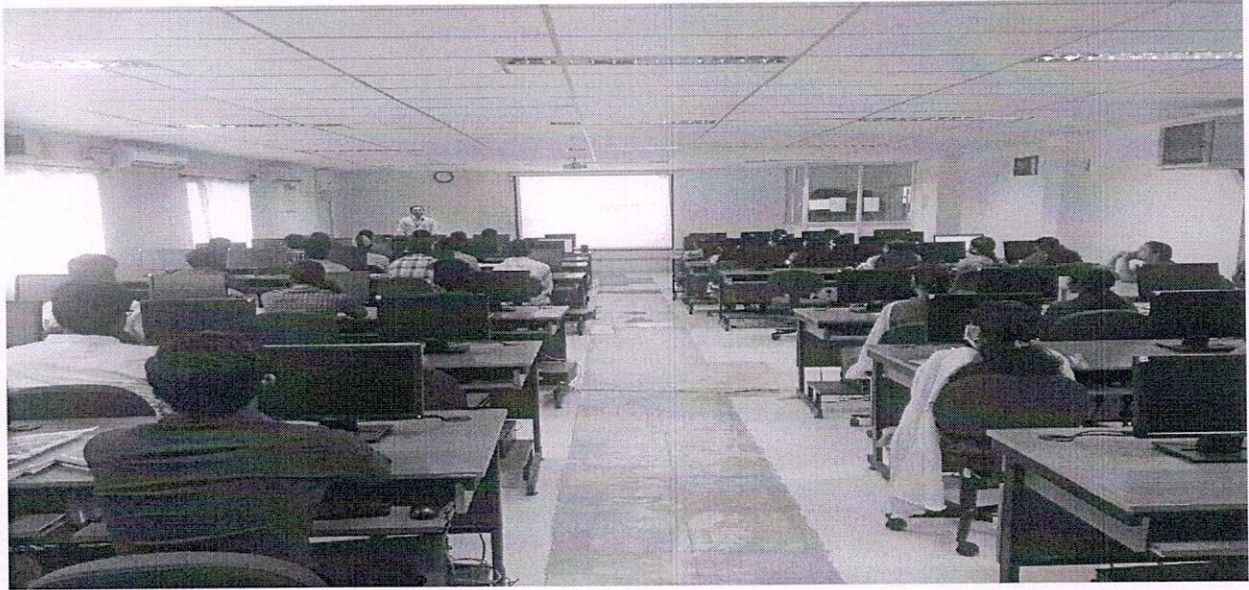
The Department of Electrical and Electronics Engineering conducted a Value Added Course on "MATLAB/SIMULINK" from 10/1/2020 to 6/2/2020. The primary objective of this programme is to update/enhance the skills of engineering The engineering faculties may be exposed to the needs of the IT industry so that they can in-turn nurture, educate and mold their students while they are still in the college. The training methodology includes: Module wise case studies, Matlab based laboratory assignment , Each module prepared for delivery, aimed for practical aspects of that theory. The content covered have been listed below:

1. solve simple problems using MATLAB programming
2. Construct simple models using SIMULINK.
3. construct the required functions to perform the operations in main problems
4. use the different tool boxes and block sets in MATLAB
- 5 solve engineering problems using MATLAB programming
6. analyze Engineering problems using SIMULINK
7. resolve the problem while ERRORS are occurred during the programming or modeling
8. appreciate the use of MATLAB in solving problems related to Electrical alliance branches of

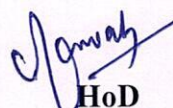


Engineering

Mr.T. Kishore Kumar, Assistant Professor, Dept. EEE resource person of the course has given through basics on the course and its application in various Engineering domains. Practical sessions in this module are explained and given the assignments on each module.




Coordinator(s)


HoD
HEAD
Department of Electrical &
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K.S.R.M. College of Engineering
Kadapa -516003.



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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

REGISTRATION FORM

Certification Course

On

“MATLAB/SIMULINK” From 10/1/2020 to 6/2/202

S.No	Full Name	Roll Number	Branch	Semester	Signature
1.	Akula Venkata Aravind	179Y1A0201	EEE	V	Aravind.
2.	Akula Venkata Sunil	179Y1A0202	EEE	V	Sunil..
3	Ankireddipalli Vivekanandareddy	179Y1A0203	EEE	V	Vivekananda Reddy.
4.	Banda Sivaraj	179Y1A0204	EEE	V	Sivaraj..
5.	Bhumireddy Chandrakala	179Y1A0206	EEE	V	Chandrakala
6.	Duggisetty Jagapathi Babu	179Y1A0207	EEE	V	Jagapathi babu
7.	Gaddam Anil Kumar	179Y1A0208	EEE	V	Anil Kumar
8.	Gajjalakondugari Renuka Devi	179Y1A0209	EEE	V	Renuka Devi
9.	Gorantla Sasidhar	179Y1A0210	EEE	V	Sasidhar
10.	Krishnam Snehalatha	179Y1A0211	EEE	V	K. Snehalatha
11.	Kuruba Lakshmikanth	179Y1A0212	EEE	V	K. Lakshmikanth
12.	Manchala Sowmya	179Y1A0214	EEE	V	Sowmya
13.	Mayana Abdul Suhaib Khan	179Y1A0215	EEE	V	M. Suhaib Khan
14.	Meda Sandeep	179Y1A0216	EEE	V	M. Sandeep
15.	Mekala Gangadhara	179Y1A0217	EEE	V	M. Gangadhara
16.	Nakkalapalli Shireesha	179Y1A0218	EEE	V	Sh. Shireesha
17.	Posa Venkata Sreevalli	179Y1A0219	EEE	V	P. Sreevalli
18.	Pasupuleti Gayathri Devi	179Y1A0220	EEE	V	P. Devi
19.	Rayapu Vennela	179Y1A0221	EEE	V	Vennela
20.	Sannapuri Venkatesh	179Y1A0222	EEE	V	S. Venkatesh
21.	Shaik Abdul Farooq	179Y1A0223	EEE	V	Farooq
22.	Shaik Misba Sania	179Y1A0224	EEE	V	S. Sania
23.	Sucharitha Panyam	179Y1A0225	EEE	V	S. Panyam
24.	Syed Azaruddin	179Y1A0226	EEE	V	Azaruddin
25.	Syed Hafeez Parvez	179Y1A0227	EEE	V	S. Parvez
26.	Syed Shazia Tabassum	179Y1A0228	EEE	V	S. Tabassum
27.	Yarranagu Rajesh Reddy	179Y1A0230	EEE	V	Rajesh



