Remedial Classes
2020-21

Department of Electrical and Electronics Engineering

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY
(Autonomous)

Gokaraju Rangaraju Institute of Engineering and Technology
Electrical and Electronics Engineering
Remedial Classes
A.Y.2020-21

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GRIET/PRIN/12A/G/20-21 30th May 2021

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING & TECHNOLOGY

REMEDIAL CLASSES 202-21

CIRCULAR

FINISHING SCHOOL

This is to inform you all that Remedial Classes will be held for academically weak students from May to June 2021.List of students and time tables are send to individual departments.

Dean Finishing School

-

30th May 2021

From
Dean,
Finishing school
GRIET.

To
The HOD
EEE
GRIET

Request for faculty and Class rooms to conduct Remedial classes.

Sir/Madam,

This is to inform you that Finishing school of GRIET is conducting Remedial classes for B.Tech II year & III year students to clear their backlogs of Sem-I.

To conduct the classes we request you

1) Permit us to use 2 online classes from 3PM -4PM from 31st May 2021 to 16th June 2021
2) Nominate faculty to teach the following courses:

S.No	YEAR	Course title	No. of Students	Name of the faculty	Signature of the faculty
1	II-II	Principles of Digital Electronics (GR18A2084)	21	Mr. P Ravikanth	Mr. P Ravikanth
2	III-I	Signals and Systems (GR18A2052)	21	Mr. R Anil Kumar	Mr. R Anil Kumar
3	III-I	Power Electronics (GR18A3014)	20	Dr Pakkiraiah B	Dr Pakkiraiah B

Thanking you
Yours Sincerely,
Dr V N Ramadevi

Gokaraju Rangaraju Institute of Engineering and Technology
Electrical and Electronics Engineering
Finishing School
Remedial Classes Schedule (ONLINE)
31st May 2021 to 19th May 2021
II Year & III Year B.Tech

S.No	Subject	Year	Name of the Faculty	Session-1	Session-2	Session-3	Session-4	Session-5
1	Principles of Digital Electronics (GR18A2084)	II-II	Mr. P Ravikanth	31/05/2021 (3.00 to 4.00)	5/06/2021 (3.00 to 4.00)	07/06/2021 (3.00 to 4.00)	12/06/2021 (3.00 to 4.00)	14/06/2021 (3.00 to 4.00)
2	Signals and Systems (GR18A2052)	III-I	Mr. R Anil Kumar	01/06/2021 (3.00 to 4.00)	04/06/2021 (3.00 to 4.00)	08/06/2021 (3.00 to 4.00)	11/06/2021 (3.00 to 4.00)	15/06/2021 (3.00 to 4.00)
3	Power Electronics (GR18A3014)	III-I	Dr Pakkiraiah B	02/06/2021 (3.00 to 4.00)	03/06/2021 (3.00 to 4.00)	09/06/2021 (3.00 to 4.00)	12/06/2021 (3.00 to 4.00)	16/06/2021 (3.00 to 4.00)

HOD-EEE

Dean, Finishing School

(Faculty Coordinator)

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY

PRINCIPLES OF DIGITAL ELECTRONICS

Course Code: GR18A2084 **L/T/P/C : 3/0/0/3**
II Year II Semester

Course Objectives:

- Understand the types of logic gates and their families.
- Design of arithmetic and logic operations using digital IC's.
- Discuss, how the memory is created using sequential circuits.
- Classify the types of Flip-Flops and their applications.
- Describe the importance of PLD with example.

CourseOutcomes:

- Understand the working of logic families and logic gates.
- Design of Combinational and Sequential logic circuits.
- Understand the process of Analog to Digital conversion and Digital to Analog conversion.
- Analyze the types of Flip-Flops used in designing the registers.
- Discuss the types of Memories and use of PLD's

Unit I: FUNDAMENTALS OF DIGITAL SYSTEMS AND LOGICFAMILIES

Digital signals, digital circuits, AND, OR, NOT, NAND, NOR and Exclusive-OR operations, Boolean algebra, examples ofICgates, number systems-binary, signed binary, octal hexadecimal number, binaryarithmetic, one's and two's complements arithmetic, codes, error detecting and correctingcodes, characteristics of digital IC's, digital logic families, TTL, Schottky TTL and CMOS logic.

Unit II: COMBINATIONAL DIGITALCIRCUITS

Standard representation for logic functions, K-map representation and simplification oflogicfunctions using K-map, minimization of logical functions. Don't care conditions, Multiplexer, De-Multiplexer/Decoders, Adders, Subtractors, carry look ahead adder,serialadder, elementary ALU design, popular MSI chips, digital comparator,paritychecker/generator, code converters, priority encoders.

Unit III: SEQUENTIAL CIRCUITS AND SYSTEMS

A 1-bit memory, the circuit properties of Bi-stable latch, the clocked SR flip flop, J- K, TandDtypesflip-flops,applicationsofflip-flops,shiftregisters,applicationsofshiftregisters,serialtoparallel converter, parallel to serial converter, ring counter, sequence generator, ripple(Asynchronous) counters, synchronous counters, counters design using flip flops,specialcounter IC's, applications ofcounters.

