CMR Institute of Technology, Bangalore		
Department: TCE		
Semester: 04		
Engineering Mathematics IV	15MAT31	Lectures/week: 06
Course Instructor: D.Prathap		
Course duration:		

Class	Chapter Title	Topic	Percentage of portion covered	
			Individual	Cumulative
01-18	**Module III**	**Complex Variables:** Review of a function of a complex variable, limits, continuity, differentiability. Analytic functions-Cauchy-Riemann equations in Cartesian and polar forms. Properties and construction of analytic functions. Complex line integrals-Cauchy's theorem and Cauchy's integral formula, Residue, poles, Cauchy's Residue theorem (without proof) and problems. **Transformations:** Conformal transformations, discussion of transformations: $w= z^2$, $w=e^z$, $w = z + (1/z)(z \neq 0)$ and bilinear transformations-problems.	20	20
19-26	**Module II**	**Special Functions:** Series solution-Frobenius method. Series solution of Bessel's differential equation leading to $J_n(x)$-Bessel's function of first kind. Basic properties, recurrence relations and orthogonality. Series solution of Legendre's differential equation leading to $P_n(x)$-Legendre polynomials. Rodrigue's formula, problems.	10	30
27-40	**Module IV**	**Probability Distributions:** Random variables (discrete and continuous), probability mass/density functions. Binomial distribution, Poisson distribution. Exponential and normal distributions, problems. **Joint probability distribution:** Joint Probability distribution for two discrete random variables, expectation, covariance, correlation coefficient.	20	50

41-54	**Module V**	**Stochastic process:** Stochastic processes, probability vector, stochastic matrices, fixed points, regular stochastic matrices, Markov chains, higher transition probability, simple problems. **Sampling Theory:** Sampling, Sampling distributions, standard error, test of hypothesis for means and proportions, confidence limits for means, student's t-distribution, Chi-square distribution as a test of goodness of fit.	20	70
55-60	**Module I**	**Numerical Methods**: Numerical solution of ordinary differential equations of first order and first degree: Taylor's series method, modified Euler's method, Runge - Kutta method of fourth order. Milne's and Adams-Bashforth predictor and corrector methods (No derivations of formulae).	20	90
61-64	**Module II**	**Numerical Methods**: Numerical solution of second order ordinary differential equations : Runge-Kutta method and Milne's method.	10	100

Sessional	**Syllabus**
T1	Class 01-31
T2	Class 32-56
T3	Class 57-64

Literature:

Book Type	**Code**	**Author & Title**	**Publication information**	
			Edition & Publisher	**ISBN**
Text Book	TB1	B.S. Grewal, Higher Engineering Mathematics, Latest Edition, Khanna publishers	Latest edition, Khanna publications	8174091955
Text Book	TB2	Erwin Kreyszig, Advanced Engineering Mathematics	Latest Edition Wiley India publishers	978812653135
References	RB1	B.V Ramana, Higher Engineering Mathematics,.	Latest Edition, Tata Mc. Graw Hill Publications	---

References	RB2	Peter V . O'Neil, Engineering Mathematics.	Cengage Learning India Pvt. Ltd. Publishers	---
References	RB3	Dr. D.S.C , Engineering Mathematics IV		
References	RB4	Dr. K.S.C , Engineering Mathematics IV		

CMR Institute of Technology, Bangalore			
Department: TCE & ECE			
Semester: IV	**Section(s):**		
Lab Name: MICROPROCESSOR		**Code: 15EC42**	**CLASSES/week: 05**
Course Instructor(s):			
Course duration: Jan-2017 to May-2017			**Even sem 2017**

