



SASURIE COLLEGE OF ENGINEERING

Approved by AICTE, New Delhi. Affiliated to Anna University, Chennai

Near NH544, Coimbatore Bypass, Near Vijayamangalam Tollgate, Tirupur 638056

NAAC DOCUMENTS

QUALITY INDICATOR FRAME WORK

CRITERION - 1

CURRICULAR ASPECTS

SUBMITTED BY

IQAC

INTERNAL QUALITY ASSURANCE CELL

SASURIE COLLEGE OF ENGINEERING



Criterion 1	Curricular Aspects	100
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1.1 Curricular Planning and Implementation (20)

1.1.1 The Institution ensures effective curriculum planning and delivery through a well-planned and documented process including Academic calendar and conduct of continuous internal Assessment

Table of Contents

S.No	Description
1	Contents - Course File
2	Time Table
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6	Test Plan For Subject
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9	Quality Objective Monitoring Record
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11	Internal question paper
12	Internal assessment Test Answer book
13	Assignment Question Paper
14	Assignment Answer Sheet



SASURIE
College of Engineering
Vijayamangalam, Tiruppur.

Department : **EEE**
Subject code & name : **EE 6703 4 SPECIAL ELECTRICAL MACHINES.**
Class & batch : **IV 4 EEE**
Semester : **VII**

**CONTENTS - COURSE FILE
PARTICULARS**

S.NO	PARTICULARS	REMARKS
1	Time Table	
2	Student name list	
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4	Subject Information Record	
5	Syllabus	
6	Lesson Plan	
7	Test Plan for the Subject	
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10	Quality objective monitoring record	
11	Internal test mark sheet(Consolidated)	X
12	Internal test question paper with answer key	X
13	Model question paper with answer key	
14	Slip test question paper with answer key - 2 part	
15	Sample Answer paper for all test(Min-3)	
16	Content beyond the syllabus	X
17	Tutorial Class - schedule and content	X
18	Assignment - schedule and (paper) X	X
19	PPT - handout	S/W
20	Video - Animation - Soft copy	S/W
21	Question bank	C/W
22	Sample university question papers(min 5 QP-recent exam)	S/W
23	Personal Log book - Updated	emp
24	Lecture Note	X
25	Special Class if any, Approval letter, Schedule, content covered.	-

Sign:	Prepared By	Approved By
Name:	Faculty	HOD

Head, Dept. of EEE
SASURIE
College of Engineering
Vijayamangalam - 638 056

Dr.M.VIJAYAKUMAR ME., Ph.D.,
PRINCIPAL
SASURIE COLLEGE OF ENGINEERING,
Vijayamangalam - 638 056, Tirupur (Dt).





CLASS TIME TABLE Academic Year 2019-20 2nd Semester

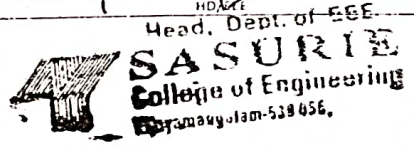
Name: Mr. V. Karthivel
Designation: AP / IEE

Year: III
Class/Semester: IEE / III

DAY / TIME	I 8:55 a.m. TO 9:00 a.m.	II 9:45 a.m. TO 10:30 a.m.	III 10:45 a.m. TO 11:30 a.m.	IV 11:45 a.m. TO 12:15 p.m.	V 12:45 p.m. TO 1:15 p.m.	VI 2:00 p.m. TO 2:30 p.m.	VII 2:45 p.m. TO 3:15 p.m.	VIII 3:30 p.m. TO 4:00 p.m.	IX 4:15 p.m. TO 4:45 p.m.
MON									
TUE		SEM							
WED									
THU	SEM		BREAK		LUNCH				
FRI			SEM						
SAT							SEM		

S.No	Subject Code	Acronym	Name of the Subject	Branch & Semester	No of hours
1	EE6703	SEM	SPECIAL ELECTRICAL MACHINES	IEE & VII	5
TOTAL					5

Prepared by: *[Signature]* Date: *[Signature]*
 Sign Name: Mr. V. Pothumani, Time table / C
 Mr. Johnny, HOD / EE
 Dr. K. Pandirajan, Principal



[Signature]
Dr. M. VIJAYAKUMAR ME., Ph.D.,
 PRINCIPAL
SASURIE COLLEGE OF ENGINEERING,
 Vijayamangalam - 638 056, Tirupur (Dt).