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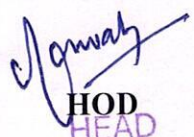
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28.	Athinjeri Rajesh	189Y5A0201	EEE	V	Rajesh
29.	Bijivemula Sudarshan Reddy	189Y5A0202	EEE	V	Sudarshan Reddy
30.	Billipati Pavan Kumar	189Y5A0203	EEE	V	Pavan Kumar
31.	Bollineni Prasanna Lakshmi	189Y5A0204	EEE	V	Lakshmi
32.	Chabuk Sawar Mohammed Subhan	189Y5A0205	EEE	V	Subhan
33.	Chundu Nirankumar	189Y5A0206	EEE	V	Chandu
34.	Dara Praveen	189Y5A0207	EEE	V	Praveen
35.	Dasari Kishor Kumar	189Y5A0208	EEE	V	D. Kumar
36.	Dasari Pavan Kalyan	189Y5A0209	EEE	V	D. Pavan Kalyan
37.	Dwarsala Veera Madhavi	189Y5A0210	EEE	V	Madhavi
38.	Gosala Srinivasa Rao	189Y5A0211	EEE	V	G. Srinivasa
39.	Gundlamadugu Reddy Krishna	189Y5A0212	EEE	V	G. Krishna
40.	Jada Naveen Kumar	189Y5A0213	EEE	V	J. Naveen Kumar
41.	Kambham Pavan Kumar Reddy	189Y5A0216	EEE	V	Pavan Kumar
42.	Kapa Omkar Reddy	189Y5A0217	EEE	V	K. Omkar
43.	Karapureddy Manoj Kumar Reddy	189Y5A0218	EEE	V	K. Manoj Kumar
44.	Koduru Kumar	189Y5A0219	EEE	V	K. Kumar
45.	Konangi Chandu	189Y5A0220	EEE	V	Chandu
46.	Kothapalli Somanju	189Y5A0221	EEE	V	K. Somanju
47.	Kumarakalva Balaji	189Y5A0222	EEE	V	K. Balaji
48.	Kummara Vishnu	189Y5A0223	EEE	V	Vishnu
49.	Kundala Sivasai	189Y5A0224	EEE	V	K. Sivasai
50.	Kusam Chandra Prakash Reddy	189Y5A0227	EEE	V	K. Prakash
51.	Lakkireddy Madhu Sai	189Y5A0228	EEE	V	L. Madhusai
52.	Lavanur Revanth Reddy	189Y5A0229	EEE	V	L. Revanth
53.	Lingireddy Sai Harshini	189Y5A0230	EEE	V	L. Sai
54.	Moghal Aslam Baig	189Y5A0231	EEE	V	M. Aslam
55.	Moola Pradeep Kumar Reddy	189Y5A0232	EEE	V	M. Pradeep
56.	Mule Siva Jyothsna (W)	189Y5A0233	EEE	V	M. Siva
57.	Neelam Pavan Kumar Reddy	189Y5A0234	EEE	V	N. Pavan
58.	Palla Ravivarma	189Y5A0235	EEE	V	P. Ravivarma
59.	Palla Reddaiah	189Y5A0236	EEE	V	P. Reddaiah
60.	Palleti Prasanna Kumar	189Y5A0237	EEE	V	P. Kumar
61.	Pathakota Santhosh Reddy	189Y5A0238	EEE	V	P. Santhosh
62.	Pattem Sravani (W)	189Y5A0239	EEE	V	P. Sravani
63.	Pullagura Prabhu Teja	189Y5A0240	EEE	V	P. Teja
64.	Pullirupu Sathish Kumar	189Y5A0241	EEE	V	P. Sathish
65.	Rajoli Karthik Reddy	189Y5A0242	EEE	V	R. Karthik
66.	Ramireddy Pavan Kumar Reddy	189Y5A0243	EEE	V	R. Pavan Kumar
67.	Repalle Anok	189Y5A0244	EEE	V	R. Anok
68.	Saraswathi Madhurima (W)	189Y5A0245	EEE	V	S. Madhurima



69.	Sareddy Niranjan Reddy	189Y5A0246	EEE	V	Mirajana Reddy
70.	Shaik Ahammad	189Y5A0247	EEE	V	Ahammad
71.	Shaik Sathik Basha	189Y5A0248	EEE	V	Basha
72.	Shaik Vannur Basha	189Y5A0249	EEE	V	Basha
73.	Siddamreddy Nagabhushan Reddy	189Y5A0250	EEE	V	Nagabhushan
74.	Sirivelu Srikanth	189Y5A0251	EEE	V	Srikanth
75.	Sulthan Saheb Kamal Basha	189Y5A0252	EEE	V	Kamal Basha
76.	Sunnapu Pavan Sai	189Y5A0253	EEE	V	Pavan Sai
77.	Syed Baba Fakruddin	189Y5A0254	EEE	V	Fakruddin
78.	Tadipatri Kambagiri	189Y5A0255	EEE	V	Kambagiri
79.	Thota Pavankumar Reddy	189Y5A0256	EEE	V	Pavankumar
80.	Vadde Abhishek	189Y5A0257	EEE	V	Abhishek


Coordinator:


HOD
HEAD
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Syllabus of Certification Course

Course Name: "MATLAB/SIMULINK"

Course Objectives:

The objective of the course is to learn the basic features and fundamental blocks of SIMULINK and to solve electrical engineering problems.

