



COLLEGE OF ENGINEERING BHUBANESWAR (COEB)
Plot No.1 (A), CNI Complex, Patia, Bhubaneswar – 751024, Odisha, India.
[AFFILIATED TO BPUT, ODISHA]
www.coeb.ac.in

DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING

ADD-ON COURSE : Design and Analysis of Oscillator Circuits

[Programme: B.Tech, ETC]

Course Objectives:

To introduce some basic fundamental ideas of oscillator, understand the noise in oscillator, understand computer simulation in SPICE..

SYLLABUS

Total Lecture Hours : 40

MODULE-I:

[10 Hours]

Fundamentals: Example, Mismatch, Relation to classic oscillator theory, Loaded Q, Resonator as matching network, pulling crystal oscillator, SAW resonator, emitter resistance in negative-R oscillator, Stability factor in oscillator design.

MODULE-II

[10 Hours]

Limiting, starting and biasing: Limiting, Class-A operation, Prediction output level, output harmonic content, starting, starting time, class C power oscillator, bias time constant, Frequency effects of limiting, one battery biasing, dual supply biasing, hybrid biasing.

MODULE-III

[10 Hours]

Noise: Amplifier noise, power supply noise, single side band phase noise, negative resistance oscillator noise, oscillator noise, oscillator noise nomograph, varactor modulation phase noise, typical oscillator noise performance, low noise design suggestion.

MODULE-III

[10 Hours]

Computer techniques: spice analysis of oscillators, Oscillator simulation, 100 MHz loop oscillator measured data, device selection, frequency tuning linearity, circuit enhancement, Broad tuning UHF VCO example, spice analysis of UHF VCO

PRINCIPAL
College of Engineering Bhubaneswar

Course Outcomes: After completion of the course, the students will be able to

- CO1: Explain the basic principles of oscillation, using resonator and negative resistance.
- CO2: Describe the use of different waveform limiting techniques.
- CO3: Analyze the stability of oscillator circuits and identify potential sources of instability.
- CO4: Define phase noise and jitter in oscillator circuits and their impact on signal quality.
- CO5: Explore the simulation of oscillators in SPICE.

Evaluation Process:

1. Attendance for the course is 75%, which is mandatory.
2. Minimum qualifying marks percentage for the course is 50.
3. Certificate will be issued after successful completion of course and assessment processes.

Learning resources:

Suggested Books:

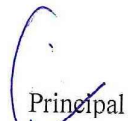
1. Foundations of Oscillator Circuit Design by Guillermo Gonzalez
2. Oscillator design and computer simulation by Randall W Rhea.
3. Oscillator circuits by Rudolf F Graf

Other Sources:

e-Learning Resources:


1. Nonlinear analysis of the Colpitts oscillator and applications to design by Maggio, Gian Mario, Oscar De Feo, and Michael Peter Kennedy.
2. https://www.youtube.com/watch?v=5mToA9h_KJA

Design and Developed by: Prof. Snehasis Dey and Prof. Subrat Kumar Mohanty


Principal

PRINCIPAL
College of Engineering Bhubaneswar


PRINCIPAL
College of Engineering Bhubaneswar


H.O.D, ETC Engg.
H.O.D
Dept. of ETC Engg.
COEB, Bhubaneswar



**DEPARTMENT OF ELECTRONICS & TELECOMMUNICATIONS ENGINEERING
COLLEGE OF ENGINEERING BHUBANESWAR**

Plot No.1 (A), CNI Complex, Patia, Bhubaneswar – 751024, Odisha, India.

[AFFILIATED TO BPUT, ODISHA]

www.coeb.ac.in

NOTICE

ADD-ON/CERTIFICATE COURSE

Ref No: COEB/ETC/2021/ 07

Date: 25/11/2021


It is for the information of all the students of 3rd/5th/7th semester that the classes for the Add-On/Certificate Courses will commence as per the time table given below. The registration process for the course will start from **26/11/2021**. The interested students to enroll themselves for the course are advised to contact the concerned Course Coordinators for the details.

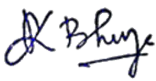
Semester	Course Title	Course Coordinator	Date of Commencement
3rd	Design and Analysis of Oscillator Circuits	Prof. Prasant Sethi	06/12/2021
5th	ECG signal processing using Raspberry Pi	Prof . Asit Kumar Satapathy	06/12/2021
7th	Animal sound processing	Prof. Subrat Kumar Mohanty	06/12/2021

The class timing will be from 5.30 pm to 7.30 pm.