Class #	**Reference Literature**	**Topic**	**Percentage of portion covered**	
			Reference	**Cumulative**
1- 15	TB, RF1,RF2, RF3	**8086 PROCESSORS**: Historical background, The microprocessor based personal computer system, VanNeumann and Harvard Architecture, RISC & CISC processor architecture, 8086 CPU Architecture, Machine language instruction formats, Addressing modes, Instruction execution timing. **INSTRUCTION SET OF 8086**: Data transfer and arithmetic instructions. Illustration of these instructions with example programs.	20%	20%
15-24	TB	**BYTE AND STRING MANIPULATION:** Branch type, loop, NOP & HALT, flag manipulation, logical and shift and rotate instructions String instructions, Dos interrupts, REP Prefix, Procedures, Directives and operators. Illustration of these instructions with example	20%	40%
25-34	TB,RF3, RF2	**Basic Peripherals and their Interfacing with 8086 (Part 1):** Semiconductor Memory Interfacing-Static RAM Interfacing of 8086, Interfacing I/O ports, 8255 PPI, Modes of operation. **Basic Peripherals and their Interfacing with 8086 (Part 2):**	25%	65%

		Interfacing ADC, Interfacing DAC, Stepper Motor Interfacing, Keyboard Interfacing, Seven Segment Display Interfacing.		
35-44	TB	**8086 INTERRUPTS:** Introduction to stack, stack structure of 8086, 8086 Interrupts and ISR, NMI, INTR, Interrupt programming, Passing parameters to procedures, Interrupt examples, Macros, Timing and Delays. Signal Descriptions of 8086, Timing diagrams, Minimum and Maximum Mode of 8086.	15%	80%
45-55	RF3, TB	**8086 BASED MULTIPROCESSING SYSTEMS:** Coprocessor configurations, The 8087 numeric data processor: data types, processor architecture, instruction set and simple program examples. Bus Interface and Higher bit Processors Introduction: Features of Peripheral component interconnect (PCI) bus, the universal serial bus (USB). Introduction to 80286 to Pentium processors.	20%	100%

- **Syllabus for Internal Assessment Test**

Internal Assessment Test	**Syllabus**
T1	Class # 01 – 24
T2	Class # 25 - 44
T3 (Improvement test)	Class # 45-55, some important topics from T1 and/or T2

Literature:

Book Type	**Code**	**Author & Title**	**Publication info**	
			Edition&Publisher	**ISBN #**
TEXT BOOK	TB	Advanced Microprocessors and Peripherals - A.K. Ray and K.M. Bhurchandi	TMH, 3rd Edition, 2012	ISBN 978-1-25-900613-5.
REFERENCE BOOK	RF1	Microprocessor and Interfacing- Programming & Hardware, Douglas hall,	2nd edition TMH, 2006.	
REFERENCE BOOK	RF2	Microcomputer systems-The 8086 / 8088 Family – Y.C. Liu and A. Gibson	2nd edition, PHI -2003.	
REFERENCE BOOK	RF3	The Intel Microprocessor, Architecture, Programming and Interfacing - Barry B. Brey,	6e, Pearson Education / PHI, 2003.	

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CMR INSTITUTE

OF TECHNOLOGY

Session wise – Course Plan

Department of Telecommunication Engg

SEMESTER : IV

BRANCH : ECE

SUBJECT : CS

SUBJECT CODE : 15EC43

NO OF HRS/WK : 6

NAME OF THE FACULTY : Parikshith Savanth

DATE OF COMMENCEMENT : 13.02.17

DATE OF CLOSING : 23.05.17

CLASS STRENGTH : 105

TOTAL HOURS : 70

Session No	Chapter no (No of hrs planed for the chapter)	DATE	Topics planned for the session	Teaching Aids	Assignments/ Tests planned for the chapter	Topics covered As per plan
1	**Prerequisite**	13.02.17	Introduction to Laplace Transform	Board, chalk, duster		
2	**Prerequisite**	13.02.17	Inverse Laplace Transform	,,		
3	**1/1**	14.02.17	Introduction to Control System	,,	Assignment-I	

4	**1/2**	14.02.17	Introduction to mechanical systems	,,		
5	**1/3**	15.02.17	Translational and Rotational systems	,,		
6	1/4	16.02.17	Force Voltage and Force-Current Analogous systems	,,		
7	**1/5**	17.02.17	Problems on Analogous systems	,,		
8	**1/6**	18.02.17	Problems on Analogous systems	,,		
9	**1/7**	20.02.17	Transfer functions	,,		
10	**1/8**	21.02.17	Problems on Transfer functions	,,		
11	**1/9**	22.02.17	Effect of feedback systems	,,		
12	**1/10**	23.02.17	Block Diagram algebra	,,		
13	**1/11**	27.02.17	Problems on Block Diagram	,,		
14	**1/12**	28.02.17	Problems on Block Diagram	,,		
15	**1/13**	01.03.17	Problems on Block Diagram	,,		
16	**1/14**	02.03.17	Introduction to Signal Flow Graphs	,,		
17	**1/15**	06.03.17	Problems on Signal Flow Graphs	,,		
18	**1/16**	07.03.17	Problems on Signal Flow Graphs	,,		