Course Outcomes:

1. Understand basic features of SIMULINK
2. Know various signals, operations and user defined functions
3. Analyze fundamental blocks of SIM power systems
4. Solve Electrical Engineering problems using SIMULINK

Module-1

Elementary features: Introduction to Simulink –Creating new Simulink file – Commonly used blocks – Continues & Discrete signals – Logic & Bit operations – Math operations – Ports & Subsystems – Sinks – Sources – User defined functions.

Module-2

SIM Power Systems: Fundamental Blocks: Electrical sources – Elements – Interface elements – Machines – Power Electronics – Control & Measurement- FACTS – Renewable Sources

Module-3

Electrical Engineering Applications – Modeling & Simulation of simple Electrical Block diagrams: Power electronics, Electrical Machines, Power & Control Systems

Text Books/Reference Books:

1. Beginning MATLAB and Simulink from Novice to Professional by Sulaymon Eshkabilov, Apress.
2. Modeling & Simulation Using MATLAB – Simulink by Dr. Shailendra Jain, Wiley.
3. MATLAB – Simulink for Engineers by Agam Kumar Tyagi, OXFORD University press.



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SCHEDULE

Department of Electrical and Electronics Engineering

Certification Course

On

“MATLAB/SIMULINK” From 10/1/2020 to 6/2/2020.

Date	Timing	Resource Person	Topic to be covered
10.01.2020	4 PM to 6 PM	K.Kalyan Kumar	Introduction to Simulink –Creating new Simulink file
11.01.2020	4 PM to 6 PM	K.Kalyan Kumar	Commonly used blocks – Continues & Discrete signals
17.01.2020	4 PM to 6 PM	K.Kalyan Kumar	Logic & Bit operations – Math operations
18.01.2020	4 PM to 6 PM	K.Kalyan Kumar	Ports & Subsystems – Sinks – Sources – User defined functions
20.01.2020	4 PM to 6 PM	K.Kalyan Kumar	Fundamental Blocks: Electrical sources – Elements
21.01.2020	4 PM to 6 PM	K.Kalyan Kumar	Interface elements – Machines
22.01.2020	4 PM to 6 PM	K.Kalyan Kumar	Power Electronics – circuits and simulation
23.01.2020	4 PM to 6 PM	K.Kalyan Kumar	Control & Measurement design and simulation
24.01.2020	4 PM to 6 PM	K.Kalyan Kumar	FACTS circuit design and simulation
25.01.2020	4 PM to 6 PM	K.Kalyan Kumar	Renewable circuit simulation
27.01.2020	4 PM to 6 PM	K.Kalyan Kumar	Electrical Engineering Applications
28.01.2020	4 PM to 6 PM	K.Kalyan Kumar	Modeling & Simulation of simple Electrical Block diagrams
03.02.2020	4 PM to 6 PM	K.Kalyan Kumar	Power electronics Circuit Simulation
04.02.2020	4 PM to 6 PM	K.Kalyan Kumar	Electrical Machines Circuit Simulation
05.02.2020	4 PM to 6 PM	K.Kalyan Kumar	Power & Control Systems Circuit Simulation
06.02.2020	4 PM to 6 PM	K.Kalyan Kumar	Power & Control Systems Circuit Simulation

Resource Person(s)

Coordinator(s)

HOD

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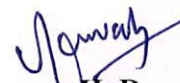
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Sl. No.	Roll No.	Name	10	11	17	18	20	21	22	23	24	25	27	28	03	04	05	06
			Jan	Jan	Jan	Jan	Jan	Jan	Jan	Jan	Jan	Jan	Jan	Jan	Feb	Feb	Feb	Feb
63	189Y5A0240	Pullagura Prabhu Teja	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
64	189Y5A0241	Pullirupu Sathish Kumar	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P
65	189Y5A0242	Rajoli Karthik Reddy	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
66	189Y5A0243	Ramireddy Pavan Kumar Reddy	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P
67	189Y5A0244	Repalle Anok	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
68	189Y5A0245	Saraswathi Madhurima (W)	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P
69	189Y5A0246	Sareddy Niranjan Reddy	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
70	189Y5A0247	Shaik Ahammad	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
71	189Y5A0248	Shaik Sathik Basha	P	P	P	P	P	P	P	P	P	P	P	P	A	P	P	P
72	189Y5A0249	Shaik Vannur Basha	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P
73	189Y5A0250	Siddamreddy Nagabhushan Reddy	P	P	P	P	P	P	P	P	A	P	P	P	P	P	A	P
74	189Y5A0251	Sirivelu Srikanth	P	P	P	P	P	P	P	P	P	P	P	P	A	P	P	P
75	189Y5A0252	Sulthan Saheb Kamal Basha	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
76	189Y5A0253	Sunnapu Pavan Sai	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
77	189Y5A0254	Syed Baba Fakruddin	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P
78	189Y5A0255	Tadipatri Kambagiri	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P
79	189Y5A0256	Thota Pavankumar Reddy	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
80	189Y5A0257	Vadde Abhishek	P	P	P	P	P	P	P	P	P	P	A	P	P	P	P	P


Coordinator(s)


HoD
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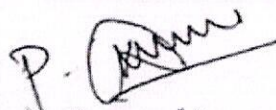
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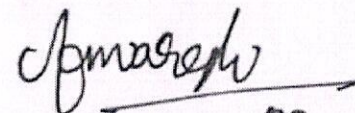
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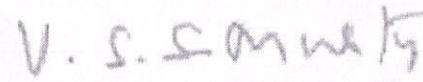
Department of E.E.E