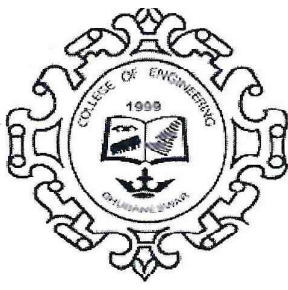
Copy to:

1. Office of the Chairman/ Vice-Chairman for kind information.
2. Office of the Executive Director for kind Information.
3. Office of the Registrar for kind Information.
3. Office of the Principal for kind information.
4. Departmental Notice Board.
5. Guard File


Head of the Department
H.C.B.
Dept. of ETC Engg.
COEB, Bhubaneswar


PRINCIPAL
College of Engineering Bhubaneswar

Head of the Department



COLLEGE OF ENGINEERING BHUBANESWAR (COEB)

ADD-ON COURSE

STUDENT ENROLLMENT SHEET

Name of the Department: Electronics and Telecommunication Engineering	
Course Title: Design and Analysis of Oscillator Circuits	
Semester: 3rd	Academic Year: 2021-22

Student's Declaration/Undertaking

1. I do hereby undertake to participate in the above mentioned add on course.

2. I do hereby, promise to abide by the admissible rules and regulations, connecting discipline, attendance, etc. of the department, and also to follow the code of Conduct prescribed for the students of the institute, as in force from time to time.

SL. NO.	Reg. No./ Enrollment No.	NAME OF THE STUDENT	Signature of the student
1	2001219080	KANHU CHARAN SAHOO	Kanhu Ch. Sahoo
2	2001219081	PIYUSH KUMAR BEHERA	Piyush K. Behera
3	2001219082	PRASHANT KUMAR SINHA	Prashant Kumar Sinha
4	2001219083	SASWAT PRASAD MOHANTY	Saswat Prasad Mohanty
5	2001219084	SATYAJIT SAMAL	Satyajit Samal
6	2001219237	ABHISHEK NITYANUTAN MOHANTY	Abhishek Mohanty
7	2001219238	LISHARANI MISHRA	Lisharani Mishra
8	2001219239	RAMESH CHANDRA RAITA	Ramesh Chandra
9	2001219240	SUSIAMA HANSDAH	Sushama Hansdah
10	2001219241	BIPIN KUMAR	Bipin Kumar
11	2001219242	KHUSHBU KUMARI	Khushbu Kumari
12	2001219243	KAUSHAL KISHOR KUMAR	Kaushal Kishor Kumar
13	2001219244	ANURAG KESHRI	Anurag Keshri
14	2001219245	SUBHALAXMI SAHOO	Subhalaxmi Sahoo
15	2001219246	ANANYA DAS	Ananya Das
16	2001219247	SNEHA KUMARI	Sneha Kumari
17	2001219248	ABHINANDAN PANDA	Abhinandan Panda
18	2001219249	RAJEEV RANJAN	Rajeev Ranjan
19	2001219250	PALLAVI	Pallavi
20	2001219251	AMRIT PRASAD SAHU	Amrit Pr. Sahu
21	2001219252	TRUPTIMAYEE BEHERA	Truptimayee Behera
22	2001219253	BHARATI SAH	Bharati Sah
23	2001219254	PRIYANKA DAS	Priyanka Das
24	2001219255	SNEHA SHARMA	Sneha Sharma

K. B. Singh

PRINCIPAL
College of Engineering Bhubaneswar



COLLEGE OF ENGINEERING BHUBANESWAR (COEB)
DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING
 ADD ON/CERTIFICATE COURSE

STUDENT ATTENDANCE SHEET

Programme: B.Tech in Electronics and Telecommunications
 Name of the Course: Design and Analysis of Oscillator Circuits
 Semester: 3rd Academic Year: 2021-22
 Course Code (if any):