19	**2/1**	08.03.17	Standard test signals	,,	Assignment -II	
20	**2/2**	09.03.17	Unit step response of First order Systems	,,		
21	**2/3**	10.03.17	Unit step response of Second order Systems	,,		
22	**2/4**	11.03.17	Analysis of second order systems	,,		
23	**2/5**	13.03.17	Time response specifications	,,		
24	**2/6**	14.03.17	Time response specifications	,,		
25	**2/7**	15.03.17	Steady state errors	,,		
26	**2/8**	16.03.17	Problems	,,		
27	**2/9**	17.03.17	Problems	,,		
28	**2/10**	18.03.17	Problems	,,		
29	**2/11**	20.03.17	Introduction to P, I and D	,,		
30	**2/12**	21.03.17	PI and PID controllers	,,		
31	**3/1**	22.03.17	Concepts of stability	,,	Assignment –III	
32	**3/2**	23.03.17	Necessary conditions for Stability	,,		

33	**3/3**	24.03.17	Routh stability criterion	,,		
34	**3/4**	31.03.17	Relative stability analysis	,,		
35	**3/5**	01.04.17	Problems	,,		
36	**3/6**	03.04.17	Problems	,,		
37	**3/7**	04.04.17	Introduction to Root-Locus Techniques and	,,		
38	**3/8**	05.04.17	Construction of root loci.	,,		
39	**3/9**	06.04.17	Problems	,,		
40	**3/10**	07.04.17	Problems	,,		
41	**3/11**	08.04.17	Problems	,,		
42	**5/1**	10.04.17	Introduction to Digital Control System	,,	Assignment –IV	
43	**5/2**	11.04.17	Spectrum Analysis of Sampling process	,,		
44	**5/3**	12.04.17	Signal reconstruction	,,		
45	**5/4**	13.04.17	Signal reconstruction	,,		
46	**5/5**	17.04.17	Difference equations	,,		

47	**5/6**	18.04.17	Problems	,,		
48	**5/7**	19.04.17	Problems	,,		
49	**5/8**	20.04.17	Concept of State, State variables	,,		
50	**5/9**	21.04.17	State variables & State model	,,		
51	**5/10**	22.04.17	State model for Linear Continuous systems	,,		
52	**5/11**	24.04.17	State model for Discrete time systems	,,		
53	**5/12**	25.04.17	Diaganolisation	,,		
54	**5/13**	26.04.17	Problems	,,		
55	**5/14**	27.04.17	Problems	,,		
56	**5/15**	28.04.17	Problems	,,		
57	**4/1**	02.05.17	Phase reversal, over load.	,,	Assignment -V	
58	**4/1**	03.05.17	Correlation between time and frequency response			
59	**4/1**	04.05.17	Bode Plots			
60	**4/1**	05.05.17	Problems			
61	**4/1**	11.05.17	Problems			

62	**4/1**	12.05.17	Introduction to Polar Plots			
63	**4/1**	13.05.17	Problems			
64	**4/1**	15.05.17	Nyquist Stability criterion			
65	**4/1**	16.05.17	Problems			
66	**4/1**	18.05.17	Lag, Lead and Lag-Lead Network			
67	**4/1**	19.05.17	Problems			
68		20.05.17	Revision			
69		22.05.17	Revision			
70		23.05.17	Revision			