**COURSE COMPLETION CERTIFICATE
ON
MATLAB / SIMULINK**

This is to certify that Dara Praveen (189Y5A020) has Successfully completed Value Added course on "MATLAB / Simulink" , from 10.01.2020 to 06.02.2020 organised by the Department of Electrical and Electronics Engineering, K.S.R.M.C.E, Kadapa


Coordinator


Dr. K. Amaresh
HOD, EEE


Dr. V.S.S. Murthy
Principal




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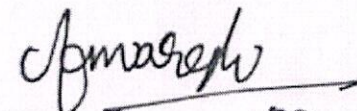
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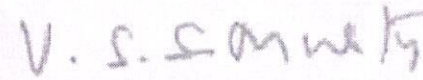
Department of E.E.E

**COURSE COMPLETION CERTIFICATE
ON
MATLAB / SIMULINK**

This is to certify that Kundala Sivasai (189Y5A0224) has Successfully completed Value Added course on "MATLAB / Simulink" , from 10.01.2020 to 06.02.2020 organised by the Department of Electrical and Electronics Engineering, K.S.R.M.C.E, Kadapa


Coordinator


Dr. K. Amaresh
HOD, EEE


Dr. V.S.S. Murthy
Principal

MATLAB and SIMULINK

T. Kishore Kumar
Assistant Professor
Dept. EEE

What is MATLAB?

- It stands for MATrix LABoratory
- It is developed by The Mathworks, Inc.
 - (<http://www.mathworks.com>)
- It is an interactive, integrated, environment
 - for numerical computations
 - for symbolic computations
 - for scientific visualizations
- It is a high-level programming language
 - Program (or script, actually) runs in interpreted, as opposed to compiled, mode
- Many application-specific toolboxes (functions) available

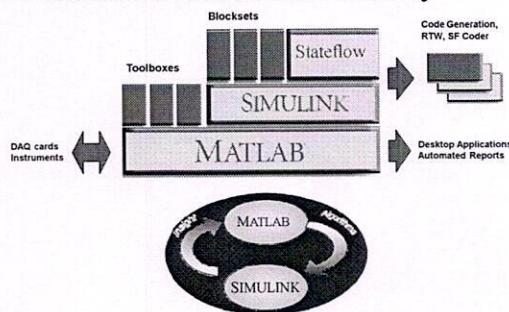
Strengths of MATLAB

- MATLAB is relatively easy to learn
- MATLAB code is optimized to be relatively quick when performing matrix operations
- MATLAB may behave like a calculator or as a programming language
- MATLAB is interpreted, errors are easier to fix
- Although primarily procedural, MATLAB does have some object-oriented elements

Weaknesses of MATLAB

- MATLAB is NOT a general purpose programming language
- MATLAB is an interpreted language (making it for the most part slower than a compiled language such as C++)
- MATLAB is designed for scientific computation and is not suitable for some things (such as parsing text)

The MathWorks Product Family

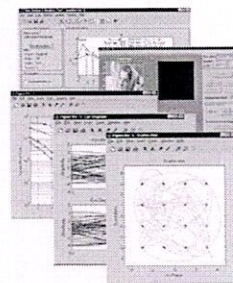


9/18/2006

ELG3311: Electric Machines and Power Systems

5

Toolboxes



- Signal Processing
- Communications
- Filter Design
- Wavelet Analysis
- Statistics
- Optimization
- Image Processing
- Others...

6

An Example of Script Files

- Create a file by the name, say, mytest.m.
- Contents of mytest.m:

```
x=45*pi/180; % convert degrees to radians
a=sin(x); % compute sine 45 degrees
b=cos(x); % compute cosine 45 degrees
disp('sin(45*pi/180)') % print header disp(a) % print result
```

An Example of Function Files

```
function y = cosgen(x,a,f,p)
%COGEN Generation of a cosine wave
% y = cosgen(x,a,f,p)
% y - cosine of x
% a - amplitude
% f - frequency [hertz]
% p - phase [radians]
y = a*cos( 2*pi*f*(x + p/(2*pi*f)) );
```

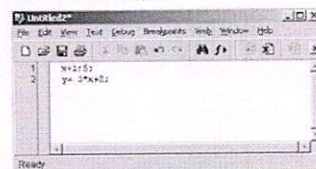
Matlab also has many built-in functions

- >> abs(x) % absolute value of x
- >> exp(x) % e to the x-th power
- >> fix(x) % rounds x to integer towards 0
- >> log10(x) % common logarithm of x to the base 10
- >> rem(x,y) % remainder of x/y
- >> sqrt(x) % square root of x
- >> sin(x) % sine of x; x in radians
- >> acoth(x) % inversion hyperbolic cotangent of x
- >> help elfun % get a list of all available elementary functions

```
>> sqrt(64)      >> e = cos(3)
ans = 8           ans = 1.111
>> sin(pi/2)     >> sin(pi/2)
ans = 1           ans = 1
>> abs(-56)      >> abs(-56)
ans = 56          ans = 56
```

Editing M-file through Editor Window

- Use the Editor/Debugger to create and debug M-files, which are programs you write to run MATLAB functions.
- The Editor/Debugger provides a GUI for basic text editing, as well as for M-file debugging
 - Create a new M-file: File → New → M-file
 - Open an M-file: File → Open



Rules on Variable and Function Names

- Variable/Function name
 - begins with a LETTER, e.g., A2z.
 - can be a mix of letters, digits, and underscores (e.g., vector_A, but not vector-A (since '-' is a reserved char)).
 - is case sensitive, e.g., NAME, Name, name are 3 distinct variables.
 - must not be longer than 31 characters.
- Suggestion:
 - Since MATLAB distinguishes one function from the next by their file names, name files the same as function names to avoid confusion.
 - Use only lowercase letter to be consistent with MATLAB's convention.
- File name
 - Files that contain MATLAB commands should be named with a suffix of ".m", e.g., something.m.
 - These include, but not restricted to, script m-files and function m-files.
 - Note: To use it, just refer to it by name, without the suffix, e.g.,
 - >> something