Unit IV: A/D AND D/A CONVERTERS

Digital to analog converters: weighted resistor/converter, R-2R Ladder D/Aconverter, specifications for D/A converters, examples of D/A converter IC's, sample and hold circuit,analog to digital converters: quantization and encoding, parallel comparator A/Dconverter,successive approximation A/D converter, counting A/D converter, dual slope A/Dconverter, A/Dconverterusing voltagetofrequencyandvoltagetotimeconversion,specificationsofA/Dconverters, example of A/D converterIC's

UnitV: SEMICONDUCTOR MEMORIES AND PROGRAMMABLE LOGIC DEVICES

Memory organization and operation, expanding memory size, classification andcharacteristicsof memories, sequential memory, read only memory (ROM), read and write memory(RAM), content addressable memory (CAM), charge de coupled device memory (CCD), commonly used memory chips, ROM as a PLD, Programmable logic array, Programmable array logic, complex Programmable logic devices (CPLDS), Field Programmable Gate Array (FPGA).

Text/References Books:

1. R. P. Jain, "Modern Digital Electronics", McGraw Hill Education, 2009.

2. M. M. Mano, "Digital logic and Computer design", Pearson Education India, 2016.

3. A. Kumar, "Fundamentals of Digital Circuits", Prentice Hall India, 2016.

4. Charles H. Roth, Jr and Lizy Kurian John's, "Digital Systems Design Using VHDL", Cengage Learning

GOKARAJURANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY
(Autonomous)
Department of Electrical and Electronics Engineering

SIGNALS AND SYSTEMS

Course Code: GR18A2052 **L:3 P:0 T:0 C:3**
III year I semester

Prerequisites:

• Calculus, Trigonometry, complex algebra

• Fundamentals of Fourier, Laplace and Z transforms

Course Objectives:

The Objective of this course is to provide the student

• To compare the concepts of continuous and discrete-time signals and systems, their properties, representations and analysis methods.

• To visualization of time-domain representation and analysis concepts as they relate to difference equations, impulse response and convolution, etc.

• To analyze the Skill of frequency-domain representation and analysis using Fourier analysis, Z-transforms.

• To apply the concepts of sampling process of analog signals and A/D and D/A conversions.

• To represent the mathematical and computational skills needed in application areas like communication, signal processing and control.

Course Outcomes:

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

• Explain the fundamentals of mathematical models and analyze deterministic CT signals and systems

• Analyze the effect of LTI systems on signals passing through them in frequency and time domains

• Explain effect of sampling in continuous-time signals and apply sampling theorem in signal processing problems

• Discriminate the Fourier, Laplace and Z-transforms as appropriate for various signals and systems

• Solve simple problems as applicable to the field of communication, signal processing and control

Unit-I:

Introduction to Continuous-time Signals and Systems:

Typical signals (impulse, step, ramp, sinusoid, exponential, signum, sinc); Time-domain scaling, shifting, and folding; Continuous-time signal characteristics (periodicity, frequency, deterministic, random, symmetry, energy and power); Properties of continuous-time systems (linearity, time invariance, causality and stability). Analogy between vectors and signals; Orthogonal signal space; Signal approximation using orthogonal functions; Mean squared error; Closed set of orthogonal functions; Orthogonality in complex functions.

Unit-II:

Fourier Series, Fourier Transform, and Laplace Transform:

Representation of continuous-time periodic signals by Fourier series; Dirichlet's conditions; Properties of Fourier series, Parseval's theorem; Trigonometric and Exponential Fourier series; Complex Fourier spectrum; Fourier transform via Fourier series; Fourier transform of periodic and aperiodic signals; Convergence of Fourier transform; Properties of Fourier transforms, Parseval's theorem; Fourier transforms involving impulse function and Signum function; Introduction to Hilbert Transform; Definition of two-& one-sided Laplace transform, Region of convergence (ROC); Relation between LT and FT.

Unit-III:

Signal Transmission through Linear Systems:

Continuous-time Linear Time-Invariant system, Representation by differential equations, Transforms and State-variables; Impulse response, Convolution; Transfer function, frequency response; Ideal vs. realizable LPF, HPF and BPF characteristics; Signal bandwidth, system bandwidth, rise-time, gain-bandwidth; Distortion; Causality and Paley-Wiener criterion for physical realization.

Unit-IV:

Sampling & Discrete-time Signals:

Sampling theorem – Graphical and analytical proof for Band Limited Signals; Impulse-train sampling; Natural and Flat-top Sampling; Reconstruction of signal 64 from its samples; Under-sampling and Aliasing; Band-pass Sampling Theorem; DT signal characteristics (periodicity, frequency, deterministic, random, symmetry, energy and power).

Unit-V:

Z-Transform:

Discrete time signal representation using complex exponential and sinusoidal components; z-Transform of a discrete sequence; Region of convergence of z-Transform, Constraints on ROC for various classes of signals; Relationship between z-Transform and DTFT (Fourier spectrum); Transfer function of a LTI system (No difference equations); Properties of z-Transform, Inverse z-Transform by Partial Fractions (simple poles only).

Suggested Text Books:

1. Alan V. Oppenheim, Alan S. Willsky and S. Hamid Nawab, "Signals and Systems",Second Edition, PHI Learning, New Delhi, 2007.

2. B. P. Lathi, Signals, Systems and Communications-B.S. Publications, 2003

Reference Books:

1.M. J. Roberts, “Signals and Systems”, Second Edition, Tata-McGraw Hill, 2012.