Duration: **40 hours**

Sheet No. _____
 Date & Signature of the Student

Sl. No.	Reg. No./ Enrollment No.	NAME OF THE STUDENT	Date:	Date:	Date:	Date:
1	2001219080	KANHU CHARAN SAHOO	6/12/2021	7/12/2021	8/12/2021	9/12/2021
2	2001219081	PIYUSH KUMAR BEHERA	Kanhu C. Sahoo	Kanhu C. Sahoo	Kanhu C. Sahoo	Kanhu C. Sahoo
3	2001219082	PRASHANT KUMAR SINHA	Piyush K. Behera	Piyush K. Behera	Piyush K. Behera	Piyush K. Behera
4	2001219083	SASWATI PRASAD MOHANTY	Prashant K. Sinha	Prashant K. Sinha	Prashant K. Sinha	Prashant K. Sinha
5	2001219084	SATYAJIT SAMAL	Saswati P. Mohanty	Saswati P. Mohanty	Saswati P. Mohanty	Saswati P. Mohanty
6	2001219237	ABHISHEK N. MOHANTY	Satyajit Samal	Satyajit Samal	Satyajit Samal	Satyajit Samal
7	2001219238	LISHARANI MISHRA	Abhishek Mohanty	Abhishek Mohanty	Abhishek Mohanty	Abhishek Mohanty
8	2001219239	RAMESH CHANDRA RAITTA	Lisharani Mishra	Lisharani Mishra	Lisharani Mishra	Lisharani Mishra
9	2001219240	SUSHAMA HANSDAH	Ramesh Chandra Raitta	Ramesh Chandra Raitta	Ramesh Chandra Raitta	Ramesh Chandra Raitta
10	2001219241	BIPIN KUMAR	Sushama Hansdah	Sushama Hansdah	Sushama Hansdah	Sushama Hansdah
11	2001219242	KHUSHBU KUMARI	Bipin Kumar	Bipin Kumar	Bipin Kumar	Bipin Kumar
12	2001219243	KAUSHAL K. KUMAR	Khushbu Kumari	Khushbu Kumari	Khushbu Kumari	Khushbu Kumari
13	2001219244	ANURAG KESHRI	Kaushal K. Kumar	Kaushal K. Kumar	Kaushal K. Kumar	Kaushal K. Kumar
14	2001219245	SUBHALAXMI SAHOO	Anurag Keshri	Anurag Keshri	Anurag Keshri	Anurag Keshri
15	2001219246	ANANYA DAS	Subhalaxmi Sahoo	Subhalaxmi Sahoo	Subhalaxmi Sahoo	Subhalaxmi Sahoo
16	2001219247	SNEHA KUMARI	Ananya Das	Ananya Das	Ananya Das	Ananya Das
17	2001219248	ABHINANDAN PANDA	Sneha Kumari	Sneha Kumari	Sneha Kumari	Sneha Kumari
18	2001219249	RAJDEV RANJAN	A. Panda	A. Panda	A. Panda	A. Panda
19	2001219250	PALLAVI	Rajdev Ranjan	Rajdev Ranjan	Rajdev Ranjan	Rajdev Ranjan
20	2001219251	AMRIT PRASAD SAHU	Pallavi	Pallavi	Pallavi	Pallavi
21	2001219252	TRUPTIMAYEE BEHERA	Amrit P. Sahu	Amrit P. Sahu	Amrit P. Sahu	Amrit P. Sahu
22	2001219253	BHARATI SAH	T. Behera	T. Behera	T. Behera	T. Behera
23	2001219254	PRIVANKA DAS	Bharati Sah	Bharati Sah	Bharati Sah	Bharati Sah
24	2001219255	SNEHA SHARMA	Privanka Das	Privanka Das	Privanka Das	Privanka Das

Signature of the Course Coordinator

P. Sethi
 PRINCIPAL
 College of Engineering Bhubaneswar



COLLEGE OF ENGINEERING BHUBANESWAR (COEB)
DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING
 ADD ON/CERTIFICATE COURSE

STUDENT ATTENDANCE SHEET

Sheet No. _____

Programme: B.Tech in Electronics and Telecommunications
 Name of the Course: Design and Analysis of Oscillator Circuits