Operators

Arithmetic Operators

Operator	Description
+	Addition
-	Subtraction
*	Multiplication
./	Right division
.\	Left division
+	Unary plus
-	Unary minus
:	Colon operator
^	Power
.'	Transpose
.'	Complex conjugate transpose
*	Matrix multiplication
/	Matrix right division
\	Matrix left division
^	Matrix power

Relational Operators

Operator	Description
<	Less than
<=	Less than or equal to
>	Greater than
>=	Greater than or equal to
==	Equal to
~=	Not equal to

Logical Operators

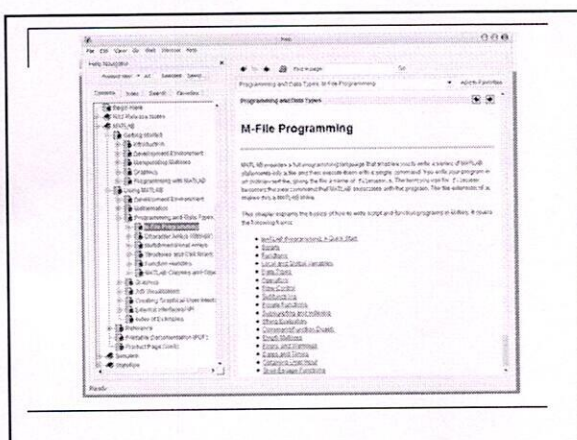
Operator	Description
&	AND
	OR
~	NOT

Hints for Editing and Run a M-file

- Hints
 - "%" is for comments.
 - ";" delimits statements; suppresses screen output
 - ":" create lists with fixed step
 - "..." statement continuation, e.g.,
 - ```
>> x = [1 3 5 ...
 7 9]; % x = [1 3 5 7 9] splitted into 2 lines
```
  - "\*" – command delimiter, e.g.,
    - ```
>> x = [1:2:9]; y = [1:9] % two statements on the same line
```
 - Define some variables:
 - ```
x = 1:5; y = 3*x+1;
```
  - "clear all; close all;" at the top-line of .m file
  - Use MATLAB functions and programming language.
- Run the M-file: (if the M-file is under the current directory)
  - In the command window, input the name of the M-file and then ENTER.
  - In the editor window, press F5.

## How to find help in MATLAB?

- "On-line" help
  - To find out about the syntax for any of the commands you can type
    - ```
>>help <commandname>
```
 inside of MATLAB.
- Help browser
 - Use the Help browser to search and view documentation and demos for all your MathWorks products.
 - To open the Help browser, click the help button in the toolbar, ?
 - or type "helpbrowser" in the Command Window.



II. MATLAB BASICS

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Introduction to Vectors in Matlab

- MATLAB is designed to work with matrices, but you can also input scalars and vectors since they can be considered as matrices with dimension 1x1 (scalars) and 1xn or nx1 (vectors).
- Defining a vector
- Accessing elements within a vector
- Basic operations on vectors
- Go to link:
 - <http://www.cyclismo.org/tutorial/matlab/vector.html>
 - <http://www.cyclismo.org/tutorial/matlab/operations.html>

Introduction to Matrices in Matlab

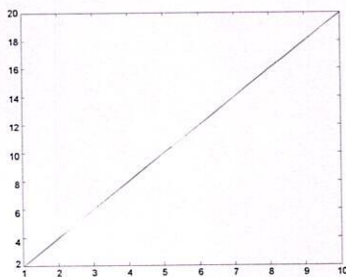
- Defining Matrices
- Matrix Functions
- Matrix Operations
- Go to link
 - <http://www.cyclismo.org/tutorial/matlab/matrix.html>
- The colon operator
 - 1:10 is a row vector containing the integers from 1 to 10: 1 2 3 4 5 6 7 8 9 10
 - To obtain nonunit spacing, specify an increment.
 - For example, 100:-7:50 is 100 93 86 79 72 65 58 51
 - Subscript expressions involving colons refer to portions of a matrix.
 - A(1:k,j) is the first k elements of the jth column of A.
 - A(:,j) is the jth column of A.
 - A(i,:) is the ith row of the A.

Plotting

- MATLAB supports a number of plot types with the ability to create custom graphs.
- The simplest x-y type plot can be created using **plot(x,y)** where x and y are vectors with a list of values stored in them.
- Other plot commands including:
 - **loglog, semilogx, semilogy, bar, stem, polar, plot3, contour, mesh** and **surf**.
- To find out about the syntax for any of the plot commands you can type **help <commandname>** inside of MATLAB.
- The figure plotted will be shown in the *Figure Window*.

Plotting (2)

- Example 1: Using the colon to create lists and generating a plot
 - **>>x=[1:.5:10]**
Defines a vector x that goes from 1 to 10 by 0.5. The colon is used to both create a list using the syntax [lower:increment:upper] and to select specific portions of a matrix.
 - **>> y=2*x**
Defines a vector y with values equal to twice the values in x.
 - **>>plot(x,y)**
Creates a simple x-y plot of the data stored in the vectors x and y.