2.Simon Haykin and Barry Van Veen, “Signals and Systems”, Edition, John Wiley and Sons, 2002.

3. P.RamakrishnaRao,ShankarPrkriya,”Signals and Systems”,2e,Mc Graw Hill(India),2013.

4. HweiP.Hsu,” Signals and Systems”, 3e,McGraw Hill Education,2014.

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY

(Autonomous)
Department of Electrical and Electronics Engineering

POWER ELECTRONICS

Course Code: GR18A3014 **L:3 P:0 T:0 C:4**
III year I semester

Course Objectives: -
The objective of this course is to provide the student:
1. Provide the students a deep insight in to the working of different switching devices with respect to their characteristics.
2. Study advanced converters and switching techniques implemented in recent technology.
3. Analyze different converters and control with their applications.
4. Familiarize the students with the utilization aspects of power engineering, more specifically the techniques of solid-state power conversions and their applications.
5. Evaluate the steady-state and transient state analysis of all the power converters

Course Outcomes: -
Students will be able to:
1. Understand the differences between signal level and power level devices
2. Understand the principle of operation, characteristics of commonly employed power electronic switching devices
3. Evaluate the performance of controlled rectifier circuits
4. Analyze the operation of DC-DC choppers
5. Analyze the operation of voltage source inverters

Syllabus

Unit I: Power switching devices
Diode, Thyristor, MOSFET, IGBT: I-V Characteristics; R,RC,UJT firing circuits for thyristor;Line and forced commutation circuits of a thyristor; Gate drive circuits for MOSFET and IGBT.

Unit II: Thyristor rectifiers
Single-phase half-wave and full-wave rectifiers, Single-phase full-bridge thyristor rectifier with R-load and highly inductive load; Three-phase full-bridge thyristor rectifier with R-load and highly inductive load; Input current wave shape and power factor. AC Voltage controller (Elementary treatment only), Cycloconverter (Elementary treatment only).

Unit III: DC-DC Converters

Elementary chopper with an active switch and diode, concepts of duty ratio and average voltage, power circuit of a buck converter, analysis and waveforms at steady state, duty ratio control of output voltage. Power circuit of a boost converter, analysis and waveforms at steady state, relation between duty ratio and average output voltage.

Unit IV: Single-Phase Voltage Source Inverter

Power circuit of single-phase voltage source inverter, switch states and instantaneous output voltage, square wave operation of the inverter, concept of average voltage over a switching cycle, bipolar sinusoidal modulation and unipolar sinusoidal modulation, modulation index and output voltage.

Unit V: Three-Phase Voltage Source Inverter

Power circuit of a three-phase voltage source inverter(120 degree mode), switch states, instantaneous output voltages, average output voltages over a sub-cycle, three-phase sinusoidal modulation.

Text Books

1. M. H. Rashid, “Power Electronics: Circuits, Devices, and Applications”, Pearson Education India, 2009.
2. N. Mohan and T. M. Undeland, “Power Electronics: Converters, applications and Design”, John Wiley & Sons, 2007.
3. R. W. Erickson and D. Maksimovic, “Fundamentals of Power Electronics”, Springer Science & Business Media, 2007.
4. L. Umanand, “Power Electronics: Essentials and Applications”, Wiley India, 2009.
5. P. S. Bimbhra, “Power Electronics”, Khanna Publishers

Gokaraju Rangaraju Institute of Engineering and Technology

Electrical and Electronics Engineering

Remedial Classes-A.Y=2020-21- Student Attendance List (P=Present & A=Absent)

Sl.No	Roll.No	Subject Code	Subject Name	01-06-2021	04-06-2021	08-06-2021	11-06-2021	15-06-2021
1	17241A0231	GR18A2052	Signals and Systems	P	A	P	P	P
2	17241A0299	GR18A2052	Signals and Systems	A	P	P	P	P
3	18241A0202	GR18A2052	Signals and Systems	A	A	P	P	P
4	18241A0205	GR18A2052	Signals and Systems	A	A	P	P	P
5	18241A0209	GR18A2052	Signals and Systems	P	A	P	P	P
6	18241A0220	GR18A2052	Signals and Systems	P	A	P	A	P
7	18241A0224	GR18A2052	Signals and Systems	P	A	A	A	P
8	18241A0244	GR18A2052	Signals and Systems	A	P	A	A	P
9	18241A0254	GR18A2052	Signals and Systems	A	P	A	A	P
10	18241A0262	GR18A2052	Signals and Systems	P	P	A	P	P
11	18241A0280	GR18A2052	Signals and Systems	P	P	A	P	A
12	18241A0287	GR18A2052	Signals and Systems	P	P	A	P	A
13	18241A0288	GR18A2052	Signals and Systems	P	P	A	P	P
14	18241A0290	GR18A2052	Signals and Systems	P	A	A	A	P
15	18241A0292	GR18A2052	Signals and Systems	A	A	A	P	P
16	18241A0298	GR18A2052	Signals and Systems	A	P	A	P	P
17	18241A02A0	GR18A2052	Signals and Systems	A	P	P	P	P
18	18241A02A3	GR18A2052	Signals and Systems	A	P	P	A	P
19	18241A02A4	GR18A2052	Signals and Systems	P	P	P	P	P
20	18241A02A8	GR18A2052	Signals and Systems	P	P	P	P	A
21	19245A0210	GR18A2052	Signals and Systems	P	P	A	P	A
Sl.No	**Roll.No**	**Subject Code**	**Subject Name**	**02-06-2021**	**03-06-2021**	**09-06-2021**	**12-06-2021**	**16-06-2021**
1	17241A0231	GR18A3014	Power Electronics	A	A	P	P	P
2	17241A0299	GR18A3014	Power Electronics	P	A	P	P	P
3	18241A0202	GR18A3014	Power Electronics	P	A	P	A	P
4	18241A0205	GR18A3014	Power Electronics	P	A	A	A	P
5	18241A0209	GR18A3014	Power Electronics	A	P	A	A	P