Semester: 3rd Academic Year: 2021-22
 Course Code (if any): _____

Duration : **40 hours**

Date & Signature of the Student

Sl. NO.	Reg. No./ Enrollment No.	NAME OF THE STUDENT	Date:	Date:	Date:	Date:
1	2001219080	KANHU CHARAN SAHOO	10/12/2021	13/12/2021	14/12/2021	15/12/2021
2	2001219081	PIYUSH KUMAR BEHERA	Kanhu Ch. Sahon	Kanhu Ch. Sahon	Kanhu Ch. Sahon	Kanhu Ch. Sahon
3	2001219082	PRASHANT KUMAR SINHA	Piyush K. Behera	Piyush K. Behera	Piyush K. Behera	Piyush K. Behera
4	2001219083	SASWAT PRASAD MOHANTY	Prashant K. Sinha	Prashant K. Sinha	Prashant K. Sinha	Prashant K. Sinha
5	2001219084	SATYAJIT SAMAL	Saswat P. Mohanty	Saswat P. Mohanty	Saswat P. Mohanty	Saswat P. Mohanty
6	2001219237	ABHISHEK N. MOHANTY	Satyajit Samal			Satyajit Samal
7	2001219238	LISHARANI MISHRA	Abhishek Mohanty	Abhishek Mohanty	Abhishek Mohanty	Abhishek Mohanty
8	2001219239	RAMESH CHANDRA RAITA	Lisharani Mishra	Lisharani Mishra	Lisharani Mishra	Lisharani Mishra
9	2001219240	SUSHAMA HANSDAH	Ramesh chandra raita	Ramesh chandra raita	Ramesh chandra raita	Ramesh chandra raita
10	2001219241	BIPIN KUMAR	Sushama Hansdah	Sushama Hansdah	Sushama Hansdah	Sushama Hansdah
11	2001219242	KHUSHBU KUMARI	Bipin Kumar	Bipin Kumar	Bipin Kumar	Bipin Kumar
12	2001219243	KAUSHAL K. KUMAR	K. Keemari	K. Keemari	K. Keemari	K. Keemari
13	2001219244	ANURAG KESHRI	Kaushal K. Kumar	Kaushal K. Kumar	Kaushal K. Kumar	Kaushal K. Kumar
14	2001219245	SUBHALAXMI SAHOO	Anurag Keshri	Anurag Keshri	Anurag Keshri	Anurag Keshri
15	2001219246	ANANYA DAS	Subhalaxmi Sahoo	Subhalaxmi Sahoo	Subhalaxmi Sahoo	Subhalaxmi Sahoo
16	2001219247	SNEHA KUMARI	Ananya Das	Ananya Das	Ananya Das	Ananya Das
17	2001219248	ABHINANDAN PANDA	Sneha Kumari	Sneha Kumari	Sneha Kumari	Sneha Kumari
18	2001219249	RAJEEV RANJAN	A. Panda	A. Panda	A. Panda	A. Panda
19	2001219250	PALLAVI	Rajeev Ranjan	Rajeev Ranjan	Rajeev Ranjan	Rajeev Ranjan
20	2001219251	AMRIT PRASAD SAHU	Pallavi	Pallavi	Pallavi	Pallavi
21	2001219252	TRUPTIMAYEE BEHERA	Amrit P. Sahu	Amrit P. Sahu	Amrit P. Sahu	Amrit P. Sahu
22	2001219253	BHARATI SAH	T. Behera	T. Behera	T. Behera	T. Behera
23	2001219254	PRITYANKA DAS	Bharati Sah	Bharati Sah	Bharati Sah	Bharati Sah
24	2001219255	SNEHA SHARMA	Prityanka Das	Prityanka Das	Prityanka Das	Prityanka Das
Signature of the Course Coordinator			P. Sethi	P. Sethi	P. Sethi	P. Sethi

P. Sethi
 PRINCIPAL
 College of Engineering Bhubaneswar



COLLEGE OF ENGINEERING BHUBANESWAR (COEB)
DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING
 ADD ON/CERTIFICATE COURSE

STUDENT ATTENDANCE SHEET

Sheet No. _____

Programme: B. Tech in Electronics and Telecommunications
 Name of the Course: Design and Analysis of Oscillator Circuits