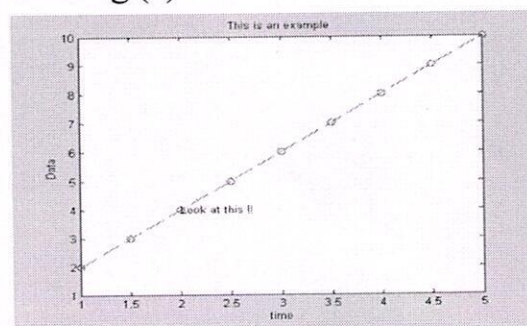
Plotting (3)

- Adding text, setting scales and styles
 - **>> axis([xmin xmax ymin ymax])**
Sets the x and y scales to the values you specify
 - **>> title('title text')**
Places a title above the plot. The commands xlabel('xtitle text') and ylabel('ytitle text') place a titles along the x and y- axes, respectively.
 - **>>text(x,y,'your text')**
Places any text string at the graph coordinates (x, y)

Plotting (4)

- Styles including color and line type can be specified by using a 2 or 3 character string inside the plot command immediately following the y variable. For example, the command **plot(x,y,'r--')** will produce a red dashed line. The available color and line type variables are given below:
 - **For color:** y yellow; m magenta; c cyan; r red; g green; b blue; w white; k black
 - **For line type:** . point; o circle; x x-mark; + plus; * star; - solid; : dotted; - . dashdot; -- dashed
- Plotting more than one data set on an single axis can be accomplished by using the command **hold** on and then plotting the additional data followed by a hold off command.

Plotting (5)



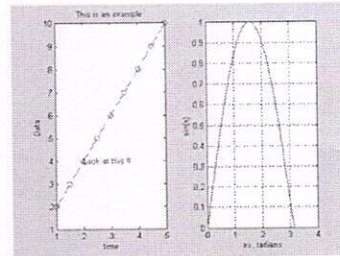
Plotting (6)

■ Example2: simple plots

- The following sequence of commands plots the graph of the sine function between 0 and π , provided that the two arrays have the same number of elements.

```
>> xx = 0:pi/90: pi;
>> yy = sin(xx);
>> plot(xx, yy)
>> grid on
>> xlabel('xx, radians')
>> ylabel('sin(xx)')
```

■ Example3: subplot



MATLAB Programming

■ Loops

- For Loops
- While Loops
- Go to link:
 - <http://www.cyclismo.org/tutorial/matlab/control.html>

■ If

- Go to link:
 - <http://www.cyclismo.org/tutorial/matlab/if.html>

■ Subroutines (optional)

- Go to link:
 - <http://www.cyclismo.org/tutorial/matlab/subroutine.html>

What is SIMULINK?

- **SIMULINK** is an extension to **MATLAB** which uses a icon-driven interface for the construction of a block diagram representation of a process.
- Simulink encourages you to try things out.
- A block diagram is simply a graphical representation of a process (which is composed of an input, the system, and an output).

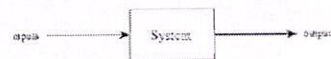


Figure 1: A Very simple block diagram of a process.

About SIMULINK

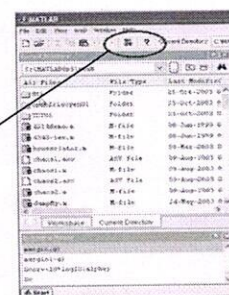
- SIMULINK uses a graphical user interface (GUI) for solving process simulations.
- Instead of writing MATLAB code, we simply connect the necessary "icons" together so as to construct the block diagram.
- The "icons" represent possible inputs to the system, parts of the systems, or outputs of the system.
- SIMULINK allows the user to easily simulate systems of *linear* and *nonlinear* ordinary differential equations.

Starting SIMULINK

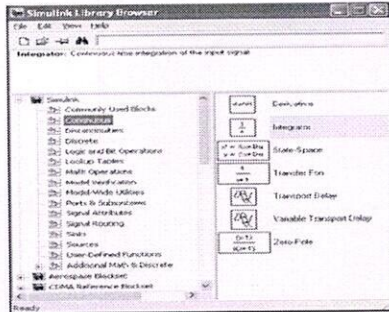
- To start Simulink, on the MATLAB command prompt, type
- `>>simulink`

■ Or

- Click here



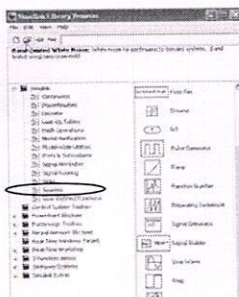
"Simulink Library Browser" will open.



Block Diagram Construction

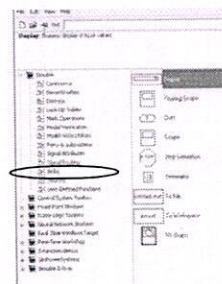
- Basically, one has to specify the **model** of the system (state space, discrete, transfer functions, nonlinear ODE's, etc.), the **input (source)** to the system, and where **the output (sink)** of the simulation of the system will go.
- Open up the Sources, Sinks, and Linear windows by clicking on the appropriate icons.
 - Note the different types of sources (step function, sinusoidal, white noise, etc.), sinks (scope, file, workspace), and linear systems (transfer function, state space model, etc.).
- The next step is to connect these icons together by drawing lines connecting the icons using the left-most mouse button (hold the button down and drag the mouse to draw a line).

Sources



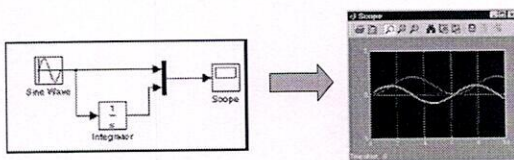
- Sources library contains the sources of data signals to be used in the dynamic system simulation.
- E.g. Constant signal, signal generator, sinusoidal waves, step input, repeating sequences like pulse trains and ramps etc.

Sink



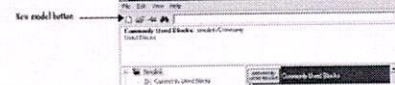
- Sinks library contains blocks where the signal terminates.
- You may store data in a file, display it.
- Use the terminator block to terminate unused signals.
- STOP block is used to stop the simulation if the input to the block is non-zero.

