SRI BHARATHI

ENGINEERING COLLEGE FOR WOMEN

(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai)

Kaikkurichi, Pudukkottai -622 303

www.sbec.edu.in

NAAC DOCUMENTS

Quality Indicator Frame Work

Criterion – 1

CURRICULAR ASPECTS

Submitted by

IQAC

Internal Quality Assurance Cell

Sri Bharathi Engineering College for Women

SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai-25)
Kaikkurichi, Pudukkottai, Tamil Nadu – 622 303, India

Criterion 1	Curricular Aspects	100

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***

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SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai-25)
Kaikkurichi, Pudukkottai, Tamil Nadu – 622 303, India

DEPARTMENT OF ELECTRONICS COMMUNICATION ENGINEERING

PREFACE OF THE COURSE FILE

Batch : **2020-2024**

Academic Year : **2021-2022/ EVEN**

Program : **ELECTRONICS AND COMMUNICATION ENGINEERING**

Year & Semester : **2rd Year/ 4th Semester**

Course Code : EC8453 **NBA Code: C214**

Name of the Course : Linear Integrated circuits

Faculty Incharge : **Mrs V.Nithiya poorani ,AP / ECE**

Dr. S.THILAGAVATHI M.E.,Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkurchi - 622 303, Pudukkottai Dt.

Signature of the Faculty Incharge

HoD / ECE

HOD / ECE
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
KAIKKURICHI

SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

REVIEW OF COURSE FILE

(to be pasted on the inner side of the file-backside).(#-State Yes/No.)

S.N	Details Date:	R-I-*	R-II-*&	R-III-*&	R-IV-*&$	R-V-*&$@
1.	Preface of the course file	Yes				
2.	Vision, Mission, PEOs, POs, PSOs, Blooms taxonomy	Yes				
3.	Subject handlers of yesteryears					
4.	Timetable/Workload of the staff – Distribution of teaching load – Roles and Responsibilities	Yes				
5.	Syllabus signed by staff & HoD	Yes				
6.	Lecture Schedule signed by staff & HoD	Yes				
7.	Course Committee meeting circular and minutes					
8.	Identification of Curricular gap and Content Beyond the syllabus	Yes				
9.	Self-study topics	Yes				
10.	Previous AU Question papers	Yes				
11.	Unit wise Q&A and Objective type questions	Yes				
12.	Unit wise course material	Yes				
13.	Assignment question paper with sample answer sheets and mark entry		Yes	Yes		
14.	Tutorial question paper with key and mark entry		Yes	Yes		
15.	Class test/IA test Q Paper with Key, sample answer papers and mark entry		Yes	Yes		
16.	IA Test- result analysis-CAP-evidence-root cause analysis.		Yes	Yes		
17.	Retest –Q paper-Attendance-marks			Yes		
18.	AU Web portal entry sheet		Yes	Yes		
19.	Very poor performance in first two tests-action taken.-communication to parents-evidence					
20.	Absence for two tests-action taken-communication to parents-evidence.					
21.	Indiscipline of student reported, if any					
22.	Special class/coaching class/remedial class/attendance-CAP					
23.	Conduct of Seminar, Quizzes - proof					
24.	Content beyond the syllabus - proof				Yes	
25.	Student feedback on faculty				Yes	
26.	Course end survey					
27.	Internal Assessment sheet				Yes	
28.	AU question paper with students feedback					
29.	Discrepancy of the question paper and correspondence, if any					
30.	AU result analysis-Details of arrear students.					
31.	AU grade sheet					Yes
32.	CO – PO & PSO attainment sheet					Yes
	Signature of Course handling faculty					
	Signature of HoD	Rugh	Rugh	Rugh	Rugh	Rugh

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

INDIVIDUAL STAFF WORKLOAD (2021-2022) EVEN SEMESTER

S. NO	NAME OF THE STAFF	SUBJECTS HANDLED	YEAR & DEPT	HOURS ALLOCATED	TOTAL HOURS
1.	Mrs.YOGESHWARI.R	**EC8652**- Wireless Communication	III ECE	04	09
		EC3251-Circuit analysis	I ECE	05	
2.	T.K.MOHANAPRIYA	**EC8094**- SatelliteCommunication	IV ECE	06	12
		GE3271-Engineering Practices Laboratory (Skilled)	I /ECE	03	
		EC3271-Circuit Analysis Laboratory	I ECE	03	
3.	Mr.PALANIAPPAN.C	**EC8452**- Electronic Circuits II	II ECE	04	11
		EC8651- Transmission Lines and RF Systems	III ECE	04	
		EE8681-Microprocessors and Microcontrollers Laboratory	III EEE	03	
4.	Mrs.NITHYAPOORANI.V	**EC8453**- Linear Integrated Circuits	II ECE	04	13
		GE8076- Professional Ethics in Engineering	IV ECE	06	
		EC8681- Microprocessors and Microcontrollers Laboratory	III ECE	03	
5.	Ms.KEERTHANA.P	**EC8451**- Electromagnetic Fields	II ECE	04	11
		EC8095- VLSI Design	III ECE	04	
		GE3271- Engineering Practices Laboratory	I /CSE	03	
6.	Mrs SUGANYA.M	**EC8691**- Microprocessors and Microcontrollers	III ECE	04	07
		GE3271-Engineering Practices Laboratory	I/ EEE	03	
7.	Mrs SUGANTHI.T	**EC8491**- Communication Theory	II ECE	04	10
		EC8462- Linear Integrated Circuits Laboratory	II ECE	03	
		GE3271-Engineering Practices Laboratory	I/ECE	03	

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8.	Mrs .SATHYA.M	**EC8004-** Wireless Networks	III ECE	04	12
		GE3271- Engineering Practices Laboratory(skilled)	I /CSE	03	
		EC8461 –Circuits Design and Simulation Laboratory	II ECE	03	
		EC8611-Technical Seminar	III/ECE	02	
9.	Ms VIDYA.G	**MG8591-** Principles of Management	III ECE	04	10
		GE3271-Engineering Practices Laboratory	I /CIVIL	03	
		EC8462- Linear Integrated Circuits Laboratory (Skilled)	II/ ECE	03	
10	Dr.VIJAYASARO.V	**EC8661-** VLSI Design Laboratory	III ECE	03	13
		EC8811- Project Work	IV ECE	10	

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COURSEPLAN

Subject code: EC8453	**Branch/Year/Sem/Section:B.E/ECE/II/ IV**
Subject Name: LINEAR INTEGRATED CIRCUITS	**Batch: 2020-2024**
	Academic year: 2021-2022
Staff Name: V.Nithya Poorani AP/ECE	

COURSEOBJECTIVE

- To introduce the basic building blocks of linear integrated circuits
- To learn the linear and non-linear applications of operational amplifiers
- To introduce the theory and applications of analog multipliers and PLL
- To learn the theory of ADC and DAC
- To introduce the concepts of waveform generation and introduce some special function ICs

TEXTBOOK:

1.D.RoyChoudhry, Shail Jain, —Linear Integrated Circuits‖, New Age International Pvt. Ltd., 2018, Fifth Edition. (Unit I – V)

2.Sergio Franco, —Design with Operational Amplifiers and Analog Integrated Circuits‖, 4th Edition, Tata McGraw-Hill, 2016 (Unit I – V).