6	18241A0220	GR18A3014	Power Electronics	A	P	A	A	P
7	18241A0244	GR18A3014	Power Electronics	P	P	A	P	P
8	18241A0248	GR18A3014	Power Electronics	P	P	A	P	A
9	18241A0257	GR18A3014	Power Electronics	P	P	A	P	A
10	18241A0260	GR18A3014	Power Electronics	P	P	A	P	P
11	18241A0262	GR18A3014	Power Electronics	P	A	A	A	P
12	18241A0280	GR18A3014	Power Electronics	A	A	A	P	P
13	18241A0288	GR18A3014	Power Electronics	A	P	A	P	P
14	18241A0290	GR18A3014	Power Electronics	A	P	P	P	P
15	18241A0296	GR18A3014	Power Electronics	A	P	A	A	P
16	18241A0298	GR18A3014	Power Electronics	A	P	A	A	P
17	18241A0299	GR18A3014	Power Electronics	P	P	A	P	P
18	18241A02A0	GR18A3014	Power Electronics	P	P	A	P	A
19	18241A02A3	GR18A3014	Power Electronics	P	P	A	P	A
20	18241A02A8	GR18A3014	Power Electronics	P	P	A	P	P
Sl.No	**Roll.No**	**Subject Code**	**Subject Name**	**31-05-2021**	**05-06-2021**	**07-06-2021**	**12-06-2021**	**14-06-2021**
1	17241A0299	GR17A2105	Principles of Digital Electronics	P	P	A	P	P
2	18241A0205	GR18A2084	Principles of Digital Electronics	P	P	A	P	A
3	18241A0209	GR18A2084	Principles of Digital Electronics	P	P	A	P	A
4	18241A0220	GR18A2084	Principles of Digital Electronics	P	P	A	P	P
5	18241A0222	GR18A2084	Principles of Digital Electronics	P	A	A	A	P
6	18241A0223	GR18A2084	Principles of Digital Electronics	P	P	A	P	A
7	18241A0234	GR18A2084	Principles of Digital Electronics	P	P	A	P	P
8	18241A0244	GR18A2084	Principles of Digital Electronics	P	A	A	A	P
9	18241A0260	GR18A2084	Principles of Digital Electronics	P	A	P	A	P
10	18241A0262	GR18A2084	Principles of Digital Electronics	P	A	A	A	P
11	18241A0272	GR18A2084	Principles of Digital Electronics	A	P	A	A	P
12	18241A0279	GR18A2084	Principles of Digital Electronics	A	P	A	A	P
13	18241A0288	GR18A2084	Principles of Digital Electronics	P	P	A	P	P
14	18241A0290	GR18A2084	Principles of Digital Electronics	P	P	A	P	A
15	18241A0298	GR18A2084	Principles of Digital Electronics	P	P	A	P	A

16	18241A02A0	GR18A2084	Principles of Digital Electronics	P	P	A	P	P
17	18241A02A3	GR18A2084	Principles of Digital Electronics	P	A	A	A	P
18	18241A02B0	GR18A2084	Principles of Digital Electronics	P	P	A	P	A
19	18241A02B1	GR18A2084	Principles of Digital Electronics	P	P	A	P	P
20	18241A02C0	GR18A2084	Principles of Digital Electronics	P	A	A	A	P
21	19245A0210	GR18A2084	Principles of Digital Electronics	A	A	A	P	P

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING & TECHNOLOGY

FINISHING SCHOOL

REMEDIAL CLASSES (Academic support for students) Student Feed Back

Branch: EEE Year: II Sem: II
Subject: Principles of Digital Electronics (PDE) Faculty Name: Mr. P Ravikanth

S.No	Item	Feedback
1	Material presented	✓Excellent/Very Good/Good/Average/Below Average
2	Teaching Clarity	✓Excellent/Very Good/Good/Average/Below Average
3	Covering of important topics	Excellent/✓Very Good/Good/Average/Below Average
4	Doubts clarification	Excellent/✓Very Good/Good/Average/Below Average

Suggestions:

Dean Finishing School

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING & TECHNOLOGY

FINISHING SCHOOL

REMEDIAL CLASSES (Academic support for students) Student Feed Back

Branch: EEE Year: II Sem: II
Subject: Signals and Systems(SS) Faculty Name: Mr. R Anil Kumar

S.No	Item	Feedback
1	Material presented	Excellent/✓Very Good/Good/Average/Below Average
2	Teaching Clarity	Excellent/✓Very Good/Good/Average/Below Average
3	Covering of important topics	Excellent/✓Very Good/Good/Average/Below Average
4	Doubts clarification	✓Excellent/Very Good/Good/Average/Below Average