An Example

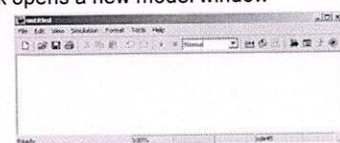


Building this Model: Creating an Empty Model

- click the **New Model** button on the Library Browser's toolbar.

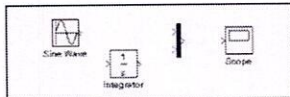


- Simulink opens a new model window



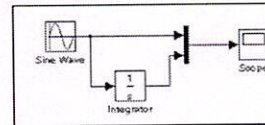
Building this Model: Adding Blocks

- To create this model, you need to copy blocks into the model from the following Simulink block libraries:
 - Sources library (the Sine Wave block)
 - Sinks library (the Scope block)
 - Continuous library (the Integrator block)
 - Signal & System library (the Mux block)



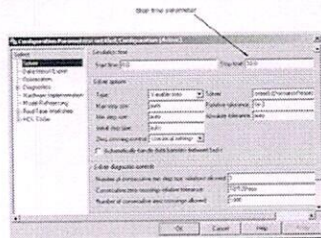
Building this Model: Connecting the Blocks

- First, position the pointer on the line between the Sine Wave and the Mux block.
- Press and hold down the Ctrl key (or click the right mouse button). Press the mouse button, then drag the pointer to the Integrator block's input port or over the Integrator block itself.
- Release the mouse button. Simulink draws a line between the starting point and the Integrator block's input port.
- Finish making block connections.



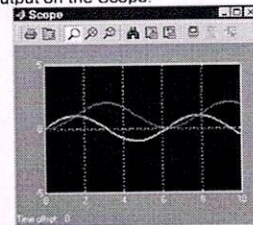
Building this Model: Configuring the Model

- Now set up Simulink to run the simulation for 10 seconds. (Simulation Parameters)



Building this Model: Running the Model

- Now **double-click** the Scope block to open its display window.
- Finally, choose Start from the Simulation menu and watch the simulation output on the Scope.



Thank You

**K.S.R.M. COLLEGE OF ENGINEERING
(AUTONOMOUS)**

Department of Electrical & Electronics Engineering


Feedback of students on Certification Course on "LabVIEW"

S.No	Roll Number	Name of the Student	The content was Clear & Understandable	The program was well paced within the allotted time	The instructor was a good communicator	The material was presented in an organized manner	The instructor was knowledgeable on the topic	Rate the value of course in increasing your skills
1	179Y1A0207	Duggisetty Jagapathi Babu	HIGH	LOW	HIGH	MODERATE	HIGH	5
2	179Y1A0208	Gaddam Anil Kumar	HIGH	HIGH	HIGH	HIGH	HIGH	5
3	179Y1A0209	Devi	HIGH	MODERATE	HIGH	MODERATE	HIGH	3
4	179Y1A0210	Gorantla Sasidhar	LOW	MODERATE	MODERATE	HIGH	HIGH	5
5	179Y1A0211	Krishnam Snehalatha	HIGH	LOW	HIGH	MODERATE	HIGH	3
6	179Y1A0212	Kuruba Lakshmikanth	LOW	HIGH	HIGH	HIGH	HIGH	5
7	179Y1A0214	Manchala Sowmya	HIGH	MODERATE	MODERATE	MODERATE	HIGH	3
8	179Y1A0215	Khan	LOW	MODERATE	HIGH	HIGH	HIGH	3
9	179Y1A0201	Akula Venkata Aravind	HIGH	HIGH	MODERATE	HIGH	HIGH	5
10	179Y1A0202	Akula Venkata Sunil	HIGH	HIGH	LOW	HIGH	HIGH	5
11	179Y1A0203	Vivekanandareddy	HIGH	HIGH	HIGH	HIGH	HIGH	5
12	179Y1A0204	Banda Sivaraj	HIGH	HIGH	LOW	HIGH	HIGH	5
13	179Y1A0206	Bhumireddy Chandrakala	LOW	MODERATE	LOW	HIGH	HIGH	5
14	189Y5A0204	Lakshmi	LOW	LOW	HIGH	MODERATE	HIGH	5
15	189Y5A0205	Mohammed Subhan	HIGH	MODERATE	HIGH	HIGH	MODERATE	5
16	189Y5A0206	Chundu Nirankumar	HIGH	MODERATE	MODERATE	HIGH	HIGH	5
17	189Y5A0207	Dara Praveen	MODERATE	HIGH	HIGH	MODERATE	MODERATE	5
18	189Y5A0208	Dasari Kishor Kumar	HIGH	HIGH	MODERATE	HIGH	MODERATE	5
19	189Y5A0209	Dasari Pavan Kalyan	MODERATE	HIGH	HIGH	HIGH	MODERATE	5
20	189Y5A0210	Dwarsala Veera Madhavi	HIGH	HIGH	MODERATE	MODERATE	MODERATE	5
21	189Y5A0211	Gosala Srinivasa Rao	LOW	MODERATE	MODERATE	HIGH	HIGH	4
22	189Y5A0212	Krishna	HIGH	HIGH	MODERATE	HIGH	HIGH	5
23	189Y5A0213	Jada Naveen Kumar	LOW	MODERATE	HIGH	HIGH	HIGH	5
24	189Y5A0216	Reddy	HIGH	HIGH	HIGH	HIGH	HIGH	4
25	189Y5A0217	Kapa Omkar Reddy	HIGH	HIGH	MODERATE	HIGH	HIGH	4