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CMR INSTITUTE OF TECHNOLOGY

Session wise – Course Plan

Department of Telecommunication

SEMESTER : IV NAME OF THE FACULTY : Mahesh Kumar Jha

BRANCH : ECE DATE OF COMMENCEMENT: 13/02/2017

SUBJECT : Signals & Systems DATE OF CLOSING : 02/06/2017

SUBJECT CODE: 15EC44 CLASS STRENGTH : 57/50

NO OF HRS/Weak : 6 TOTAL HRS : 70

Session No	Chapter no (No of hrs planed for the chapter)	DATE	Topics planned for the session	Teaching Aids	Assignments/ Tests planned for the chapter	Topics covered As per plan
1	1/1		**MODULE-I:** Introduction to the subjects. What is signals? What is systems?	Board, chalk, duster		
2	2/1		Classification Of Signals: Cont. And Discrete Time Signals. Sampling of analog Signals.	,,		
3	3/1		Deterministic and Non-Deterministic Signals, Even and Odd Signals	,,		
4	4/1		Even and Odd Signals	,,		
5	5/1		Periodic and Non-Periodic Signals	,,		

6	6/1		Periodic and Non-Periodic	,,		
7	7/1		Energy Signals and Power Signals	,,		
8	8/1		Energy Signals and Power Signals	,,	**A1**	
9	9/1		Elementary signals	,,		
10	10/1		Elementary Signals	,,		
11	11/1		Operations on Signals	,,		
12	12/1		Operations on Signals	,,		
13	13/1		Problems on Signals	,,		
14	14/1		Properties of Systems	,,		
15	15/1		Properties of Systems	,,		
16	16/1		Problems on Module-1	,,		
17	17/1		Problems on Module-1	,,		
18	1/2		**MODULE-II:** LTI System, Convolution Sum	,,		
19	2/2		Problems on Convolution Sum	,,		
20	3/2		Problems on Convolution Sum	,,	**A2**	
21	4/2		Properties of Convolution	,,		
22	5/2		Convolution Integral	,,		
23	6/2		Problems on Convolution integral	,,		
24	7/2		Graphical Method of Convolution	,,		
25	8/2		Graphical Method of Convolution	,,		
26	9/2		Properties of Convolution	,,		
27	10/2		Problems and Doubt Solving on Convolution	,,		
28	11/2		Problems and Doubt Solving on Convolution	,,		
29	1/3		**MODULE-III:** System interconnection, system properties in terms of	,,		

			Impulse response.			
30	2/3		Step response in terms of impulse response.	,,	**A3**	
31	3/3		Fourier Series: Complex Sinusoidal, Eigen value & Eigen function	,,		
32	4/3		CTFS, Frequency Response, Magnitude Spectrum, Phase Spectrum	,,		
33	5/3		Properties of CTFS	,,		
34	6/3		Problems on CTFS	,,		
35	7/3		Problems on CTFS	,,		
36	8/3		DTFS	"		
37	9/3		Properties of DTFS	,,		
38	10/3		Problems on DTFS	,,		
39	11/3		Problems	,,		
40	1/4		**MODULE-IV:** CT Fourier Transform, Magnitude And Phase Spectrum	,,		
41	2/4		Basic Problems on CTFT	,,	**A4**	
42	3/4		Properties of CTFT	,,		
43	4/4		Properties of CTFT	,,		
44	5/4		Problems on CTFT	,,		
45	6/4		Problems on CTFT	,,		
46	7/4		DTFT, Magnitude And Phase Spectrum	,,		
47	8/4		Basic Problems on DTFT	,,		
48	9/4		Properties of DTFT	,,		
49	10/4		Properties of DTFT	,,		
50	11/4		Problems on DTFT	,,		
51	12/4		Problems on DTFT	,,		

52	13/4		Sampling Theorem and Reconstruction of signals	,,		
53	14/4		Problems on Sampling Theorem	,,		
54	15/4		Problems and Doubt solving	,,		
55	1/5		**MODULE-V:** Z-Transform: Basic Concepts	,,		
56	2/5		Problems on Z-Transform & Roc Concept	,,	**A5**	
57	3/5		Problems on Z-Transform And Roc	,,		
58	4/5		Properties of Z-Transform	,,		
59	5/5		Properties of Z-Transform	,,		
60	6/5		Problems based on Properties Of Z-Transform	,,		
61	7/5		Inverse Z-Transform	,,		
62	8/5		Inverse Z-Transform	,,		
63	9/5		LTI system using Z-Transform	,,		
64	10/5		LTI system using Z-Transform	,,		
65	11/5		Unilateral Z-Transform	,,		
66	12/5		Problems	,,		
67	13/5		Problems and doubt solving	,,		
68	--		Solving VTU Questions	,,		
69	--		Solving VTU Questions	,,		
70	--		TEST			