Suggestions:

Dean Finishing School

GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING & TECHNOLOGY

FINISHING SCHOOL

REMEDIAL CLASSES (Academic support for students) Student Feed Back

Branch: EEE Year: III Sem: I
Subject: Power Electronics (PE) Faculty Name: Dr Pakkiraiah B

S.No	Item	Feedback
1	Material presented	Excellent/✓Very Good/Good/Average/Below Average
2	Teaching Clarity	Excellent/✓Very Good/Good/Average/Below Average
3	Covering of important topics	Excellent/✓Very Good/Good/Average/Below Average
4	Doubts clarification	Excellent/✓Very Good/Good/Average/Below Average

Suggestions:

Dean Finishing School

Faculty Report on Subject

Subject: Principles of Digital Electronics

Unit1.Discussed about the Fundamentals of Digital Systems and Logic families

Unit2.Explain about Combinational Digital circuits

Unit 3. Discussed about Sequential Circuits and Systems

Unit4.Explain about A/D and D/A Converters

Unit5: Discussed about Semiconductor Memories and Programmable Logic Devices

II. Previous question papers

III. Notes or PPTs

Faculty Report on Subject

Subject: Signals and Systems

Unit1.Discussed about the Continuous-time Signals and Systems

Unit2.Explain about Fourier Series, Fourier Transform, and Laplace Transform

Unit 3. Discussed about Signal Transmission through Linear Systems

Unit4.Explain about Sampling & Discrete-time Signals

Unit5: Discussed about Z-Transform:

II. Previous question papers

III. Notes or PPTs

Faculty Report on Subject

Subject: Power Electronics

Unit1.Discussed about the Power switching devices

Unit2.Explain about Thyristor rectifiers

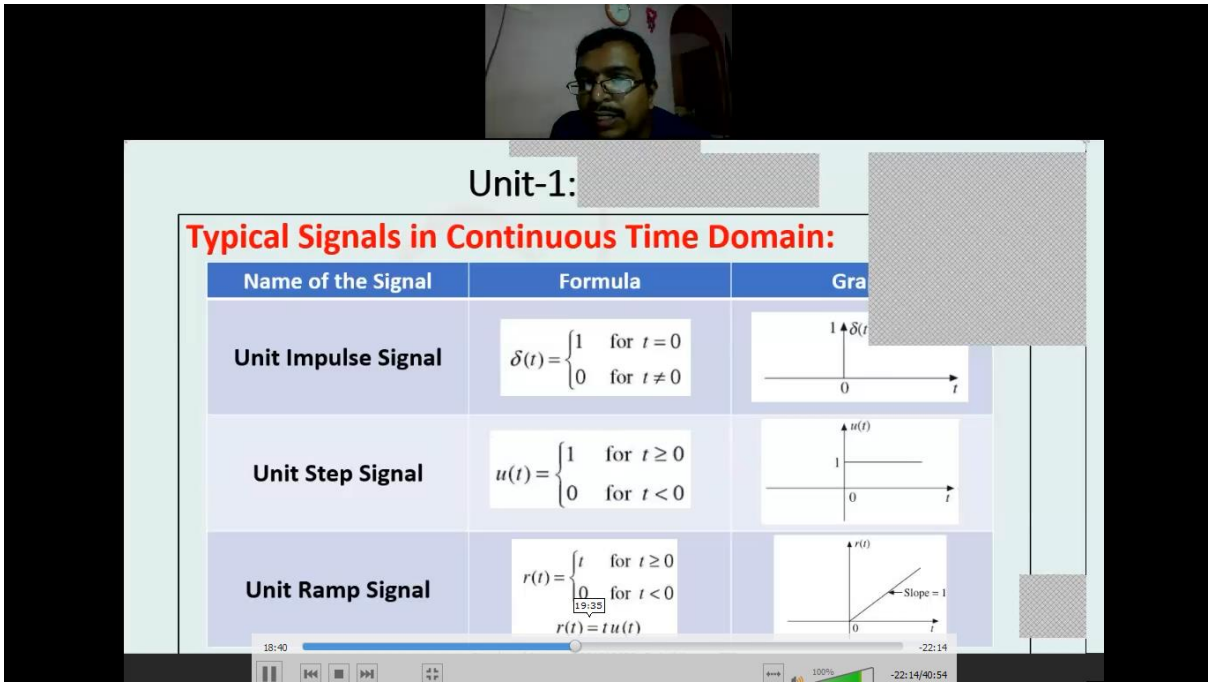
Unit 3. Discussed about Three-Phase Voltage Source Inverter