Semester: 3rd Academic Year: 2021-22
 Course Code (if any): _____

Duration : **40 hours**

Date & Signature of the Student

Sl. No.	Reg. No./ Enrollment No.	NAME OF THE STUDENT	Date:	Date:	Date:	Date:
1	2001219080	KANHU CHARAN SAHOO	16/12/2021	17/12/2021	20/12/2021	21/12/2021
2	2001219081	PIYUSH KUMAR BEHERA	Kamru. Cl. Sahan	Nandu Cl. Hoo	Kamru Cl. Sahan	Kamru Cl. Sahan
3	2001219082	PRASHANT KUMAR SINHA	Piyush k Behera	Piyush k Behera	Piyush k Behera	Piyush k Behera
4	2001219083	SASWAT PRASAD MOHANTY	Prashant k. Sinha	Prashant k. Sinha	Prashant k. Sinha	Prashant k. Sinha
5	2001219084	SATYAJIT SAMAL	Saswat P. Mohanty	Saswat P. Mohanty	Saswat P. Mohanty	Saswat P. Mohanty
6	2001219237	ABHISHEK N MOHANTY	Satyajit Samal	Satyajit Samal	Satyajit Samal	Satyajit Samal
7	2001219238	LISHARAN MISHRA	Abhishek Mohanty	Abhishek Mohanty	Abhishek Mohanty	Abhishek Mohanty
8	2001219239	RAAMESH CHANDRA RAITA	Lisharan Mishra	Lisharan Mishra	Lisharan Mishra	Lisharan Mishra
9	2001219240	SUSHAMA HANSDAH	Ramesh chandra Raita	Ramesh chandra Raita	Ramesh chandra Raita	Ramesh chandra Raita
10	2001219241	BIPIN KUMAR	Sushama Hansdah	Sushama Hansdah	Sushama Hansdah	Sushama Hansdah
11	2001219242	KHUSHBU KUMARI	Bipin Kumar	Bipin Kumar	Bipin Kumar	Bipin Kumar
12	2001219243	KAUSHAL K. KUMAR	K. Kumari	K. Kumari	K. Kumari	K. Kumari
13	2001219244	ANURAG KESHRI	Kaushal K. Kumar	Kaushal K. Kumar	Kaushal K. Kumar	Kaushal K. Kumar
14	2001219245	SUBHALAXMI SAHOO	Anurag Keshri	Anurag Keshri	Anurag Keshri	Anurag Keshri
15	2001219246	ANANYA DAS	Subhalaxmi Sahoo	Subhalaxmi Sahoo	Subhalaxmi Sahoo	Subhalaxmi Sahoo
16	2001219247	SNEHA KUMARI	Ananya Das	Ananya Das	Ananya Das	Ananya Das
17	2001219248	ABHINANDAN PANDA	Sneha Kumari	Sneha Kumari	Sneha Kumari	Sneha Kumari
18	2001219249	RAJDEV RANJAN	A. Panda	A. Panda	A. Panda	A. Panda
19	2001219250	PALLAVI	Rajdev Ranjan	Rajdev Ranjan	Rajdev Ranjan	Rajdev Ranjan
20	2001219251	AMRIT PRASAD SAHU	Pallavi	Pallavi	Pallavi	Pallavi
21	2001219252	TRUPTI MAJEE BEHERA	Amrit P. Saha	Amrit P. Saha	Amrit P. Saha	Amrit P. Saha
22	2001219253	BHARATI SAH	T. Behera	T. Behera	T. Behera	T. Behera
23	2001219254	PRITYANKA DAS	Bharati Sah	Bharati Sah	Bharati Sah	Bharati Sah
24	2001219255	SNEHA SHARMA	Prityanka Das	Prityanka Das	Prityanka Das	Prityanka Das

Signature of the Course Coordinator

P. Sethi

P. Sethi

P. Sethi

P. Sethi

P. Sethi



COLLEGE OF ENGINEERING BHUBANESWAR (COEB)
DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING
 ADD ON/CERTIFICATE COURSE

STUDENT ATTENDANCE SHEET

Sheet No. _____

Programme: B.Tech in Electronics and Telecommunications
 Name of the Course: Design and Analysis of Oscillator Circuits