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CMR INSTITUTE

OF TECHNOLOGY

Session wise – Course Plan

Department of Electronics & Communication

SEMESTER :IV NAME OF THE FACULTY : Mr Rahul Tiwari

BRANCH : TCE DATE OF COMMENCEMENT : 13.02.2017

SUBJECT : PCS DATE OF CLOSING : 02.06.2017

SUBJECT CODE : 15EC45 CLASS STRENGTH : 100

NO OF HRS/WK : 5 TOTAL HRS : 64

Session No	Chapter no (No of hrs planed for the chapter)	DATE	Topics planned for the session	Teaching Aids	Assignments/ Tests planned for the chapter	Topics covered As per plan
1.	**1/1**	13.02.17	Introduction to AM, Time Domain analysis.	Board, chalk, duster	Assignment -1	
2.	**2/1**	14.02.17	AM Frequency Domain analysis. Problem	,,		
3.	**3/1**	15.02.17	Problems	,,		
4.	**4/1**	16.02.17	AM generation: square law modulator, switching modulator	,,		
5.	**5/1**	17.02.17	AM detection: square law detector, envelop detector.			

6.	**6/1**	18.02.17	Double side band suppressed carrier modulation (DSBSC): Time Domain analysis.			
7.	**7/1**	20.02.17	DSBSC Problem			
8.	**8/1**	21.02.17	Frequency Domain analysis.	,,		
9.	**9/1**	22.02.17	DSBSC generation: balanced modulator	,,		
10.	**10/1**	23.02.17	Ring modulator.	,,		
11.	**11/1**	27.02.17	DSBSC detection: Coherent detection.	,,		
12.	**12/1**	28.02.17	Costas loop. problems	,,		
13.	**13/1**	01.03.17	Problems on AM, DSBSC			
14.	**14/1**	02.03.17	Hilbert transform, properties of Hilbert transform.	Board, chalk, duster	Assignment –II	
15.	**15/1**	06.03.17	Quadrature carrier multiplexing	,,		
16.	**16/1**	07.03.17	Pre-envelope, Canonical representation of band pass signals.	,,		
17.	**17/1**	08.03.17	Pre-envelope, Canonical representation of band pass signals.	,,		
18.	**18/1**	09.03.17	SSB modulation Time Domain analysis.	,,	Assignment -III	
19.	**19/1**	10.03.17	SSB modulation Frequency Domain analysis.	,,		
20.	**20/ 1**	11.03.17	Problem on SSB	,,		
21.	**21/1**	13.03.17	SSB generation: Phase discrimination method.	,,		
22.	**21/1**	14.03.17	SSB demodulation	,,		
23.	**22/1**	15.03.17	Problem on SSB	,,		
24.	**1/2**	16.03.17	Introduction & Definitions of FM	Board, chalk,	Assignmnt –IV	

				duster		
25.	**2/2**	17.03.17	Narrow band FM	,,		
26.	**3/2**	18.03.17	Wide band FM	,,		
27.	**4/2**	20.03.17	Transmission bandwidth of FM waves	,,		
28.	**5/2**	21.03.17	FM generation: indirect FM	Board, chalk, duster		
29.	**6/2**	22.03.17	FM generation: direct FM.	,,		
30.	**7/2**	23.03.17	Problems on FM	,,		
31.	**8/2**	24.03.17	FM Demodulation	,,		
32.	**9/2**	31.03.17	FM stereo multiplexing	,,		
33.	**10/2**	01.04.17	Phase-locked loop: Linear model of PLL	,,		
34.	**11/2**	03.04.17	Phase-locked loop: Nonlinear model of PLL	,,		
35.	**1/3**	05.04.17	Set theory, Probability, Random variables	,,		
36.	**2/3**	06.04.17	Cumulative Density Function.	,,		
37.	**3/3**	07.04.17	Probability Density Function.	,,		
38.	**4/3**	08.04.17	Several random variables.	,,		
39.	**5/3**	10.04.17	Statistical averages: Moments, Mean	,,		
40.	**6/3**	11.04.17	Random processes, Central limit theorem	,,	Assignment- V	
41.	**7/3**	12.04.17	Correlation and Covariance function, Principles of autocorrelation function, cross – correlation functions.	,,		
42.	**8/3**	13.04.17	Principles of autocorrelation function, cross – correlation functions.	,,		