REFERENCES:

1. Ramakant A. Gayakwad, —OP-AMP and Linear ICs‖, 4th Edition, Prentice Hall / Pearson Education, 2015.
2. Robert F.Coughlin, Frederick F.Driscoll, —Operational Amplifiers and Linear Integrated Circuits‖, Sixth Edition, PHI, 2001.
3. B.S.Sonde, —System design using Integrated Circuits‖ , 2nd Edition, New Age Pub, 2001.
4. Gray and Meyer, —Analysis and Design of Analog Integrated Circuits‖, Wiley International,5th Edition, 2009.
5. William D.Stanley, —Operational Amplifiers with Linear Integrated Circuits‖, Pearson Education,4th Edition,2001.
6. S.Salivahanan& V.S. KanchanaBhaskaran, —Linear Integrated Circuits‖, TMH,2nd Edition, 4 th Reprint, 2016.

TEACHINGMETHODOLOGIES:

BB -BLACKBOARD
PPT -POWERPOINTPRESENTATION

RELATED WEBSITES URL:

W1:http//www.electronics-tutorial.ws/Sequential/sequential_3.html
W2: http//www.pcbheaven.com/wikipages/the_Schmitt_trigger/html
W3: http//www.nptel.ac.in.courses/117107094/lecture/lecture_18/lecture_18/ -page2.html

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

EC 3451 LINEAR INTEGRATED CIRCUITS **L T P C**
3 0 0 3

UNIT I BASICS OF OPERATIONAL AMPLIFIERS **9**

Current mirror and current sources, Current sources as active loads, Voltage sources, Voltage References, BJT Differential amplifier with active loads, Basic information about op-amps – Ideal Operational Amplifier - General operational amplifier stages -and internal circuit diagrams of IC 741, DC and AC performance characteristics, slew rate, Open and closed loop configurations – JFET Operational Amplifiers – LF155 and TL082.

UNIT II APPLICATIONS OF OPERATIONAL AMPLIFIERS **9**

Sign Changer, Scale Changer, Phase Shift Circuits, Voltage Follower, V-to-I and I-to-V converters, adder, subtractor, Instrumentation amplifier, Integrator, Differentiator, Logarithmic amplifier, Antilogarithmic amplifier, Comparators, Schmitt trigger, Precision rectifier, peak detector, clipper and clamper, Low-pass, high-pass and band-pass Butterworth filters.

UNIT III ANALOG MULTIPLIER AND PLL **9**

Analog Multiplier using Emitter Coupled Transistor Pair - Gilbert Multiplier cell – Variable transconductance technique, analog multiplier ICs and their applications, Operation of the basic PLL, Closed loop analysis, Voltage controlled oscillator, Monolithic PLL IC 565, application of PLL for AM detection, FM detection, FSK modulation and demodulation and Frequency synthesizing and clock synchronisation.

UNIT IV ANALOG TO DIGITAL AND DIGITAL TO ANALOG CONVERTERS **9**

Analog and Digital Data Conversions, D/A converter – specifications - weighted resistor type, R-2R Ladder type, Voltage Mode and Current-Mode R - 2R Ladder types - switches for D/A converters, high speed sample-and-hold circuits, A/D Converters – specifications - Flash type - Successive Approximation type - Single Slope type – Dual Slope type - A/D Converter using Voltage-to-Time Conversion - Over-sampling A/D Converters, Sigma – Delta converters.

UNIT V WAVEFORM GENERATORS AND SPECIAL FUNCTION ICS **9**

Sine-wave generators, Multivibrators and Triangular wave generator, Saw-tooth wave generator, ICL8038 function generator, Timer IC 555, IC Voltage regulators – Three terminal fixed and adjustable voltage regulators - IC 723 general purpose regulator - Monolithic switching regulator, Low Drop – Out(LDO) Regulators - Switched capacitor filter IC MF10, Frequency to Voltage and Voltage to Frequency converters, Audio Power amplifier, Video Amplifier, Isolation Amplifier, Optocouplers and fibre optic IC.

TOTAL : 45 PERIODS

Faculty Incharge

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UNIT–IIIANALOG MULTIPLIER AND PLL(9)						
19	Analog Multiplier using Emitter Coupled Transistor Pair	R4	704-708	BB	1	19
20	Gilbert Multiplier cell – Variable transconductance technique	R4	708-711	BB	1	20
21	analog multiplier ICs and their applications	R4	712-716	BB	1	21
22	Operation of the basic PLL, Closed loop analysis	R4	716-731	BB	1	22
23	Voltage controlled oscillator,	T1	315-319	BB	1	23
24	Monolithic PLL IC 565,	T1	319-324	BB	1	24
25	application of PLL for AM detection, FM detection, FSK modulation and demodulation	T1	324-348	BB&PPT	1	25
26	Frequency synthesizing and clock synchronization	T1	348-353	BB	1	26
27	Review of Unit-III			BB& Talk	1	27

LEARNINGOUTCOME:
At the end of unit, the students will be able to
Design applications using PLL and Multiplier

UNITIV	ANALOG TO DIGITAL AND DIGITAL TO ANALOG					(9)
28	Analog and Digital Data Conversions, D/A converter – specifications - weighted resistor type, R-2R Ladder type,	T1	392-400	BB	1	28
29	Voltage Mode and Current-Mode R - 2R Ladder types ,switches for D/A converters	T1	400-403	BB	1	29
30	High speed sample-and-hold circuits,	T1	403-407	BB&PPT	1	30
31	A/D Converters – specifications - Flash type - Successive Approximation type	T1	407-409	BB	1	31
32	Single Slope type	T1	409-411	BB	1	32
33	Dual Slope type ,A/D Converter using Voltage-to-Time Conversion	T1	411-414	BB&PPT	1	33
34	Over-sampling A/D Converters, Sigma Delta converters	T1	414-416	BB	1	34
35	Review of Unit-IV			BB& Talk	1	35

LEARNINGOUTCOME:
At the end of unit, the students will be able to
Design ADC and DAC using OP – AMPS

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Topic No	Topic Name	Books For reference	PageNo	Teaching Methodology	No of periods required	Cumulative periods
UNITI	**BASICS OF OPERATIONAL AMPLIFIERS**					**(9)**
1	Current mirror and current sources	R4	251-268	BB	1	1
2	Current sources as active loads	R4	268-271	BB	1	2
3	Voltage sources, Voltage References	R4	271-275	BB	1	3
4	BJT Differential amplifier with active loads	T1	25-29	BB	1	4
5	Basic information about op-amps, Ideal Operational Amplifier	T1	41-49	BB	1	5
6	General operational amplifier stages - and internal circuit diagrams of IC 741	T1	50-62	BB	1	6
7	DC and AC performance characteristics, slew rate	T1	112-117	BB	1	7
8	Open and closed loop configurations JFET Operational Amplifiers – LF155and TL082.	T1	101-111	BB&PPT	1	8
9	Review of Unit-I			BB& Talk	1	9

LEARNINGOUTCOME:
At the end of unit, the students will be able to
Design linear applications of OP – AMPS

UNITII	**APPLICATIONS OF OPERATIONAL AMPLIFIERS**					**(9)**
10	Sign Changer, Scale Changer, Phase Shift Circuits, Voltage Follower,	T1	150-154	BB	1	10
11	V-to-I and I-to-V converters	T1	166-168	BB&PPT	1	11
12	adder, subtractor, Instrumentation amplifier,	T1	169-185	BB	1	12
13	Integrator, Differentiator,	T1	186-191	BB	1	13
14	Logarithmic amplifier, Antilogarithmic amplifier,	T1	178-183	BB	1	14
15	Comparators, Schmitt trigger,	T1	231-241	BB	1	15
16	Precision rectifier, peak detector, clipper and clamper	T1	241-259	BB&PPT	1	16
17	Low-pass, high-pass and band-pass Butterworth filters.	T1	289-313	BB	1	17
18	Review of Unit-II			BB& Talk	1	18

LEARNINGOUTCOME:
At the end of unit, the students will be able to
Design non linear applications of OP – AMPS

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ASSESSMENT DETAILS

ASSESMENTNUMBER	I	II	III
TOPIC NO.(UNIT)	(1 to2Units)	(2 to 4 units)	(4 to 5units)

ASSIGNMENT DETAILS

ASSIGNMENT NUMBER	I&I I	III& IV
TOPICNUMBERFOR REFERENCE	(1st Unit) (2nd Unit)	(3rd Unit) (4th Unit)

ASSIGNMENT NUMBER	DESCRIPTIVEQUESTIONS/TOPIC (Minimumof8Pages)
I	Internal Circuit Diagram of IC 741.
II	JFET Operational Amplifier LF155, TL082.
III	Instrumentation Amplifier.
IV	Schmitt trigger.
V	Applications of PLL.