IV YEAR NAME LIST

Department Electrical and Electronics Engineering

S.No.	Reg. No.	Name of the Student
1.	732416105001	AMSAVENI S
2.	732416105002	ARHARAN P
3.	732416105003	BASKAR S
4.	732416105004	BOOPATHI S
5.	732416105005	DIHARAN D
6.	732416105006	HARISH D
7.	732416105007	KALLALAKHAR K S
8.	732416105009	KARTHIKEYAN V
9.	732416105010	KIRUBHAKARAN R
10.	732416105011	NAVJENKUMAR M
11.	732416105012	NAVJENKUMAR R
12.	732416105013	PAVITHRAM
13.	732416105014	RAJESHKUMAR M
14.	732416105015	TAMILSELVAM G
15.	732416105016	VANMATHI P
16.	732416105017	VIDHYA V
17.	732416105301	MAJITHI
18.	732416105302	GUNASEKARAN S
19.	732416105501	M.CHANDHRAKUMAR

MV

Dr.M.VIJAYAKUMAR ME., Ph.D.,
PRINCIPAL
SASURIE COLLEGE OF ENGINEERING,
Vijayamangalam - 638 056, Tirupur (Dt).



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SUBJECT INFORMATION RECORD

Department : EEE

Subject : SPECIAL ELECTRICAL MACHINES

Year : IV

Semester : VII

Last year handled by : ?

Percentage of Result (last year) : ?

Quality Objectives : To impart knowledge on the construction to the special electrical machines.

Reference Book : J.E. MILLER BRUSHLESS PERMANENT MAGNET AND RELUCTANCE MOTOR.
T. KENJO "STEPPING MOTOR AND THEIR MICROPROCESSOR CONTROLS"

Prepared By	Approved By
Faculty	HD

Head, Dept. of EEE
SASURIE
College of Engineering
Vijayamangalam, Tiruppur.

Dr. M. VIJAYAKUMAR ME., Ph.D.
PRINCIPAL
SASURIE COLLEGE OF ENGINEERING,
Vijayamangalam - 638 056, Tirupur (Dt).

(b) (i) Explain in detail about the construction and working principle of PMBLDC (11)

(c) (i) Explain in detail about the construction and working principle of PMBLDC (11)

LESSON PLAN

Faculty Name : V.KARTHIVEL
 Department : EEE
 Subject / Code : EE6703 / SPECIAL ELECTRICAL MACHINES
 Academic Year : 2019-2020