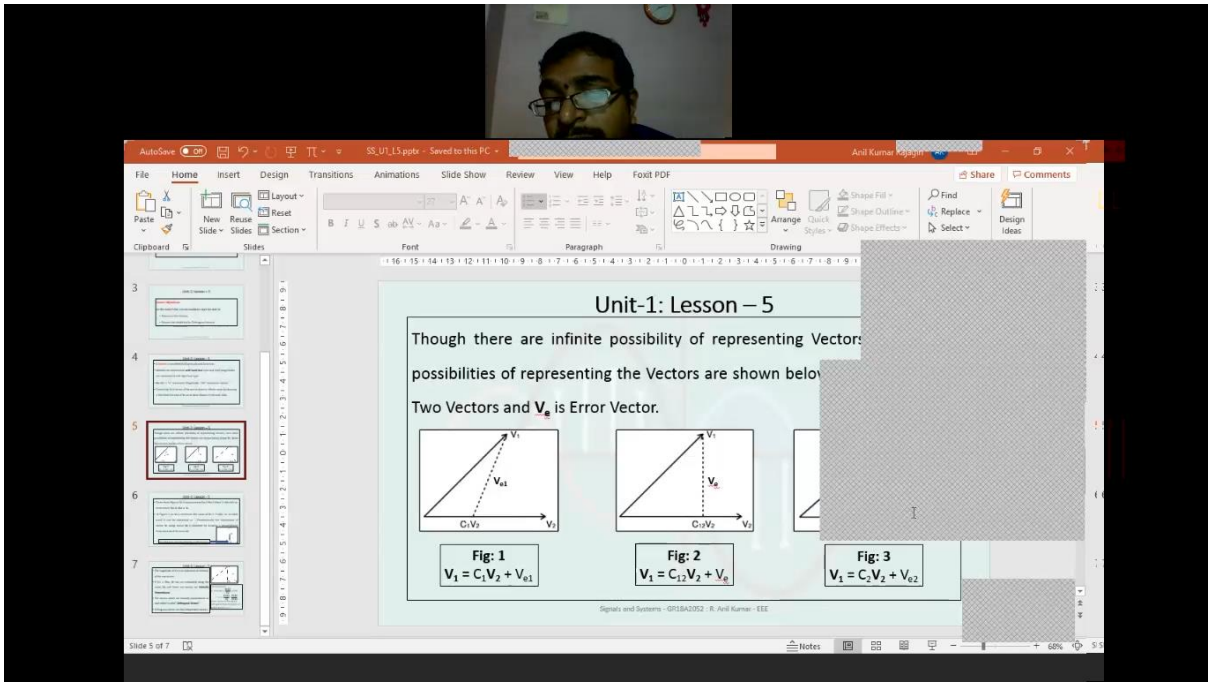
Unit4.Explain about DC-DC Converters

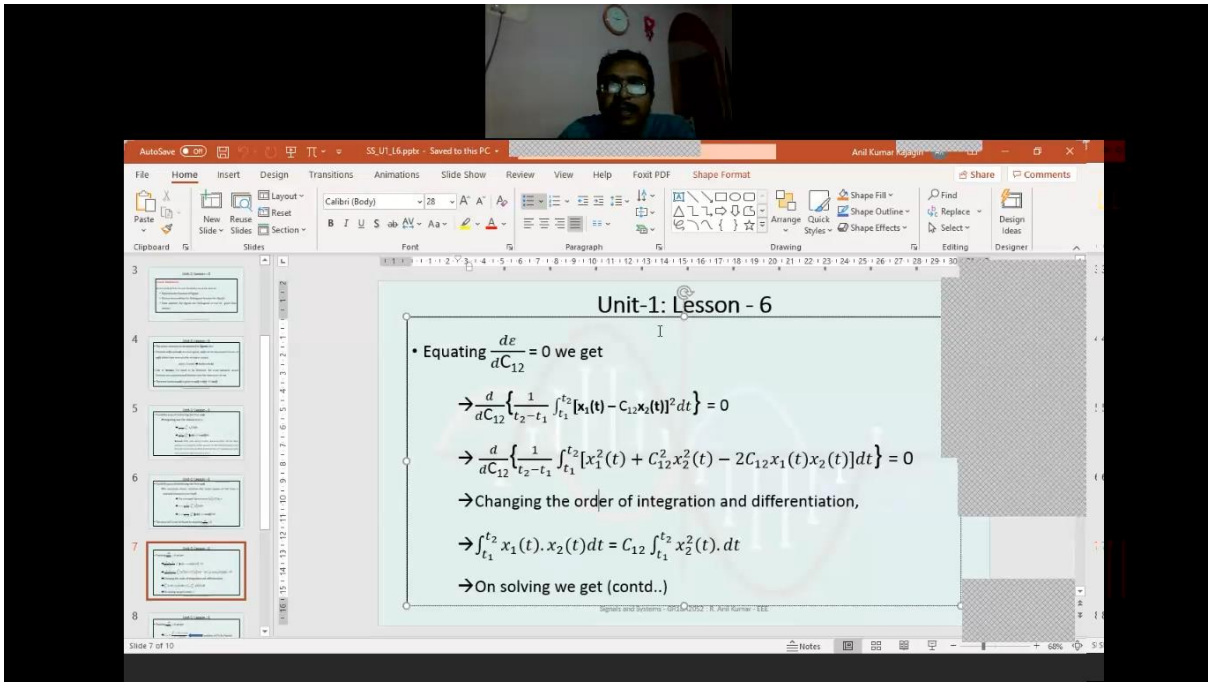
Unit5: Discussed about Single-Phase Voltage Source Inverter