PREPAREDBY

V.Nithya Poorani AP/ECE

VERIFIED BY

HoD/ECE

HOD / ECE
SRI BHARATHI ENGINEER
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KAIKKURICHI,
PUDUKKOTTAI - 622 303

APPROVED BY 14/03/22

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PUDUKKOTTAI DISTRICT

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UNITV	WAVEFORM GENERATORS AND SPECIAL FUNCTION ICS					(9)
36	Sine-wave generators, Multivibrators and Triangular wave generator, Saw-tooth wave generator	R2	453-460	BB	1	36
37	ICL8038 function generator	R2	461-478	BB	1	37
38	Timer IC 555, IC Voltage regulators – Three terminal fixed and adjustable voltage regulators	T1	355-367	BB	1	38
39	IC 723 general purpose regulator - Monolithic switching regulator, Low Drop – Out(LDO) Regulators	T1	262-280	BB	1	39
40	Switched capacitor filter IC MF10,	T1	282-286	BB	1	40
41	Frequency to Voltage and Voltage to Frequency converter	T1	288-290	BB	1	41
42	Audio Power amplifier	T1	294-298	BB &PPT	1	42
43	Video Amplifier, Isolation Amplifier	T1	300-306	BB &PPT	1	43
44	Opto couplers and fibre optic IC.	T1	318-332	BB &PPT	1	44
45	Review of Unit-V			BB& Talk	1	45
46	**Low power design batteries**			**BB**	**1**	**46**

LEARNINGOUTCOME:

At the end of unit, the students will be able to

Generate waveforms using OP – AMP Circuits & Analyze special function ICs

COURSEOUTCOME

At the end of the course,the student should be able to:

- CO1: To analyze the basic building blocks of linear integrated circuits.
- CO2:To learn the linear and non-linear applications of operational amplifiers
- CO3:To introduce the theory and applications of analog multipliers and PLL
- CO4:To learn the theory of ADC and DAC
- CO5: To introduce the concepts of waveform generation.
- CO6:To analyze the special function ICs

CONTENTBEYONDTHESYLLABUS

- Low power design batteries

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DEPARTMENT OF ELECTRONICS &COMMUNICATION ENGINEERING

Identification of Curricular Gap & Content Beyond Syllabus(CBS)

Name of the Faculty :Mrs.V.Nithya Poorani **Course Code & Name:EC8453&Linear Integrated Circuits**

Degree & Program: B.E. /ECE **Semester/Year : IV/II** **Academic Year: 2021 -2022 /EVEN**

I. Mapping of Course Outcomes with POs & PSOs.(before CBS)

Table.1 Mapping of COs, C, PSOs with POs - before CBS.

Course Outcomes	ProgramOutcomes														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C214.1	3	2	2	2	2	-	-	-	2	2	-	1	1	2	-
C214.2	3	2	2	2	2	-	-	-	2	2	-	1	1	2	1
C214.3	3	2	2	2	2	-	-	-	2	2	-	1	1	2	-
C214.4	3	2	2	2	2	-	-	-	2	2	-	1	1	2	-
C214.5	3	2	2	2	2	-	-	-	2	2	-	1	1	2	1
C214.6	3	2	2	2	2	-	-	-	2	2	-	1	1	2	-
C214	**3**	**2**	**2**	**2**	**2**	-	-	-	**2**	**2**	-	**1**	**1**	**2**	**1**

II. Identification of content beyond syllabus.

Table.2 Identification of content beyond syllabus

Details of Content Beyond Syllabus(CBS) added	POs strengthened/ vacant filled	CO/Unit
Low power design batteries	PO6(2) Vacant filled	C214.5 / V&VI

III. Mapping of Course Outcomes with POs & PSOs.(After CBS)

Table.3 Mapping of COs, C, PSOs with POs- after CBS.

Course Outcomes	ProgramOutcomes														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C214.1	3	3	2	2	2		-	-	2	2	-	1	1	2	-
C214.2	3	3	2	2	2	-	-	-	2	2	-	1	1	2	1
C214.3	3	3	2	2	2	-	-	-	2	2	-	1	1	2	-
C214.4	3	3	2	2	2	-	-	-	2	2	-	1	1	2	-
C214.5	3	3	2	2	2	2*	-	-	2	2	-	1	1	2	1
C214.6	3	3	2	2	2	2*	-	-	2	2	-	1	1	2	-
C214	**3**	**3**	**2**	**2**	**2**	**2**	-	-	**2**	**2**	-	**1**	**1**	**2**	**1**

Signature of the Faculty

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Assignment Answer Sheet

Name of the Student: S. Abirami

AU Register Number: 912620106001

Assignment – 03			Date of Issue:	06.05.22	Marks	10
Course code	EC8453	Course Title	Linear Integrated Circuits			
Year	II	Semester/Section	IV	Date of Submission:	10.05.22	

Q.No	Questions	CO
1	Describe detail about Analog multiplier ICs and their applications	C214.3
2.	Explain in detail about Voltage controlled oscillator with neat diagram.	C214.3

Mark Allocation

Rubrics	Marks Allocated	Marks obtained
Content Quality	6	6
Presentation Quality	2	1
Timely submission	2	2
Total marks	10	9

V. Nithya

Name and Signature of the Faculty Incharge

[V. NITHYA POORANI, AP/ECE]

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IQAC Academic Audit Form

ACADEMIC YEAR: 2021-2022 EVEN SEMESTER

Name of Department :	ECE	Year / Sem :	II/ IV	No. of Students Registered :	10
Details of Examination :	Cycle Test -1 / Cycle Test -2 / Cycle Test -3				

S.No.	Course Code	List of Reg.No Verified	Course Log Book Verified (Y / N)	Course File Verified (Y / N)	No of students Passed	No of Absentees	No of Failures	Pass %	Remarks
1.	MA8451	912620106002	Y	Y	03	04	03	30%	–
2.	EC8452	912620106006	Y	Y	05	03	02	50%	–
3.	EC8491	912620106301	Y	Y	06	02	02	60%	–
4.	EC8451	912620106001	Y	Y	03	04	03	30%	–
5.	EC8453	912620106004	Y	Y	06	02	02	60%	–
6.	GE8291	912620106203	Y	Y	05	03	03	50%	–

Verified by

External Member Name and Signature:	R. Sath [R. SARATHA]
Internal Member Name and Signature:	[C. PALANIAPPAN AP/ECE]

Overall Remarks:

Try to score good percentage in MA8451, EC8452 & GE8291.