43	**9/3**	17.04.17	Properties of Gaussian process.	,,		
44	**10/3**	18.04.17	Nonlinear effects in FM systems	,,		
45	**1/3**	19.04.17	Introduction: shot noise, thermal noise, white noise.	Board, chalk, duster	Assignmnt –VI	
46	**2/3**	20.04.17	Noise equivalent bandwidth	,,		
47	**3/3**	21.14.17	Narrow bandwidth. Noise Figure	,,		
48	**4/3**	22.04.17	Problems	,,		
49	**5/3**	24.04.17	Equivalent noise temperature.	,,		
50	**6/3**	25.04.17	Cascade connection of two-port networks, Problems	,,		
51	**7/3**	26.04.17	Introduction to Receiver model	,,		
52	**1/4**	27.04.17	Noise in DSB-SC receivers	Board, chalk, duster		
53	**2/4**	28.04.17	Noise in SSB receivers	,,		
54	**3/4**	02.05.17	Noise in AM receivers Threshold effect	,,		
55	**4/4**	03.05.17	Noise in FM receivers, FM threshold effect	,,		
56	**5/4**	05.05.17	Pre-emphasis and De-emphasis in FM.	,,		
57	**1/5**	11.05.17	Introduction, Why Digitize Analog Sources?	,,	Assignment -VII	
58	**2/5**	12.05.17	The Sampling process, Pulse Amplitude Modulation	,,		
59	**3/5**	13.05.17	Time Division Multiplexing, Pulse-Position Modulation, Generation	,,		

			of PPM Waves, Detection of PPM Waves,			
60.	**4/5**	15.05.17	The Quantization Process	,,		
61.	**5/5**	16.05.17	Quantization Noise, Pulse– Code Modulation	,,		
62.	**6/5**	17.05.17	Sampling, Quantization, Encoding, Regeneration,	,,		
63.	**7/5**	18.05.17	Sampling, Quantization, Encoding, Regeneration	,,		

Syllabus for Sessional:

Sessional #	Syllabus
T1	Class # 1-23
T2	Class # 24-44
T3	Class # 45-64

Literature:

Book Type	Code	Author and title	Publisher info	
			Edition and Publisher	ISBN #
Text Book	TB1	Simon Haykins "Communication Systems"	5th Edition, John Willey India Pvt. Ltd 2009	9971513056
Text Book	TB2	Simon Haykins "An Introduction to Analog and Digital Communication"	5th Edition, John Willey India Pvt. Ltd 2008	9788126509324
Text Book	TB3	Taub, Schilling, " Principal Of Communication Systems"	2nd Edition, TMH publications, 2009	0-07-462456-3
References	RB1	B.P. Lathi "Modern digital and analog communication systems"	4th Edition, Oxford University Press 2010	9780198073802
References	RB2	Harold P. E, Stern Samy and A Mahmond "Communication Systems"	Pearson Ed, 2004	9786756745332

References	RB2	Singh and Sapre “Communication Systems”	Analog and digital TMH 2nd, Ed 2007	9785653423235
References	RB4	A.B Carlson, P.B Crilly, J.C. Rutledge, “Communication Systems”	4th Edition , Mc GRAW-HILL Publications	0-07-121028-8

AS: Assignment

SIGNATURE OF FACULTY HOD PRINCIPAL

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CMR INSTITUTE OF TECHNOLOGY

Session wise – Course Plan

Department of Telecommunication

SEMESTER : IV
BRANCH : TCE
SUBJECT : LINEAR INTEGRATED CIRCUITS
SUBJECT CODE : 15EC46
NO OF HRS/WK : 6

NAME OF THE FACULTY : PALLAVI MISHRA
DATE OF COMMENCEMENT : 13.02.2017
DATE OF CLOSING : 24.05.2017
CLASS STRENGTH : 43
TOTAL HRS : 58