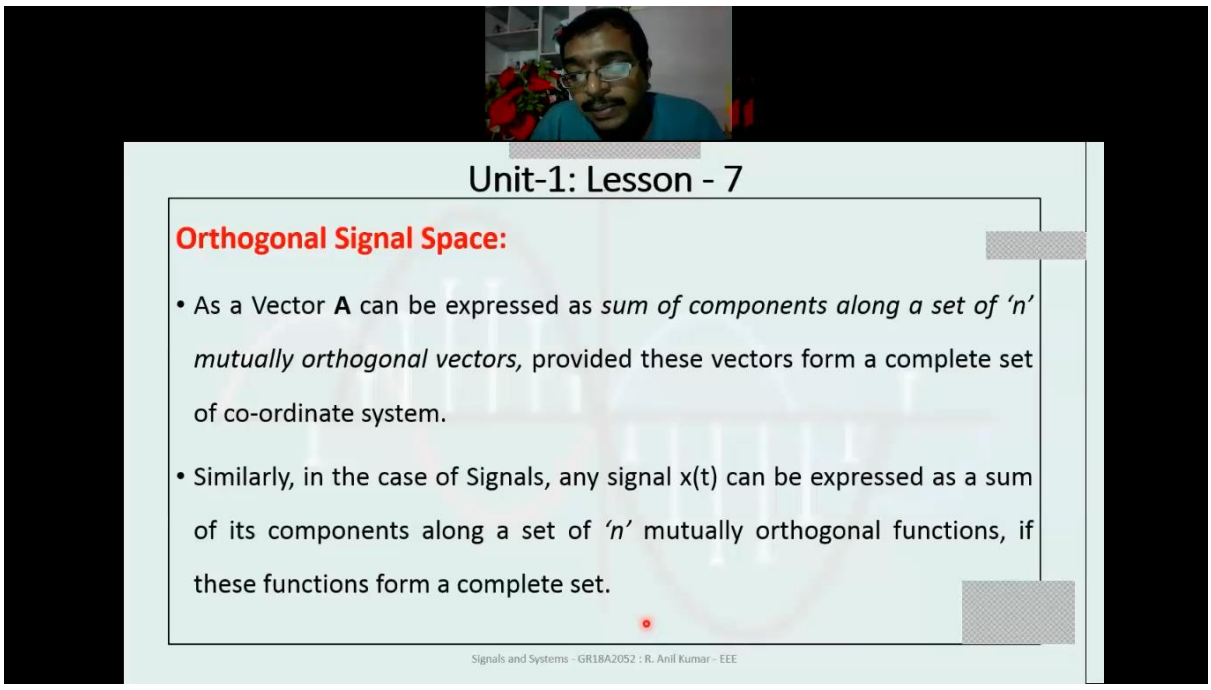
II. Previous question papers

III. Notes or PPTs


Unit-1:
Typical Signals in Continuous Time Domain:
Name of the Signal
Formula
Unit Impulse Signal
$\delta(t)=\begin{cases}1 & \text{for } t=0\\ 0 & \text{for } t\neq 0\end{cases}$
Unit Step Signal
$u(t)=\begin{cases}1 & \text{for } t\geq 0\\ 0 & \text{for } t<0\end{cases}$
Unit Ramp Signal
$r(t)=\begin{cases}t & \text{for } t\geq 0\\ 0 & \text{for } t<0\end{cases}$
$r(t)=t\,u(t)$
Slope = 1
18:40
-22:14
-22:14/40:54


Unit-1: Lesson – 5
Though there are infinite possibility of representing Vectors
possibilities of representing the Vectors are shown belo
Two Vectors and V_e is Error Vector.
Fig: 1
$V_1 = C_1V_2 + V_{e1}$
Fig: 2
$V_1 = C_{12}V_2 + V_e$
Fig: 3
$V_1 = C_2V_2 + V_{e2}$


Unit-1: Lesson - 6
• Equating $\frac{d\varepsilon}{dC_{12}} = 0$ we get
$\rightarrow \frac{d}{dC_{12}}\left\{\frac{1}{t_2-t_1}\int_{t_1}^{t_2}[x_1(t) - C_{12}x_2(t)]^2 dt\right\} = 0$
$\rightarrow \frac{d}{dC_{12}}\left\{\frac{1}{t_2-t_1}\int_{t_1}^{t_2}[x_1^2(t) + C_{12}^2 x_2^2(t) - 2C_{12}x_1(t)x_2(t)]dt\right\} = 0$
→Changing the order of integration and differentiation,
$\rightarrow \int_{t_1}^{t_2} x_1(t).x_2(t)dt = C_{12}\int_{t_1}^{t_2} x_2^2(t).dt$
→On solving we get (contd..)


Unit-1: Lesson - 7
Orthogonal Signal Space:
• As a Vector **A** can be expressed as *sum of components along a set of 'n' mutually orthogonal vectors,* provided these vectors form a complete set of co-ordinate system.
• Similarly, in the case of Signals, any signal x(t) can be expressed as a sum of its components along a set of *'n'* mutually orthogonal functions, if these functions form a complete set.
Signals and Systems - GR18A2052 : R. Anil Kumar - EEE

Report on Remedial Classes

This is to inform you that Finishing school of GRIET is conducting Remedial classes for B.Tech IIyear,III year,IV year students to clear their backlogs.

Details are

1. Remedial classes are conducted in different Subjects to support the Students in clearing their backlogs. As the first step, classes are held for Final year and Marched out batches in three different schedules. Students were informed through SMS. Students shown lot of interest .Faculty gave tips as well as material for the students.80-90% of the students who have attended got benefit and they passed in the exams.