HoD/ ECE — IQAC Coordinator — Principal

HOD / ECE
SRI BHARATHI ENGINEERING

Dr.S.THILAGAVATHI M.E., Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING

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SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

(Approved by AICTE, Affiliated to Anna University, Chennai, India)
Kaikkurichi, Pudukkottai – 622 303
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Course code & Name: EC8453&Linear Integrated Circuits

Year& Sem : II/IV

STUDENT FEEDBACK ON FACULTY

S.NO.	DESCRIPTION	SCORED OUT OF 4	SCORED OUT OF 100
1.	Syllabus coverage as prescribed by university	3.3	66
2.	Technical Knowledge of the teacher	3.1	62
3.	Teacher Communication Skill	3	60
4.	Regularity in taking classes	3.4	68
5.	Helping the students in conducting the experiment through set of instructions And Demonstrations	3.1	62
6.	Tendency of inviting opinion and questions on subject matter from students	3.6	72
7.	Knowledge of the teacher in latest Development of field	3	60
8.	Perfectness of Valuation	2.9	58
	OVERALL SCORE	3.17	63.5

Dr. S.THILAGAVATHI M.E.,Ph.D.,
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Kaikkurchi - 622 303, Pudukkottai Dt.

REPORT SHEET

S .NO	REG.NO	NAME	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
1.	912620106001	ABIRAMI S	4	4	4	4	4	4	4	4
2.	912620106002	ANUSHYA M	4	4	4	4	4	4	4	4
3.	912620106003	ARTHI S	4	4	4	4	4	4	4	4
4.	912620106004	JEYASRI K	4	4	4	4	4	4	4	4
5.	912620106006	SENPAGAHARINI V	2	3	1	3	1	3	1	2
6.	912620106007	SONIYA P	4	4	4	4	4	4	4	4
7.	912620106301	ABITHA S	3	3	2	4	1	1	3	2
8.	912620106302	DESIKA G	2	1	3	2	4	4	2	3
9.	912620106303	SABAREESWARI S	4	3	2	3	3	4	2	1
10.	912620106304	SUBBULAKSHMI P	2	1	2	2	2	4	2	1
		AVERAGE	**3.3**	**3.1**	**3**	**3.4**	**3.1**	**3.6**	**3**	**2.9**
		PERCENTAGE	**66**	**62**	**60**	**68**	**62**	**72**	**60**	**58**

EXCELLENT	VERY GOOD	GOOD	AVERAGE	POOR
4	3	2	1	0

Course Faculty
(Name /Sign)
V. NITHYA POORANI

Dr. S.THILAGAVATHI M.E.,Ph.D.,
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Kaikkurchi - 622 303, Pudukkottai Dt.

HoD
(Name /Sign)
HOD / ECE
SRI BHARATHI ENGINEERING
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KAIKKURICHI,
PUDUKKOTTAI - 622

SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN
KAIKKURICHI, PUDUKKOTTAI – 622 303.

Circular Date: 05.05.2022

The Second cycle test will be conducted from **16.05.2022 to 21.05.2022** for the IV, VI & VIII semester (II, III & IV year) students.

The following instructions are to be followed by the faculty members.

- Total marks for which the question paper to be set will be for 60 marks. **(PART A** 10X2=20 **PART B** 2X13=26 **& PART C** 1X14=14)
- It is the responsibility of the **question paper** setter to take the Xerox copies of the required number of question papers and it should be handed over to the Exam cell Coordinators Mr. J. Sathyaraj AP/ EEE / Mrs. G. Bhuvaneswari AP/CSE along with **answer key** on or before **12.05.2022.**
- The Exam Coordinators (exam cell) are requested to make necessary arrangements (hall arrangements, invigilation duty etc.,) for conducting the test.
- Faculty members are requested to handover the valued answer scripts to the students on or before **23.05.2022** and the class in-charges are requested to send the consolidated mark sheet along with the attendance percentage **(from 16th March 2022 to 14th May 2022)** to the parents on or before **24.05.2022.**

PRINCIPAL

Cc:
- All faculty
- Exam cell
- Office file

Dr. S.THILAGAVATHI M.E., Ph.D.
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SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN
KAIKKURICHI, PUDUKKOTTAI – 622 303.

Circular

Date: 05.05.2022

The Second cycle test will be conducted from 16.05.2022 to 21.05.2022 for the IV semester (II year) B.E students for 60 marks as per the time table given below. Students are directed to prepare well and score good marks. Regular classes will be conducted at **11.50 am** onwards and **no retest** will be conducted.

Date	09.45 am -11.45 am
16-05-2022	CE8402-Strength of Materials-II (CIVIL) MA8402- Probability and Queuing Theory (CSE) IC8451- Control Systems (EEE) MA8451- Probability and Random Processes (ECE)
17-05-2022	MA8491-Numerical Methods (CIVIL/EEE) CS8492- Database Management Systems (CSE) EC8451- Electromagnetic Fields (ECE)
18-05-2022	CC8404- Concrete Technology (CIVIL) CS8493- Operating Systems (CSE) EE8401- Electrical Machines – II (EEE) EC8452- Electronic Circuits II (ECE)
19-05-2022	CE8491- Soil Mechanics (CIVIL) CS8494- Software Engineering (CSE) EE8402- Transmission and Distribution (EEE) GE8291- Environmental Science and Engineering (ECE)
20-05-2022	CE8401-Construction Techniques and Practices (CIVIL) CS8451- Design and Analysis of Algorithms (CSE) EE8451- Linear Integrated Circuits and Applications (EEE) EC8453- Linear Integrated Circuits (ECE)
21-05-2022	CE8403-Applied Hydraulics Engineering (CIVIL) CS8491- Computer Architecture (CSE) EE8403- Measurements and Instrumentation (EEE) EC8491- Communication Theory(ECE)

PRINCIPAL

06/05/22

Cc:

- All II year B.E Classes
- All faculty
- Exam cell
- Notice Board
- Office file

Dr. S.THILAGAVATHI M.E.,Ph.D.,
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SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN

Register Number:											

SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

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Kaikkurichi, Pudukkottai, Tamil Nadu – 622 303, India

Cycle test - II			Date/Session	20.05.2022/FN	Marks	60
Course code	EC8453	Course Title	LINEAR INTEGRATED CIRCUITS			
Regulation	2017	Duration	2 HOURS	Academic Year	2021-2022	
Year	II	Semester	IV	Department	ECE	

COURSE OUTCOMES

C214:1	To analyse the basic building blocks of linear integrated circuits
C214:2	To learn the linear and non-linear applications of operational amplifiers
C214:3	To introduce the theory and applications of analog multipliers and PLL
C214:4	To learn the theory of ADC and DAC
C214:5	To introduce the concepts of waveform generation and
C214:6	To analyse the special function ICs