Designation: Assistant Professor
 Semester/ Year: VII/ IV

S.No.	Proposed		Details of Topic Covered	TA	Ref.	Actual		Remarks
	Date	Period				Date	Period	
UNIT-I-SYNCHRONOUS RELUCTANCE MOTORS								
1	7/1/2019	7	Constructional features	1	1	11/7/19	7	} P.L
2	7/2/2019	2	Types	1	1	02/07/19	2	
3	7/2/2019	8	Axial and Radial flux motors	1	1	02/07/19	8	
4	7/3/2019	4	Operating principles	1	1	03/07/19	4	
5	7/4/2019	1	Variable reluctance motor	1	1	03/07/19	8	
6	7/5/2019	3	Voltage and Torque Equations	1	1	04/07/19	1	
7	7/6/2019	6	Voltage and Torque Equations	1	1	05/07/19	3	
8	7/8/2019	7	Applications.	1	1	05/07/19	7	
9	7/9/2019	2	Applications.	1	1	04/07/19	2	
UNIT-II STEPPER MOTORS								
10	7/9/2019	8	Constructional features, Principle of operation	1	1	12/7/19	3	} P.L
11	7/10/2019	4	Variable reluctance motor	1	1	13/7/19	3	
12	7/12/2019	3	Hybrid motor	1	1	15/7/19	7	} P.L
13	7/15/2019	7	Single and multi stack configurations	1	1	17/7/19	4	
14	7/16/2019	2	Torque equations, Modes of excitation, Characteristics	1	1	23/7/19	8	} P.L
15	7/16/2019	8	Drive circuits	1	1	26/7/19	3	
16	7/17/2019	4	Microprocessor control of stepper motors	1	1	27/7/19	6	} P.L
17	7/29/2019	7	Closed loop control	1	1	29/7/19	7	
18	7/30/2019	2	Concept of lead angle, Applications.	1	1	30/7/19	2	
UNIT III SWITCHED RELUCTANCE MOTORS (SRM)								
19	7/30/2019	8	Constructional features	1	1	30/7/19	8	} P.L
20	7/31/2019	4	Rotary and Linear SRM, Principle of operation	1	1	31/7/19	4	
21	8/2/2019	3	Torque production, Steady state performance prediction-	1	1	01/08/19	1	} P.L
22	8/5/2019	7	Analytical method	1	1	02/08/19	3	
23	8/6/2019	2	Power Converters and their controllers	1	1	08/08/19	1	} P.L
24	8/6/2019	8	Methods of Rotor position sensing	1	1	08/08/19	2	
25	8/7/2019	4	Sensor less operation	1	1	10/08/19	6	} P.L
26	8/9/2019	3	Characteristics and Closed loop control	1	1	12/08/19	7	
27	8/13/2019	2	Applications	1	1	13/08/19	2	
UNIT IV PERMANENT MAGNET BRUSHLESS D.C. MOTORS								
28	8/13/2019	8	Permanent Magnet materials	1	1	13/08/19	8	} P.L
29	8/14/2019	4	Minor hysteresis loop and recoil line	1	1	14/08/19	4	
30	8/26/2019	7	Magnetic characteristics, Permeance coefficient	1	1	17/08/19	3	} P.L
31	8/27/2019	2	Principle of operation, Types	1	1	19/08/19	2	
32	8/27/2019	8	Magnetic circuit analysis	1	1	19/08/19	6	} P.L
33	8/28/2019	4	EMF and torque equations	1	1	19/08/19	7	
34	8/30/2019	3	Commutation	1	1	20/08/19	7	} P.L
35	9/3/2019	2	Power Converter Circuits and their controllers	1	1	20/08/19	8	
36	9/3/2019	8	Motor characteristics and control, Applications	1	1	21/08/19	4	
UNIT V PERMANENT MAGNET SYNCHRONOUS MOTORS (PMSM)								
37	9/4/2019	4	Principle of operation, Ideal PMSM	1	1	22/08/19	1	} P.L
38	9/6/2019	3	EMF and Torque equations	1	1	24/08/19	1	
39	9/9/2019	7	Armature MMF	1	1	25/08/19	2	} P.L
40	9/10/2019	2	Synchronous Reactance	1	1	25/08/19	6	
41	9/10/2019	8	Sine wave motor with practical windings	1	1	26/08/19	7	} P.L
42	9/11/2019	4	Phasor diagram	1	1	29/08/19	7	
43	9/16/2019	7	Torque, speed characteristics	1	1	30/08/19	3	} P.L
44	9/17/2019	2	Power controllers	1	1	30/08/19	8	
45	9/17/2019	8	Converter Volt-ampere requirements, Applications.	1	1	30/08/19	8	

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 PRINCIPAL



Text books (Ref):

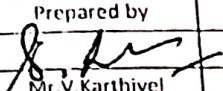
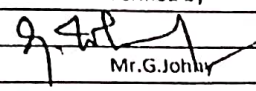
1. K.Venkataratnam, 'Special Electrical Machines', Universities Press (India) Private Limited, 2008.
2. I.J.E. Miller, 'Brushless Permanent Magnet and Reluctance Motor Drives', Clarendon Press, Oxford 1998.

REFERENCES:

1. R.Krishnan, 'Switched Reluctance Motor Drives – Modeling, Simulation, Analysis, Design and Application', CRC Press, New York, 2001.
2. P.P. Aearnley, 'Stepping Motors – A Guide to Motor Theory and Practice', Peter Perengrinus, London, 1982

Teaching Aids (TA):

1. Black Board with Chalk
2. Overhead Projector
3. LCD Projector
4. Others (Field visits, Charts, Cutset Models)

	Prepared by	Verified by	Approved by	Authorized by
Sign:				
Name:	Mr.V.Karthivel	Mr.G.John	Mrs.P.Muruga Priya	Dr.K. Pandiarajan
	Faculty	HD	IQAC Head	Principal


Dr.M.VIJAYAKUMAR ME., Ph.D.,
PRINCIPAL
 **SASURIE COLLEGE OF ENGINEERING,**
Vijayamangalam - 638 056, Tirupur (Dt).