26	189Y5A0218	Reddy	HIGH	LOW	HIGH	HIGH	HIGH	5
27	189Y5A0219	Koduru Kumar	HIGH	HIGH	LOW	HIGH	HIGH	4
28	189Y5A0220	Konangi Chandu	MODERATE	HIGH	MODERATE	HIGH	MODERATE	5
29	189Y5A0221	Kothapalli Somanju	LOW	HIGH	HIGH	HIGH	MODERATE	4
30	189Y5A0222	Kumarakalva Balaji	LOW	HIGH	HIGH	MODERATE	MODERATE	4
31	189Y5A0223	Kummara Vishnu	HIGH	HIGH	HIGH	MODERATE	HIGH	5
32	189Y5A0224	Kundala Sivasai	LOW	HIGH	HIGH	HIGH	LOW	4
33	189Y5A0227	Reddy	HIGH	HIGH	HIGH	MODERATE	HIGH	5
34	189Y5A0228	Lakkireddy Madhu Sai	LOW	HIGH	HIGH	MODERATE	LOW	5
35	189Y5A0229	Lavanur Revanth Reddy	MODERATE	MODERATE	MODERATE	HIGH	LOW	5
36	189Y5A0230	Lingireddy Sai Harshini	LOW	HIGH	HIGH	HIGH	LOW	5
37	179Y1A0216	Meda Sandeep	HIGH	LOW	MODERATE	HIGH	HIGH	5
38	179Y1A0217	Mekala Gangadhara	HIGH	HIGH	HIGH	LOW	HIGH	5
39	179Y1A0218	Nakkalapalli Shireesha	LOW	LOW	HIGH	HIGH	HIGH	5
40	179Y1A0219	Posa Venkata Sreevalli	MODERATE	MODERATE	LOW	HIGH	MODERATE	5
41	179Y1A0220	Pasupuleti Gayathri Devi	LOW	HIGH	HIGH	LOW	HIGH	4
42	179Y1A0221	Rayapu Vennela	HIGH	HIGH	MODERATE	HIGH	HIGH	4
43	179Y1A0222	Sannapuri Venkatesh	HIGH	HIGH	MODERATE	HIGH	HIGH	5
44	179Y1A0223	Shaik Abdul Farooq	LOW	HIGH	HIGH	HIGH	HIGH	5
45	179Y1A0224	Shaik Misba Sania	LOW	MODERATE	HIGH	HIGH	LOW	4
46	179Y1A0225	Sucharitha Panyam	LOW	HIGH	HIGH	HIGH	LOW	5
47	179Y1A0226	Syed Azaruddin	HIGH	MODERATE	HIGH	HIGH	HIGH	4
48	179Y1A0227	Syed Hafeez Parvez	LOW	HIGH	HIGH	HIGH	HIGH	5
49	179Y1A0228	Syed Shazia Tabassum	HIGH	HIGH	MODERATE	LOW	MODERATE	5
50	179Y1A0230	Yarranagu Rajesh Reddy	MODERATE	LOW	MODERATE	HIGH	MODERATE	4
51	189Y5A0201	Athinjeri Rajesh	LOW	HIGH	HIGH	MODERATE	MODERATE	5
52	189Y5A0202	Reddy	HIGH	HIGH	MODERATE	MODERATE	HIGH	4
53	189Y5A0231	Moghal Aslam Baig	LOW	LOW	MODERATE	HIGH	HIGH	5
54	189Y5A0232	Reddy	LOW	HIGH	HIGH	HIGH	HIGH	5
55	189Y5A0233	Mule Siva Jyothsna (W)	HIGH	MODERATE	LOW	HIGH	LOW	4
56	189Y5A0234	Reddy	MODERATE	LOW	HIGH	LOW	HIGH	4
57	189Y5A0235	Palla Ravivarma	HIGH	HIGH	HIGH	HIGH	HIGH	5
58	189Y5A0236	Palla Reddaiah	HIGH	HIGH	HIGH	HIGH	HIGH	5
59	189Y5A0237	Palleti Prasanna Kumar	LOW	HIGH	LOW	LOW	MODERATE	5
60	189Y5A0238	Reddy	LOW	MODERATE	MODERATE	HIGH	HIGH	5
61	189Y5A0239	Pattem Sravani (W)	HIGH	HIGH	MODERATE	MODERATE	HIGH	5

62	189Y5A0240	Pullagura Prabhu Teja	LOW	MODERATE	HIGH	HIGH	HIGH	5
63	189Y5A0241	Pullirupu Sathish Kumar	HIGH	HIGH	HIGH	MODERATE	LOW	5
64	189Y5A0242	Rajoli Karthik Reddy	LOW	MODERATE	HIGH	HIGH	LOW	5
65	189Y5A0243	Reddy	HIGH	HIGH	HIGH	HIGH	LOW	3
66	189Y5A0244	Repalle Anok	MODERATE	MODERATE	HIGH	HIGH	LOW	5
67	189Y5A0245	(W)	HIGH	HIGH	MODERATE	HIGH	LOW	5
68	189Y5A0246	Sareddy Niranjana Reddy	HIGH	HIGH	MODERATE	LOW	HIGH	5
69	189Y5A0247	Shaik Ahammad	LOW	HIGH	HIGH	HIGH	MODERATE	3
70	189Y5A0248	Shaik Sadhik Basha	HIGH	HIGH	HIGH	MODERATE	MODERATE	5
71	189Y5A0249	Shaik Vannur Basha	LOW	MODERATE	LOW	LOW	MODERATE	5
72	189Y5A0250	Nagabhushan Reddy	MODERATE	HIGH	LOW	HIGH	HIGH	3
73	189Y5A0251	Sirivelu Srikanth	LOW	LOW	MODERATE	HIGH	HIGH	5
74	189Y5A0252	Basha	HIGH	HIGH	HIGH	MODERATE	HIGH	5
75	189Y5A0253	Sunnapu Pavan Sai	LOW	MODERATE	MODERATE	MODERATE	HIGH	5


Coordinator


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