Q.No.	Question	CO	BTL
	PART A (Answer all the Questions 10 x 2 = 20 Marks)		
1	Draw the configuration of Gilbert multiplier cell with its pre distortion unit.	C214.4	K1
2	Differentiate between current mode and voltage mode R-2R ladder D/A converter?	C214.4	K4
3	List the applications of analog multiplier.	C214.4	K1
4	What is VCO? Write down its frequency conversion factor.	C214.4	K2
5	Mention the applications of PLL	C214.4	K1
6	Draw the circuit of AM detector using PLL.	C214.4	K1
7	Explain how a frequency double can be realized using analog multiplier.	C214.3	K2
8	Draw the sample and hold circuit..	C214.3	K1
9	Define resolution of DAC.	C214.3	K1
10	Compare and contrast binary ladder and R-2R ladder DAC.	C214.3	K4
	PART B (Answer all the Questions 2 x 13 = 26 Marks)		
11a	Explain various types of analog multiplication techniques (13)	C214.3	K2
	OR		
11b	Explain in detail about VCO using suitable diagram. Also derive its voltage to frequency Conversion factor (13)	C214.3	K2
12a	Explain in detail about features of following DAC **i)** Current mode and voltage mode **ii)** 4 bit weighted resistor type DAC (7+6)	C214.3	K2
	OR		
12b	Explain the following types of switches used in D/A converter with suitable diagram Totem pole MOSFET switch **ii)** CMOS inverter switch (13)	C214.3	K2
	PART C (Answer all the Questions 1 x 14 = 14 Marks)		
13a	Describe the closed loop analysis of PLL with necessary diagrams. (14)	C214.4	K2
	OR		
13b	Explain about operation of PLL with its IC detail (14)	C214.4	K2

V. Nithya 12/5/22

Course Faculty

[V. NITHYA POORANI, AP/ECE]

(Name /Sign /Date)

Dr. S.THILAGAVATHI M.E., Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING

Ruph

HoD 12/5/22

(Name /Sign / Date)

EC8453 - Linear Integrated Circuits

Part - A

1) Gilbert multiplier cell:- — (2m)

→ Modification of emitter coupled cell

→ 2 cross coupled emitter coupled pairs.

2) Difference between voltage mode & current mode:- — (2m)

Voltage mode	Current Mode
→ Limited to lower speed.	→ Noisy DAC operate based on ladder.

3) Applications of analog multipliers:- — (2m)

→ Multiplication division squaring and signals modulation & demodulation.

4) What is VCO:- — (2m)

→ Electronic oscillator whose output frequency is proportional to I/p voltage.

5) Application of PLL:- — (2m)

→ Frequency Multiplier & Frequency Translator

→ FM Detector.

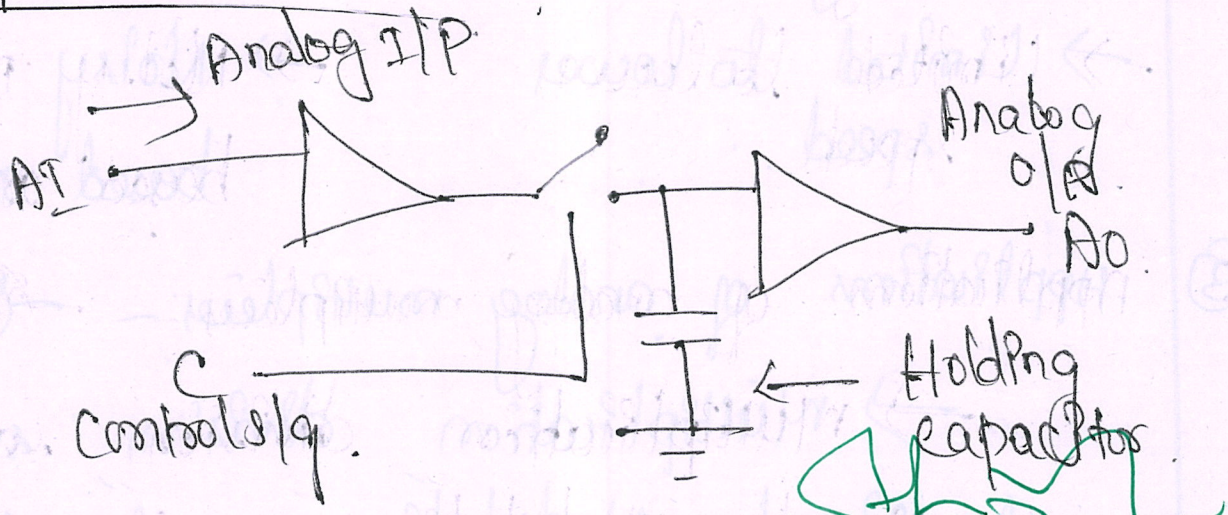
6) Circuit for AM detector using PLL:-

→ PLL is locked to the carrier frequency of the incoming AM signal.

7)

→ multiplication of two sine waves have same frequency & different amplitudes.

8) Sample & Hold circuit:-



9) Resolution of DAC:-

→ Resolution is range of analog values DAC can be produce resolution.

10) Binary ladder

→ ~~DAC~~ converting digital voltage signal into analog o/p signal

R-2R ladder.

→ Resistor having only 2 values.

part - B

(11) i) Logarithmic summing technique.

ii) Pulse height/width Modulation Technique.

iii) Variable trans conductance Technique.

iv) Multiplication using gilbert cell.

v) Multiplication using variable trans conductance technique.

$$V_o = \frac{(V_x + \phi_x)(V_y + \phi_y)}{I_o(1+2)} \phi_o$$

(12) b) Explain detail about VCO :-

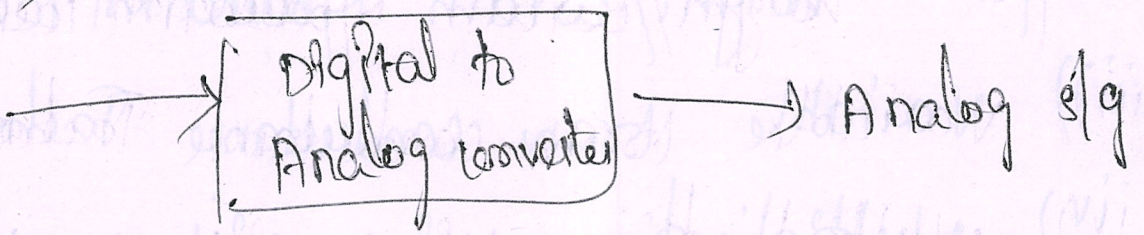
→ output frequency is proportional its I/p voltage.

→ Oscillator provides a periodic signal determined by frequency.

→ frequency are controlled using external I/p DC voltage.

12) a) 4 bit weighted resistor type DAC:-

→



→ DAC transforms a particular binary code into equivalent anlog signal.

→ which result output signal resolegre

→ Determine the maximum output voltage

12) b) MOSFET switch & CMOS Inverter :-

→ When input voltage to the gate transistor is zero.

→ output voltage is equal to supply voltage.

→ ON state voltage required to ensure the MOSFET.

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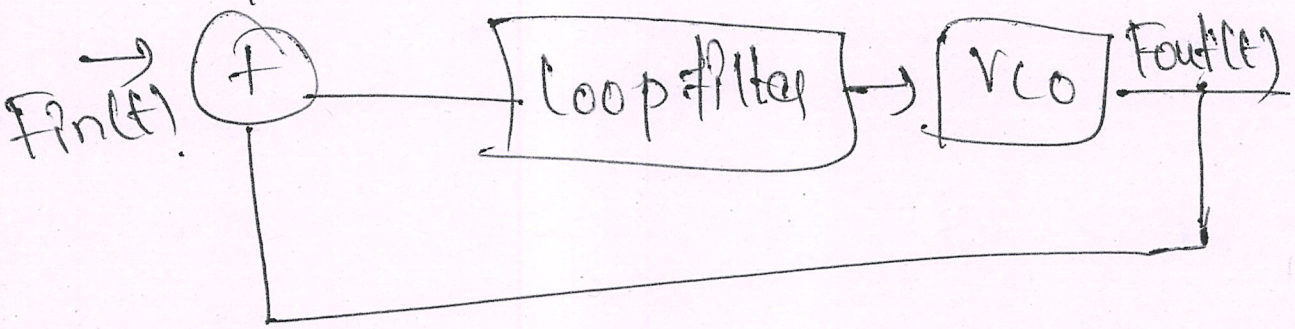
part-c

13) a) closed loop analysis of PLL :-

→ produces an output signal phase depends on the phase its input signal phase detectors.