SASURIE
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Vijayamangalam, Tiruppur.

TEST PLAN FOR SUBJECT

Subject **SEM** Faculty
Semester **VII** Year **IV**
Department **EEG**

S. No.	Description	Planned Date/Month	Actual Conducted Date / Month	Remarks
1.	Internal Test-1	7.8.19	7.8.19	
2.	Internal Test-2	13.09.19	13.09.19	
3.	Model Exam	10.10.19	10.10.19.	

Prepared By	Approved By
Name:	Q. Subramanian
Faculty	HD

Head, Dept. of EEG
SASURIE
College of Engineering
Vijayamangalam, Tiruppur.

Dr. M. VIJAYAKUMAR ME., Ph.D.,
PRINCIPAL
SASURIE COLLEGE OF ENGINEERING,
Vijayamangalam - 638 056, Tirupur (Dt).

(b) (i) Explain in detail about the construction and working principle of PMBLDC (13)

...-1 working principle of PMBLDC (13)

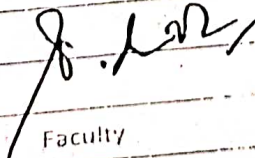
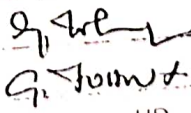
RESULT ANALYSIS OF TEST & CORRECTIVE ACTION PLAN

Subject : SEM Date : 20.08.19
 Class : IV Department : EEE
 Semester : VII

Exam details & date : Internal test-1 & 19.8.19.
 Faculty : V. Karthivel.
 Number of students : 19
 No. of students attended : 19
 No. of students absent : 0
 No. of students passed : 19
 No. of students failed : 0
 Percentage of failures : 0

RESULT DATA:

Marks	0-25	26-50	51-75	76-90	91-100
No. of Students	-	-	7	7	5

	Prepared By	Approved By
Sign:		
Name:	Faculty	HD

Head, Dept. of EEE
SASURIE
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 Vijayamangalam, Tiruppur.


Dr. M. VIJAYAKUMAR ME., Ph.D.,
 PRINCIPAL
SASURIE COLLEGE OF ENGINEERING,
 Vijayamangalam - 638 056, Tiruppur (Dt).



RESULT ANALYSIS OF TEST & CORRECTIVE ACTION PLAN

Subject : SEM
Class : IV
Semester : VII

Date : 14.09.19
Department : EEC

Exam details & date

Internal test - 2 4/13.07.19

Faculty

V. Karthikeyan

Number of students

17

No. of students attended

17

No. of students absent

0

No. of students passed

17

No. of students failed

02

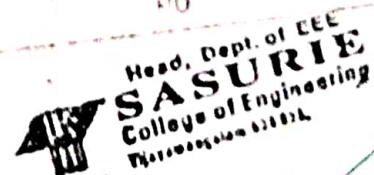
Percentage of failures

10.5

RESULT DATA:

Marks	0-25	26-50	51-75	76-90	91-100
No. of Students	-	2	5	7	5

Sign:	Prepared By <i>[Signature]</i>	Approved By <i>[Signature]</i>
Name:	Faculty	ID



[Signature]
Dr. M. VIJAYAKUMAR ME., Ph.D.,
PRINCIPAL
SASURIE COLLEGE OF ENGINEERING,
Vijayamangalam - 638 056, Tirupur (Dt).

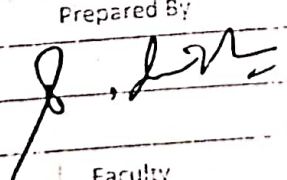
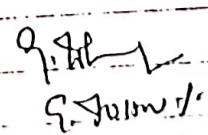
RESULT ANALYSIS OF TEST & CORRECTIVE ACTION PLAN

Subject : **SEM**
 Class : **IV**
 Semester : **VII**
 Date : **11.10.19**
 Department : **EEE**

Exam details & date : **Model Exam 4 10.10.2019**
 Faculty : **V. Karthivel.**
 Number of students : **19**
 No. of students attended : **19**
 No. of students absent : **0**
 No. of students passed : **19**
 No. of students failed : **0**
 Percentage of failures : **0**

RESULT DATA.