2. The classes are aimed to help the students having a maximum of three backlogs so that they will get the degree as per their academic calendar. Students preferred material and few tips as they were busy in Projects. For some subjects they came and attentive.
3. The sessions for II & III-year students are to prevent failure rate and thereby increasing transition rate. The subjects are selected based on I-semester results. To increase attendance for the classes a brief motivation lecture is organized with the key note address by HOD.

   The following shows the courses for which Remedial classes are held and the Transition rate in such course:

S.No	Course	No.of students attended	No.of students passed	Transition rate
1.	Principles of Digital Electronics	21	18	85.71
2.	Signals and Systems	21	16	76.19
3.	Power Electronics	20	18	90.00

Gokaraju Rangaraju Institute of Engineering and Technology

Electrical and Electronics Engineering

Remedial Classes

A.Y.2020-21

Sl.No	Roll.No	Subject Code	Subject Name	Result
1	17241A0231	GR18A2052	Signals and Systems	Fail
2	17241A0299	GR18A2052	Signals and Systems	Fail
3	18241A0202	GR18A2052	Signals and Systems	Pass
4	18241A0205	GR18A2052	Signals and Systems	Fail
5	18241A0209	GR18A2052	Signals and Systems	Pass
6	18241A0220	GR18A2052	Signals and Systems	Pass
7	18241A0224	GR18A2052	Signals and Systems	Pass
8	18241A0244	GR18A2052	Signals and Systems	Pass
9	18241A0254	GR18A2052	Signals and Systems	Pass
10	18241A0262	GR18A2052	Signals and Systems	Pass
11	18241A0280	GR18A2052	Signals and Systems	Pass
12	18241A0287	GR18A2052	Signals and Systems	Pass
13	18241A0288	GR18A2052	Signals and Systems	Pass
14	18241A0290	GR18A2052	Signals and Systems	Fail
15	18241A0292	GR18A2052	Signals and Systems	Pass
16	18241A0298	GR18A2052	Signals and Systems	Fail
17	18241A02A0	GR18A2052	Signals and Systems	Pass
18	18241A02A3	GR18A2052	Signals and Systems	Pass
19	18241A02A4	GR18A2052	Signals and Systems	Pass
20	18241A02A8	GR18A2052	Signals and Systems	Pass
21	19245A0210	GR18A2052	Signals and Systems	Pass
1	17241A0231	GR18A3014	Power Electronics	Fail
2	17241A0299	GR18A3014	Power Electronics	Fail
3	18241A0202	GR18A3014	Power Electronics	Pass
4	18241A0205	GR18A3014	Power Electronics	Pass
5	18241A0209	GR18A3014	Power Electronics	Pass
6	18241A0220	GR18A3014	Power Electronics	Pass
7	18241A0244	GR18A3014	Power Electronics	Pass
8	18241A0248	GR18A3014	Power Electronics	Pass
9	18241A0257	GR18A3014	Power Electronics	Pass
10	18241A0260	GR18A3014	Power Electronics	Pass
11	18241A0262	GR18A3014	Power Electronics	Pass
12	18241A0280	GR18A3014	Power Electronics	Pass
13	18241A0288	GR18A3014	Power Electronics	Pass
14	18241A0290	GR18A3014	Power Electronics	Pass
15	18241A0296	GR18A3014	Power Electronics	Pass
16	18241A0298	GR18A3014	Power Electronics	Pass
17	18241A0299	GR18A3014	Power Electronics	Pass
18	18241A02A0	GR18A3014	Power Electronics	Pass
19	18241A02A3	GR18A3014	Power Electronics	Pass
20	18241A02A8	GR18A3014	Power Electronics	Pass
1	17241A0299	GR17A2105	Principles of Digital Electronics	Fail
2	18241A0205	GR18A2084	Principles of Digital Electronics	Pass

3	18241A0209	GR18A2084	Principles of Digital Electronics	Pass
4	18241A0220	GR18A2084	Principles of Digital Electronics	Pass
5	18241A0222	GR18A2084	Principles of Digital Electronics	Pass
6	18241A0223	GR18A2084	Principles of Digital Electronics	Pass
7	18241A0234	GR18A2084	Principles of Digital Electronics	Pass
8	18241A0244	GR18A2084	Principles of Digital Electronics	Pass
9	18241A0260	GR18A2084	Principles of Digital Electronics	Pass
10	18241A0262	GR18A2084	Principles of Digital Electronics	Pass
11	18241A0272	GR18A2084	Principles of Digital Electronics	Pass
12	18241A0279	GR18A2084	Principles of Digital Electronics	Pass
13	18241A0288	GR18A2084	Principles of Digital Electronics	Pass
14	18241A0290	GR18A2084	Principles of Digital Electronics	Fail
15	18241A0298	GR18A2084	Principles of Digital Electronics	Pass
16	18241A02A0	GR18A2084	Principles of Digital Electronics	Pass
17	18241A02A3	GR18A2084	Principles of Digital Electronics	Pass
18	18241A02B0	GR18A2084	Principles of Digital Electronics	Pass
19	18241A02B1	GR18A2084	Principles of Digital Electronics	Pass
20	18241A02C0	GR18A2084	Principles of Digital Electronics	Pass
21	19245A0210	GR18A2084	Principles of Digital Electronics	Fail