13) b) Operation & function of phase locked loop :-

→ feedback control system that.

eliminates frequency & phase differences between output & input signals.

→ Tracking phase & frequency of Input signal

→ used in communications system radars & satellites.

→ used in phase detectors & low pass filter.

V. IVA Prof
Staff Incharge

Dr. S.THILAGAVATHI M.E., Ph.D.
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Kaikkurichi - 622 303, Pudukkottai Dt.

HOD/ECE
SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN
KAIKKURICHI

SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

(Approved by AICTE, New Delhi and affiliated to Anna University, Chennai)
Kaikkurichi, Pudukkottai, Tamil Nadu – 622 303, India

Cycle Test Answer Book

Name	K. JEYASRI			**Year/ Semester**	II/IV
Reg No.	912690106004	**Date/Session**	20.5.22/FN	**Department**	ECE
Course code	EC8453	**Course Title**	Linear Integrated Circuits		
Cycle Test (Put a tick mark)		**CT 1** ☐	**CT 2** ☑	**CT 3** ☐	**Model** ☐
Name and Signature of the Invigilator with date	P.D 20/5/22		EP. Dennis Abra, AP/ECE		

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 Marks	✓	b Marks	
1		2	11		08			08
2		2	12				09	09
3		1	13		08			08
4		0	14				06	06
5		1	15					
6		1	16					
7		2					Total	31
8		–						
9		0						
10		2						
Total		11	42/60 Grand Total				V. Nithya 22/5/22 [V. NITHYA PEORANI, AP/ECE] Name and Signature of the Examiner with date	

To be filled by the examiner							
Course Outcomes	1	2	3	4	5	6	Total
Marks allotted			34	26			60
Marks Obtained			25	17			42

IQAC Audit - Remarks

B Priya 24/6/22
Name and Signature of the IQAC member

Dr. S.THILAGAVATHI M.E.,Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN

(Mrs. B. PRIYA)

SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai-25)
Kaikkurichi, Pudukkottai, Tamil Nadu – 622 303, India
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
ACADEMIC YEAR 2021 – 2022(EVEN SEMESTER)

STUDENTS MARK STATEMENT- CO BASED

CYCLE TEST-II

SUBJECT CODE &TITLE: EC8543 & LINEAR INTEGRETED CIRCUITS

YEAR/SEM: II YEAR & IV SEMESTER **MONTH & YEAR: MAY-2022**

S.NO	REG NO	STUDENT NAME	CO3 (34)	CO4 (26)	MARKS (60)	TOTAL (100)
1.	912620106001	ABIRAMI S	33	25	58	97
2.	912620106002	ANUSHYA M	25	15	40	67
3.	912620106003	ARTHI S	19	18	37	62
4.	912620106004	JEYASRI K	25	17	42	70
5.	912620106006	SENPAGAHARINI V	26	23	49	82
6.	912620106007	SONIYA P	21	24	45	75
7.	912620106301	ABITHA S	19	18	37	61
8.	912620106302	DESIKA G	13	11	24	40
9.	912620106303	SABAREESWARI S	AB	AB	AB	AB
10.	912620106304	SUBBULAKSHMI P	AB	AB	AB	AB

MARKS RANGE:

<20	20-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100
-	-	1	-	-	05	-	1	1

Dr. S.THILAGAVATHI M.E.,Ph.D.,
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SRI BHARATHI ENGINEERING
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Total No.of Candidates Present	**08**
Total No.of Candidates Absent	**02**
Total No.of Students Pass	**07**
Total No. of Students Fail	**01**
Percentage of Pass	**87.5%**

FACULTY INCHARGE

HoD/ECE

HOD / ECE
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
KAIKKURICHI
PUDUKKOTTAI - 622 303

PRINCIPAL

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KAIKKURICHI - 622 303.
PUDUKKOTTAI DISTRICT

Dr. S.THILAGAVATHI M.E.,Ph.D.,
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Kaikkurchi - 622 303, Pudukkottai Dt.

SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai-25)
Kaikkurichi, Pudukkottai, Tamil Nadu – 622 303, India
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ROOT CAUSE ANALYSIS

Name of the Faculty : Mrs.V.Nithya Poorani **Course Code & Name: EC8453& Linear integrated Circuits**
Degree & Program : B.E & ECE **Semester** : IV
Cycle Test : I /II/III
Target : 100 % **Achieved** : 87.5 %

S.NO	REG NO	NAME OF THE STUDENT	CAUSES FOR FAILURE	CORRECTIVE ACTION TAKEN
1.	9126106302	G. Desika	Not able to recall the concepts	Try to engage more in group study
2.	9126106303	S. Sabareeswari	Difficulties to understand circuits & derivations	Practice more problems & previous year question paper
3.	9126106304	P. Subbulakshmi	Health issue	Improve your preparation by concentration on you health.

V. Nithya

Signature of the Faculty Member

[V. NITHYA POORANI, AP/ECE]

Signature of the HoD/ECE

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KAIKKURICHI,
PUDUKKOTTAI - 622 303

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Kaikkurichi - 622 303

SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN
KAIKKURICHI, PUDUKKOTTAI – 622 303.

Circular

Date: 23.05.2022

Retest for Second cycle test will be conducted from **25.05.2022 to 31.05.2022** for the IV, VI & VIII semester (II, III & IV year) students.

The following instructions are to be followed by the faculty members.

- Total marks for which the question paper to be set will be for 50 marks. **(PART A** 5X2=10, **PART B** 2X13=26 **& PART C** 1X14=14)
- It is the responsibility of the **question paper** setter to take the Xerox copies of the required number of question papers.
- Concerned Faculty members are requested to conduct the examination as per the scheduled and handover the valued answer scripts to the students on or before **01.06.2022.**

PRINCIPAL

23/5/22

Cc:
- All faculty
- Exam cell
- Office file

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KAIKKURICHI, PUDUKKOTTAI – 622 303.

Circular

Date: 23.05.2022

Retest for Second cycle test will be conducted from **25.05.2022 to 31.05.2022** for the IV semester (II year) B.E students for 50 marks as per the time table given below. Students are directed to prepare well and score good marks.