Marks	0-25	26-50	51-75	76-90	91-100
No. of Students	-	-	5	9	5

	Prepared By	Approved By
Sign		
Name	Faculty	HD

Head, Dept. of EEE
SASURIE
 College of Engineering
 Vijayamangalam - 638 056


Dr. M. VIJAYAKUMAR ME., Ph.D.,
 PRINCIPAL
SASURIE COLLEGE OF ENGINEERING,
 Vijayamangalam - 638 056, Tirupur (Dt).

(b)(i) Explain in detail about the construction and working principle of PMBLDC (11)

(b)(ii) Explain in detail about the construction and working principle of PMBLDC (11)



CORRECTIVE ACTION REPORT

Dept. : EEE

Year : IV

Subject : Sem

Semester : VII

NON CONFORMANCE REPORT

DATE :

Faculty Sign

ROOT CAUSE ANALYSIS

DATE :

Faculty Sign

CORRECTIVE ACTION

DATE :

Faculty Sign

VERIFICATION OF CORRECTIVE ACTION

DATE :

Faculty Sign

Prepared By		Approved By	
Sign		Sign	
Name		Name	G. Kumar
Faculty		ID	

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 PRINCIPAL
 SASURIE COLLEGE OF ENGINEERING,
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QUALITY OBJECTIVE MONITORING RECORD

Department **EEE**
Year **IV**
Semester **VII**
Subject **SEM**

S.No.	Quality Objective	Internal Test-I		Internal Test-II		Internal Test-III	
		Expecting result	Obtained result	Expecting result	Obtained result	Expecting Result	Obtained result
1.	> 90%	> 90%	100%	> 90%	100%	> 90%	100%

Prepared By *[Signature]*
Approved By *[Signature]*
Name: *G. Juma*
Faculty
HD

Head, Dept. of EEE
SASURIE
College of Engineering
Vijayamangalam

Mo
Dr. M. VIJAYAKUMAR ME., Ph.D.,
PRINCIPAL
SASURIE COLLEGE OF ENGINEERING,
Vijayamangalam - 638 056, Tirupur (Dt).

[B] (1) Explain in detail about the construction and working principle of PNP BJT (13)

[B] (1) Explain in detail about the construction and working principle of PNP BJT (13)



SASURIE
College of Engineering

Department of Mechanical Engineering
ASSIGNMENT SCHEDULE

SLNo	TOPIC	SUBMISSION DATE
1	Synchronous Reluctance motor (and drives) .	29.7.19
2	Stepper motor Construction and its Applications .	19.08.19
3	Switched Reluctance motor Applications .	31.08.19 .

Prepared by

Verified by

Sign.

Name.

Faculty

HD


Head. Dept. of EEE
SASURIE
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Vijayamangalam - 638 056, Tirupur (Dt).

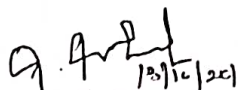

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PRINCIPAL
SASURIE COLLEGE OF ENGINEERING,
Vijayamangalam - 638 056, Tirupur (Dt).



(b) (i) Explain in detail about the construction and working principle of PMBLDC.

(b) (i) Explain in detail about the construction and working principle of PMBLDC. (13)

	(i) Explain with neat circuit any two configuration of power converter used for the control of switched reluctance motor? (2)	CO4	A
	(ii) State the advantages of sensor less operation. (7)		K
	OR		
13b	Explain the closed loop control analysis of switched reluctance motor	CO4	A
14a	(i) Explain the speed torque characteristics of PMBLDC (8)	CO5	C
	(ii) Differentiate between mechanical and electronic commutators (7)		
	OR		
14b	Explain in detail about the construction and working principle of PMBLDC	CO5	A
15a	Explain the construction and working principle of operation of PMSM.	CO6	A
	OR		
15b	Draw and explain the phasor diagram of PMSM	CO6	A
PART C			
(Answer all the Questions 1 x 15 = 15 Marks)			
16a	Explain the closed loop scheme of a PMBLDC motor Drive with suitable schematic diagram.	CO5	AN
	OR		
16b	Illustrate B-H hysteresis loop of the permanent magnet material.	CO6	AN


 Course Faculty
 (Name / Sign / Date)
 Mr. V. Karthivel


 HoD
 (Name / Sign / Date)
 Mr. A. John



 Principal
 (Name / Sign / Date)
 Dr. T. Sivakumar

 Dr. M. VIJAYAKUMAR ME., Ph.D.,
 PRINCIPAL
 SASURIE COLLEGE OF ENGINEERING,
 Vijayamangalam - 638 056, Tirupur (Dt).