Semester: 3rd Academic Year: 2021-22
 Course Code (if any): _____

Date & Signature of the Student

Duration : **40 hours**

Sl. No.	Reg. No./ Enrollment No.	NAME OF THE STUDENT	Date:	Date:	Date:	Date:
1	2001219080	KANFU CHARAN SAHOO	22/12/2021	23/12/2021	24/12/2021	6/01/2022
2	2001219081	PRYUSH KUMAR BEHERA	Kanika C. Sahoo	Kanika C. Sahoo	Kanika C. Sahoo	Kanika C. Sahoo
3	2001219082	PRASHANT KUMAR SINHA	Priyanka B. Behera	Priyanka B. Behera	Priyanka B. Behera	Priyanka B. Behera
4	2001219083	SASWAT PRASAD MOHANTY	Prashant K. Sinha	Prashant K. Sinha	Prashant K. Sinha	Prashant K. Sinha
5	2001219084	SATYAJIT SAMAL	Saswat Prasad Mohanty	Saswat P. Mohanty	Saswat P. Mohanty	Saswat P. Mohanty
6	2001219237	ABHISHEK N. MOHANTY	Satyajit Samal	Satyajit Samal	Satyajit Samal	Satyajit Samal
7	2001219238	LISHARANI MISHERA	Abhishek Mohanty	Abhishek Mohanty	Abhishek Mohanty	Abhishek Mohanty
8	2001219239	RAMESH CHANDRA RAITA	Lisharani Mishra	Lisharani Mishra	Lisharani Mishra	Lisharani Mishra
9	2001219240	SUSHAMA HANSDAH	Ramesh chandra Raita	Ramesh chandra Raita	Ramesh chandra Raita	Ramesh chandra Raita
10	2001219241	BIPIN KUMAR	Sushama Hansdah	Sushama Hansdah	Sushama Hansdah	Sushama Hansdah
11	2001219242	KHUSHBU KUMARI	Bipin Kumar	Bipin Kumar	Bipin Kumar	Bipin Kumar
12	2001219243	KAUSHAL K. KUMAR	K. Kumari	K. Kumari	K. Kumari	K. Kumari
13	2001219244	ANURAG KESHRI	Kaushal K. Kumar	Kaushal K. Kumar	Kaushal K. Kumar	Kaushal K. Kumar
14	2001219245	SUBHALAXMI SAHOO	Anurag Keshri	Anurag Keshri	Anurag Keshri	Anurag Keshri
15	2001219246	ANANYA DAS	Subhalaxmi Sahoo	Subhalaxmi Sahoo	Subhalaxmi Sahoo	Subhalaxmi Sahoo
16	2001219247	SNEHA KUMARI	Ananya Das	Ananya Das	Ananya Das	Ananya Das
17	2001219248	ABHINANDAN PANDA	Sneha Kumari	Sneha Kumari	Sneha Kumari	Sneha Kumari
18	2001219249	RAJEEV RANJAN	A. Panda	A. Panda	A. Panda	A. Panda
19	2001219250	PALLAVI	Rajeev Ranjan	Rajeev Ranjan	Rajeev Ranjan	Rajeev Ranjan
20	2001219251	AMRIT PRASAD SAHU	Pallavi	Pallavi	Pallavi	Pallavi
21	2001219252	TRUPTIMAYEE BEHERA	Amrit P. Sahu	Amrit P. Sahu	Amrit P. Sahu	Amrit P. Sahu
22	2001219253	BHARATI SAH	T. Behera	T. Behera	T. Behera	T. Behera
23	2001219254	PRIVYANKA DAS	Bharati Sah	Bharati Sah	Bharati Sah	Bharati Sah
24	2001219255	SNEHA SHARMA	Privyanka Das	Privyanka Das	Privyanka Das	Privyanka Das
		Signature of the Course Coordinator	P. Sethi	P. Sethi	P. Sethi	P. Sethi



COLLEGE OF ENGINEERING BHUBANESWAR (COEB)
DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING
 ADD ON/CERTIFICATE COURSE

STUDENT ATTENDANCE SHEET

Sheet No. _____

Programme: B. Tech in Electronics and Telecommunications Semester: 3rd Academic Year: 2021-22
 Name of the Course: Design and Analysis of Oscillator Circuits Course Code (if any): _____