Date	04.00 pm -05.30 pm
25-05-2022	CE8402-Strength of Materials-II (CIVIL) MA8402- Probability and Queuing Theory (CSE) IC8451- Control Systems (EEE) MA8451- Probability and Random Processes (ECE)
26-05-2022	MA8491-Numerical Methods (CIVIL/EEE) CS8492- Database Management Systems (CSE) EC8451- Electromagnetic Fields (ECE)
27-05-2022	CE8404- Concrete Technology (CIVIL) CS8493- Operating Systems (CSE) EE8401- Electrical Machines – II (EEE) EC8452- Electronic Circuits II (ECE)
28-05-2022	CE8491- Soil Mechanics (CIVIL) CS8494- Software Engineering (CSE) EE8402- Transmission and Distribution (EEE) GE8291- Environmental Science and Engineering (ECE)
30-05-2022	CE8401-Construction Techniques and Practices (CIVIL) CS8451- Design and Analysis of Algorithms (CSE) EE8451- Linear Integrated Circuits and Applications (EEE) EC8453- Linear Integrated Circuits (ECE)
31-05-2022	CE8403-Applied Hydraulics Engineering (CIVIL) CS8491- Computer Architecture (CSE) EE8403- Measurements and Instrumentation (EEE) EC8491- Communication Theory(ECE)

PRINCIPAL

23/5/22

Cc:

- All II year B.E Classes
- All faculty
- Exam cell
- Notice Board
- Office file

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COLLEGE FOR

Register Number:												

SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

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Kaikkurichi, Pudukkottai, Tamil Nadu – 622 303, India

CYCLE TEST – II(RETEST)			Date/Session	30.05.2022/AN	Marks	50
Course code	EC8453	Course Title	LINEAR INTEGRATED CIRCUITS			
Regulation	2017	Duration	90 Minutes	Academic Year	2021-2022	
Year	II	Semester	IV	Department	ECE	

COURSE OUTCOMES

C214:1	To analyze the basic building blocks of linear integrated circuits
C214:2	To learn the linear and non-linear applications of operational amplifiers
C214:3	To introduce the theory and applications of analog multipliers and PLL
C214:4	To learn the theory of ADC and DAC
C214:5	To introduce the concepts of waveform generation and
C214:6	To analyze the special function ICs

Q.No.	Question	CO	BTL
	PART A (Answer all the Questions 5 x 2 = 10 Marks)		
1	Classify the A/D converters based on their operational features.	C214.4	K4
2	State the main advantages of integrating type ADCs	C214.4	K1
3	Compare the advantages and drawbacks of a dual slope ADC.	C214.4	K4
4	Why VCO is also called as V to F converter	C214.3	K2
5	Explain how a frequency double can be realized using analog multiplier.	C214.3	K2
	PART B (Answer all the Questions 2 x 13 = 26 Marks)		
11a	Analyze the Gilbert's four quadrant multiplier cell with a neat circuit diagram.	C214.3	K4
	OR		
11b	Justify the following applications of Analog Multiplier ICs	C214.3	K4
12a	Derive the following Digital to Analog & Analog to Digital conversion techniques	C214.4	K3
	OR		
12b	Calculate 4-bit R-2R ladder D/A converter assume that the full scale voltage is 16V .Calculate the step change in output voltage on input varying from 01111 to 1111. Discuss the important specification of Data Converters	C214.4	K3
	PART C (Answer all the Questions 1 x 14 = 14 Marks)		
13a	Explain detail about Differentiator and compare ideal and practical Differentiator.	C214.3	K2
	OR		
13b	Discuss circuit of temperature independent logarithmic and antilogarithmic amplifier and explain its operation. Alsodeduce the expression for output voltage.	C214.3	K2

V. Nithya 25/5/22

Course Faculty

(Name /Sign / Date)

[V. NITHYA POORANI / AP, ECE]

Dr. S.THILAGAVATHI M.E., Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN

R.Yogh 25/5/22

HoD

(Name /Sign / Date)

[R. YOGESHWARI]

HOD / ECE
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Kaikkurichi, Pudukkottai, Tamil Nadu – 622 303, India

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ATTENDANCE SHEET - RETEST FOR CYCLE TEST-II

Name of the Faculty :Mrs.V.Nithya Poorani

Course Code & Name: EC 8453&Linear Integrated Circuits

Academic Year : 2021-2022/EVEN

Degree & Program : B.E/ECE **Year/ Semester:** II/IV

Date : 30.05.2022

S.NO	REG.NO	NAME	SIGNATURE
1.	912620106302	DESIKA G	
2.	912620106303	SABAREESWARI S	
3.	912620106304	SUBBULAKSHMI P	

30/5/22

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SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai-25)
Kaikkurichi, Pudukkottai, Tamil Nadu – 622 303, India
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
ACADEMIC YEAR 2021 – 2022 (EVEN SEMESTER)

STUDENTS MARK STATEMENT- CO BASED
RETEST FOR CYCLE TEST-II

SUBJECT CODE &TITLE: EC8543 & LINEAR INTEGRETED CIRCUITS

YEAR/SEM: II YEAR & IV SEMESTER **MONTH & YEAR: MAY 2022**

S.NO	REG NO	STUDENT NAME	CO1 (30)	CO2 (20)	MARKS (50)	TOTAL (100)
1.	912620106302	DESIKA G	22	15	37	74
2.	912620106303	SABAREESWARI S	23	17	40	80
3.	912620106304	SUBBULAKSHMI P	20	16	36	72

MARKS RANGE:

<20	20-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100
-	-	-	-	-	-	03	-	-

Total No.of Candidates Present	03
Total No.of Candidates Absent	NIL
Total No.of Students Pass	03
Total No. of Students Fail	-
Percentage of Pass	100%

1/6/22
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KAIKKURICHI - 622 303.
DISTRICT

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ACADEMIC YEAR 2021 – 2022(EVEN SEMESTER)

FINAL INTERNAL STUDENTS MARK STATEMENT(Out of 20)

SUBJECT CODE &TITLE: EC 8453 –LINEAR INTEGRATED CIRCUITS

YEAR/SEM : II/IV

REGULATION : 2017

S.NO	REG NO	STUDENT NAME	TOTAL (20)
1.	912620106001	ABIRAMI S	19
2.	912620106002	ANUSHYA M	15
3.	912620106003	ARTHI S	15
4.	912620106004	JEYASRI K	17
5.	912620106006	SENPAGAHARINI V	17
6.	912620106007	SONIYA P	17
7.	912620106301	ABITHA S	16
8.	912620106302	DESIKA G	15
9.	912620106303	SABAREESWARI S	15
10.	912620106304	SUBBULAKSHMI P	15

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ACADEMIC YEAR 2021 – 2022 (EVEN SEMESTER)

ANNA UNIVERSITY RESULT STATEMENT APR/MAY-2022

SUBJECT CODE &TITLE: EC 8453 –LINEAR INTEGRATED CIRCUITS
YEAR/SEM : II/IV

S.NO	REG NO	STUDENT NAME	GRADE
1.	912620106001	ABIRAMI S	B^+
2.	912620106002	ANUSHYA M	U
3.	912620106003	ARTHI S	U
4.	912620106004	JEYASRI K	B^+
5.	912620106006	SENPAGAHARINI V	B
6.	912620106007	SONIYA P	B
7.	912620106301	ABITHA S	U
8.	912620106302	DESIKA G	U
9.	912620106303	SABAREESWARI S	U
10.	912620106304	SUBBULAKSHMI P	U

FACULTY INCHARGE **HoD/ECE** **PRINCIPAL**

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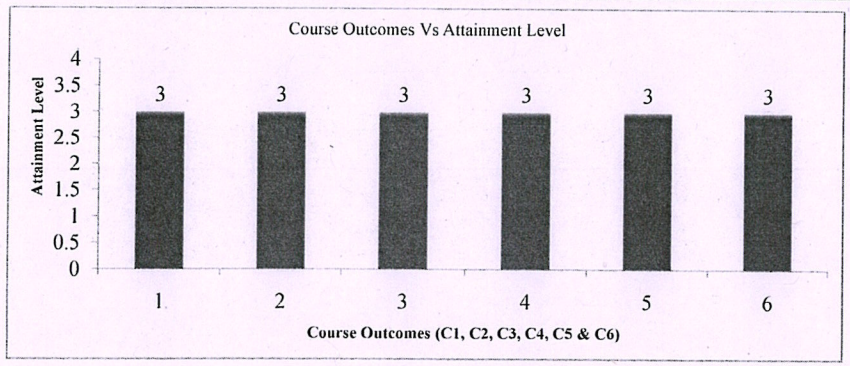
Kaikkuruchi, Pudukkottai- 622303.