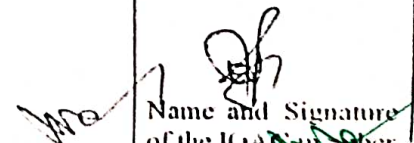

 Dr. M. VIJAYAKUMAR ME., Ph.D.,
 PRINCIPAL
 SASURIE COLLEGE OF ENGINEERING,
 Vijayamangalam - 638 056, Tirupur (Dt).



Internal Assessment Test Answer Book

Name	S. Amsaveni			Year/ Semester/Section	V - VII
Register Number	732416105001	Date/Session	14.10.19 AN	Department	EEE
Course code	EE6703	Course Title	SPECIAL ELECTRICAL MACHINES		
Internal Assessment Test	IAT 1 <input type="checkbox"/>	IAT 2 <input type="checkbox"/>	IAT 3 <input type="checkbox"/>	Model	<input checked="" type="checkbox"/>
Name and Signature of the Invigilator with date	J. Sakthivel 14/10/19 J. Sasikumar				

Instruction to the Student. Put tick mark to the question attended in the column against question.							
Part A			Part B/ Part C				Total Marks
Q. No.	✓	Marks	Q. NO.	✓	a	b	
					Marks	Marks	
1	✓	2	11	✓	12		12
2	✓	2	12	✓	12		12
3	✓	2	13			✓ 12	12
4	✓	2	14	✓	13		13
5	✓	2	15	✓	13		13
6	✓	2	16	✓	15		15
7	✓	2	Grand Total				77
8	✓	2	97				 V. KATHIRVEL 15/10/2019 Name and Signature of the Examiner with date
9	✓	2					
10	✓	2	Grand Total				
Total		20					

To be filled by the examiner							
Course Outcomes	1	2	3	4	5	6	Total
Marks allotted	13	17	8	13	32	17	100
Marks Obtained	12	15	8	13	32	17	97
IQAC Audit - Remarks							
Marks Verified.							
						 Name and Signature of the IQAC Auditor	



SASURIE
College of Engineering
Vijayamangalam, Tiruppur.

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Assignment Question Paper

Name of the Student: *S. Arngaveni*

AU Register Number: *732416105001*

Assignment - 01			Date of Issue:	22.7.2019	Marks	10
Course code	EE6703	Course Title	Special Electrical Machines			
Year	IV	Semester/Section	VII	Date of Submission:	29.7.2019	

Q.No	Questions	CO
1	Synchronous reluctance motor and drives.	CO1

V. Karthivel
Name and Signature of the Faculty Incharge
V. KARTHIVEL

Dr. M. Vijayakumar
HOD/EEE

Dr. M. Vijayakumar
Dr.M.VIJAYAKUMAR ME., Ph.D.,
PRINCIPAL
SASURIE COLLEGE OF ENGINEERING,
Vijayamangalam - 633 056, Tirupur (Dt).

Dr. M. Vijayakumar
Dr.M.VIJAYAKUMAR ME., Ph.D.,
PRINCIPAL
SASURIE COLLEGE OF ENGINEERING,
Vijayamangalam - 638 056, Tirupur (Dt).



SASURIE
College of Engineering
Vijayamangalam, Tiruppur

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Assignment Answer Sheet

Name of the Student: S. Amoghveni

AU Register Number: 732416105001

Assignment - 01			Date of Issue:	22.7.2019	Marks	10
Course code	EE6703	Course Title	Special Electrical Machines			
Year	IV	Semester/Section	VII	Date of Submission:	29.7.2019	

Q.No	Questions	CO
1	Synchronous reluctance motor and drives.	CO1

Mark Allocation

Rubrics	Marks Allocated	Marks obtained
Content Quality	6	6
Presentation Quality	2	2
Timely submission	2	2
Total marks	10	10

Name and Signature of the Faculty Incharge

V. KARTHIVEL

HOD/EEE

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PRINCIPAL

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