Duration : **40 hours** Date & Signature of the Student

Sl. No.	Reg. No./ Enrollment No.	NAME OF THE STUDENT	Date:	Date:	Date:	Date:
1	2001219080	KANHU CHARAN SAHOO	7/10/2022	10/10/2022	11/10/2022	12/10/2022
2	2001219081	PIYUSH KUMAR BEHERA	<i>Piyush K Behera</i>	<i>Piyush K Behera</i>	<i>Piyush K Behera</i>	<i>Piyush K Behera</i>
3	2001219082	PRASHANT KUMAR SINHA	<i>Prashant K. Sinha</i>	<i>Prashant K. Sinha</i>	<i>Prashant K. Sinha</i>	<i>Prashant K. Sinha</i>
4	2001219083	SASWAT PRASAD MOHANTY	<i>Saswat P. Mohanty</i>	<i>Saswat P. Mohanty</i>	<i>Saswat P. Mohanty</i>	<i>Saswat P. Mohanty</i>
5	2001219084	SATYAJIT SAMAL MOHANTY	<i>Satyajit Samal</i>	<i>Satyajit Samal</i>	<i>Satyajit Samal</i>	<i>Satyajit Samal</i>
6	2001219237	ABHISHEK NITYANUTAN MOHANTY	<i>Abhishek Mohanty</i>	<i>Abhishek Mohanty</i>	<i>Abhishek Mohanty</i>	<i>Abhishek Mohanty</i>
7	2001219238	LISHA RANI MISRA	<i>Lisha Ran Mishra</i>	<i>Lisha Ran Mishra</i>	<i>Lisha Ran Mishra</i>	<i>Lisha Ran Mishra</i>
8	2001219239	RAMESH CHANDRA RAITA	<i>Ramesh chandra Raita</i>	<i>Ramesh chandra Raita</i>	<i>Ramesh chandra Raita</i>	<i>Ramesh chandra Raita</i>
9	2001219240	SUSHAMA HANSDAH	<i>Sushama Hansdah</i>	<i>Sushama Hansdah</i>	<i>Sushama Hansdah</i>	<i>Sushama Hansdah</i>
10	2001219241	BIPIN KUMAR	<i>Bipin Kumar</i>	<i>Bipin Kumar</i>	<i>Bipin Kumar</i>	<i>Bipin Kumar</i>
11	2001219242	KHUSHBU KUMARI	<i>K. Khushi</i>	<i>K. Khushi</i>	<i>K. Khushi</i>	<i>K. Khushi</i>
12	2001219243	KAUSHAL KISHOR KUMAR	<i>Kaushal K. Kumar</i>	<i>Kaushal K. Kumar</i>	<i>Kaushal K. Kumar</i>	<i>Kaushal K. Kumar</i>
13	2001219244	ANURAG KESHRI	<i>Anurag Keshri</i>	<i>Anurag Keshri</i>	<i>Anurag Keshri</i>	<i>Anurag Keshri</i>
14	2001219245	SUBHALAXMI SAHOO	<i>Subhalaxmi saho</i>	<i>Subhalaxmi saho</i>	<i>Subhalaxmi saho</i>	<i>Subhalaxmi saho</i>
15	2001219246	ANANYA DAS	<i>Ananya Das</i>	<i>Ananya Das</i>	<i>Ananya Das</i>	<i>Ananya Das</i>
16	2001219247	SNEHA KUMARI	<i>Sneha Kumari</i>	<i>Sneha Kumari</i>	<i>Sneha Kumari</i>	<i>Sneha Kumari</i>
17	2001219248	ABHINANDAN PANDA	<i>Abhinandan</i>	<i>Abhinandan</i>	<i>Abhinandan</i>	<i>Abhinandan</i>
18	2001219249	RAJEEV RANJAN	<i>Rajeev Ranjan</i>	<i>Rajeev Ranjan</i>	<i>Rajeev Ranjan</i>	<i>Rajeev Ranjan</i>
19	2001219250	PALLAVI	<i>Pallavi</i>	<i>Pallavi</i>	<i>Pallavi</i>	<i>Pallavi</i>
20	2001219251	AMRIT PRASAD SAHU	<i>Amrit P. Sahu</i>	<i>Amrit P. Sahu</i>	<i>Amrit P. Sahu</i>	<i>Amrit P. Sahu</i>
21	2001219252	TRUPTIMAYEE B-SHERA	<i>T. Behera</i>	<i>T. Behera</i>	<i>T. Behera</i>	<i>T. Behera</i>
22	2001219253	BHARATI SAH	<i>Bharnati sah</i>	<i>Bharnati sah</i>	<i>Bharnati sah</i>	<i>Bharnati sah</i>
23	2001219254	PRITYANKA DAS	<i>Prityanka Das</i>	<i>Prityanka Das</i>	<i>Prityanka Das</i>	<i>Prityanka Das</i>
24	2001219255	SNEHA SHARMA	<i>Sneha Sharma</i>	<i>Sneha Sharma</i>	<i>Sneha Sharma</i>	<i>Sneha Sharma</i>