Department of Electronics and communication Engineering

Internal Assessment -Attainment of Course Outcomes (Through Direct Assessment)

ACADEMIC YEAR - 2021 - 2022			**BATCH**	2020 - 2024				
COURSE CODE/TITLE	EC8453–Linear Integrated Circuits		**COURSE OUTCOME**	**1**	**2**	**3**	**4**	**5**	**6**
YEAR / SEMESTER	II / IV		**TARGET(%)**	65	65	65	65	65	65
COURSE COORDINATOR	Mrs.Nithya Poorani V		**TOTAL STRENGTH**	10					
ATTAINMENT LEVEL	**Level**	**Range**							
	1	**UP TO 60% of the students scored more than target**							
	2	**61 - 79% of the students scored more than target**							
	3	**80% & ABOVE of the students scored more than target**							

S.NO	REG NO	NAME OF THE STUDENT	IAT 1 - MARKS ALLOTED						IAT 2 - MARKS ALLOTED						IAT 3 - MARKS ALLOTED						Assignment / Mini Project /Tutorial / Seminar						TOTAL COURSE OUTCOME					
			C1	C2	C3	C4	C5	C6	C1	C2	C3	C4	C5	C6	C1	C2	C3	C4	C5	C6	C1	C2	C3	C4	C5	C6	C1	C2	C3	C4	C5	C6
			60	40							40	60							60	40		10	10			10	60	50	50	60	60	50
1	912620106001	ABIRAMI S	58	39							38.8	58.2							58.2	38.8		8	9.0			8	58.2	46.8	47.8	58.2	58.2	46.8
2	912620106002	ANUSHYA M	43	29							30	45							48	32		8	8.0			7	43.2	36.8	38	45	48	39
3	912620106003	ARTHI S	44	29							29.6	44.4							46.2	30.8		9	8.0			8	43.8	38.2	37.6	44.4	46.2	38.8
4	912620106004	JEYASRI K	46	31							32	48							55.8	37.2		7	8.0			8	46.2	37.8	40	48	55.8	45.2
5	912620106006	SENPAGAHARINI V	46	31							34.4	51.6							55.2	36.8		8	8.0			9	46.2	38.8	42.4	51.6	55.2	45.8
6	912620106007	SONIYA P	43	28							31.2	46.8							58.2	38.8		8	7.0			9	42.6	36.4	38.2	46.8	58.2	47.8
7	912620106301	ABITHA S	46	31							28	42							43.8	29.2		8	8.0			9	46.2	38.8	36	42	43.8	38.2
8	912620106302	DESIKA G	43	29							28.4	42.6							45.6	30.4		9	8.0			9	43.2	37.8	36.4	42.6	45.6	39.4
9	912620106303	SABAREESWARI S	44	30							28.4	42.6							45	30		9	8.0			9	44.4	38.6	36.4	42.6	45	39
10	912620106304	SUBBULAKSHMI P	43	28							28	42							43.2	28.8		8	8.0			8	42.6	36.4	36	42	43.2	36.8
		CO's Target Value																									39.0	32.5	32.5	39.0	39.0	32.5
		No. of Students scored above CO's Target Value																									10	10	10	10	10	10
		Percentage of Students scored above Target																									100.0	100.0	100.0	100.0	100.0	100.0
		CO Attainment																									3	3	3	3	3	3
		CO attainment Values to plot the Graph																									3	3	3	3	3	3



Faculty Incharge

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DEPARTMENT OF ECE

COURSE OUTCOME ATTAINMENT - UNIVERSITY EXAMINATION

ACADEMIC YEAR : 2021 - 2022 (EVEN SEM)

YEAR / SEMESTER : II YEAR / IV SEMESTER **Batch:2020-2024**

SUBJECT : EC8453–Linear Integrated Circuits

CO Attainment Level: 1 - (UPTO 60%) 2- (61%-79%) 3-(80% and Above)

TOTAL STRENGTH : 10

S.NO	Register No	NAME	Univ. Grade
1	912620106001	ABIRAMI S	B+
2	912620106002	ANUSHYA M	U
3	912620106003	ARTHI S	U
4	912620106004	JEYASRI K	B+
5	912620106006	SENPAGAHARINI V	B
6	912620106007	SONIYA P	B
7	912620106301	ABITHA S	U
8	912620106302	DESIKA G	U
9	912620106303	SABAREESWARI S	U
10	912620106304	SUBBULAKSHMI P	U

No. of O Grade	0	0
No. of A+ Grade	0	0
No. of A Grade	0	0
No.of B+ Grade	2	2
No. of B Grade	2	2
No. of U Grade	6	6
No. of UA Grade	0	0
Target for course outcome Attainment	60	10
No of students above the target	4	
CO-Attainment University (%)	40.00	

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Overall Attainment Sheet – COs - POs & PSOs attainment calculation

CO	CO-Attainment Internal (CO-INT) (Avg. Attainment of All section) (%)	CO-Attainment University (CO-UNI) (Avg. Attainment of All section) (%)	Direct CO Attainment (0.20xCO-INT + 0.80xCO-UNI) (%)	CO Attainment Level
C214.1	100.0	40.00	52.0	1
C214.2	100.0	40.00	52.0	1
C214.3	100.0	40.00	52.0	1
C214.4	100.0	40.00	52.0	1
C214.5	100.0	40.00	52.0	1
C214.6	100.0	40.00	52.0	1

Expected CO-PO Level

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C214.1	3	2	2	2	2	-	-	-	2	2	-	1	1	2	-
C214.2	3	2	2	2	2	-	-	-	2	2	-	1	1	2	1
C214.3	3	2	2	2	2	-	-	-	2	2	-	1	1	2	-
C214.4	3	2	2	2	2	-	-	-	2	2	-	1	1	2	-
C214.5	3	2	2	2	2	-	-	-	2	2	-	1	1	2	1
C214.6	3	2	2	2	2	-	-	-	2	2	-	1	1	2	-
C214	3	2	2	2	2	-	-	-	2	2	-	1	1	2	1

PO Attainment Level

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C214.1	1	0.67	0.67	0.67	0.67	-	-	-	0.67	0.67	-	0.33	0.33	0.67	-
C214.2	1	0.67	0.67	0.67	0.67	-	-	-	0.67	0.67	-	0.33	0.33	0.67	0.33
C214.3	1	0.67	0.67	0.67	0.67	-	-	-	0.67	0.67	-	0.33	0.33	0.67	-
C214.4	1	0.67	0.67	0.67	0.67	-	-	-	0.67	0.67	-	0.33	0.33	0.67	-
C214.5	1	0.67	0.67	0.67	0.67	-	-	-	0.67	0.67	-	0.33	0.33	0.67	0.33
C214.6	1	0.67	0.67	0.67	0.67	-	-	-	0.67	0.67	-	0.33	0.33	0.67	-
C214	1	0.67	0.67	0.67	0.67	-	-	-	0.67	0.67	-	0.33	0.33	0.67	0.33

Attainment of POs and PSOs:

Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO2
C214	3	2	2	2	2	-	-	-	2	2	-	1	1	2	1
Attainment	1	0.67	0.67	0.67	0.67	-	-	-	0.67	0.67	-	0.33	0.33	0.67	0.33

Comments by Program Coordinator	1. 2.
Remarks by HoD	

V. Nithya Poorani, AP/ECE

Name and Signature of the Faculty Member

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