Signature of the Course Coordinator

P. Sathya

PRINCIPAL
 College of Engineering Bhubaneswar



COLLEGE OF ENGINEERING BHUBANESWAR
 PLOT NO-1(A), CNI COMPLEX, PATIA, BHUBANESWAR, KHORDHA, ODISHA-751024




Certificate of Completion

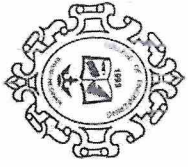
This is to certify that Mr./Ms. KANHU CHARAN SAHOO, student of the Department
 of Electronics & Telecommunication Engg. semester Third bearing registration number 2001219080
 has successfully completed the ADD-ON Course titled Design and Analysis of Oscillator Circuits
 conducted at College of Engineering Bhubaneswar in the academic year 2021-22

TRUE COPY


 Course-Coordinator


 Principal


 PRINCIPAL
 College of Engineering Bhubaneswar



COLLEGE OF ENGINEERING BHUBANESWAR

PLOT NO-1(A), CNI COMPLEX, PATIA, BHUBANESWAR, KHORDHA, ODISHA-751024



Certificate of Completion


This is to certify that Mr./Ms. PIYUSHKUMAR BEHERA, student of the Department


of Electronics & Telecommunication Engg. semester Third bearing registration number 2001219081

has successfully completed the ADD-ON Course titled Design and Analysis of Oscillator Circuits

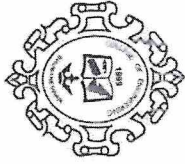
conducted at College of Engineering Bhubaneswar in the academic year 2021-22

TRUE COPY


Course-Coordinator


Principal


PRINCIPAL
College of Engineering Bhubaneswar



COLLEGE OF ENGINEERING BHUBANESWAR
PLOT NO-1(A), CNI COMPLEX, PATIA, BHUBANESWAR, KHORDHA, ODISHA-751024




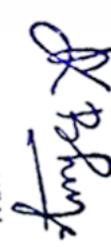
Certificate of Completion

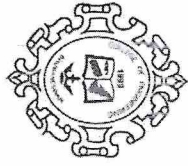
This is to certify that Mr./Ms. PRASHANT KUMAR SINHA student of the Department
of Electronics & Telecommunication Engg. semester Third bearing registration number 2001219082
has successfully completed the ADD-ON Course titled Design and Analysis of Oscillator Circuits
conducted at College of Engineering Bhubaneswar in the academic year 2021-22.

TRUE COPY


Course-Coordinator


Principal


PRINCIPAL
College of Engineering Bhubaneswar



COLLEGE OF ENGINEERING BHUBANESWAR

PLOT NO-1(A), CNI COMPLEX, PATIA, BHUBANESWAR, KHORDHA, ODISHA-751024



Certificate of Completion

This is to certify that Mr./Ms. SASWAT PRASAD MOHANTY, student of the Department

of Electronics & Telecommunication Engg. semester Third bearing registration number 2001219083

has successfully completed the ADD-ON Course titled Design and Analysis of Oscillator Circuits

conducted at College of Engineering Bhubaneswar in the academic year 2021-22



PRINCIPAL
College of Engineering Bhubaneswar

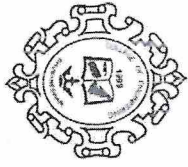
TRUE COPY



Course-Coordinator



Principal



COLLEGE OF ENGINEERING BHUBANESWAR

PLOT NO-1(A), CNI COMPLEX, PATIA, BHUBANESWAR, KHORDHA, ODISHA-751024



Certificate of Completion

This is to certify that Mr./Ms. ABHISHEK NITYANUTAN MOHANTY, student of the Department

of Electronics & Telecommunication Engg. semester Third bearing registration number 2001219237

has successfully completed the ADD-ON Course titled Design and Analysis of Oscillator Circuits

conducted at College of Engineering Bhubaneswar in the academic year 2021-22

PRINCIPAL
College of Engineering Bhubaneswar

TRUE COPY

Course-Coordinator

Principal