Session No	Chapter no (No of hrs planed for the chapter)	DATE	Topics planned for the session	Teaching Aids	Assignments/ Tests planned for the chapter	Topics covered As per plan
1	Module-1/1	13-02-17	Basic Op-amp circuit	Board, chalk, duster		
2	Module-1/2	14-02-17	Op-Amp parameters – Input and output voltage	,,		
3	Module-1/3	15-02-17	CMRR and PSRR	,,		
4	Module-1/4	16-02-17	offset voltages and currents	,,		
5	Module-1/5	17-02-17	Input and output impedances	,,		
6	Module-1/6	18-02-17	Slew rate and Frequency limitations	,,		
7	Module-1/7	20.2.17	Biasing OP-amps	,,		
8	Module-1/8	23-02-17	Direct coupled voltage followers	Board, chalk, duster		
9	Module-1/9	27-02-17	Non-inverting amplifiers, inverting amplifiers	,,		
10	Module-1/10	28-02-17	Summing amplifiers	,,		
11	Module-1/11	01-03-17	Difference amplifiers	,,	Assignment- I	
12	Module-1/12	02-03-17	Interpretation of OP-amp LM741 & TL081 datasheet	,,		
13	Module-2/1	06-03-17	Capacitor coupled voltage follower	,,		

14	Module-2/2	07-03-17	High input impedance – Capacitor coupled voltage follower	,,		
15	Module-2/3	09-03-17	Capacitor coupled non inverting amplifiers			
16	Module-2/4	11-03-17	High input impedance – Capacitor coupled Non inverting amplifiers			
17	Module-2/5	13-03-17	Capacitor coupled inverting amplifiers			
18	Module-2/6	15-03-17	setting the upper cut-off frequency	,,		
19	Module-2/7	16-03-17	Capacitor coupled difference amplifier	,,		
20	Module-2/8	17-03-17	**OP-amp Applications:** Voltage sources	,,		
21	Module-2/9	20-03-17	**OP-amp Applications:** current sources and current sinks	,,		
22	Module-2/10	21-03-17	current amplifiers	,,		
23	Module-2/11	22-03-17	instrumentation amplifier		Assignment- II	
24	Module-2/12	24-03-17	precision rectifiers	Board, chalk, duster		
25	Module-3/1	31-03-17	Limiting circuits	,,		
26	Module-3/2	01-04-17	Clamping circuits	,,		
27	Module-3/3	03-04-17	Peak detectors	,,		
28	Module-3/4	04-04-17	Sample and hold circuits	,,		
29	Module-3/5	05-04-17	V to I and I to V converters	,,		
30	Module-3/6	06-04-17	Differentiating Circuit	,,		
31	Module-3/7	07-04-17	Integrator Circuit	,,		
32	Module-3/8	08-04-17	Phase shift oscillator	,,		
33	Module-3/9	10-04-17	Wein bridge oscillator	Board, chalk, duster		
34	Module-3/10	11-04-17	Crossing detectors	,,		
35	Module-3/11	12-04-17	inverting Schmitt trigger	,,	Assignment –III	

36	Module-3/12	13-04-17	Log and antilog amplifiers, Multiplier and divider	,,		
37	Module-4/1	17-04-17	First order active Low-pass	,,		
38	Module-4/2	18-04-17	Second order active Low-pass	,,		
39	Module-4/3	20-04-17	First order active High-pass	,,		
40	Module-4/4	22-04-17	Second order active High-pass	,,		
41	Module-4/5	24-04-17	Bandpass Filter	,,		
42	Module-4/6	26-04-17	Bandstop Filter	,,		
43	Module-4/7	02-05-17	**Voltage Regulators:** Introduction	,,		
44	Module-4/8	03-05-17	Series Op-amp regulator	,,		
45	Module-4/9	04-05-17	IC voltage regulators	,,		
46	Module-4/10	05-05-17	723 general purpose regulators	,,		
47	Module-4/11	11-05-17	Numerical for Filter Circuit	,,	Assignment –IV	
48	Module-4/12	12-05-17	Previous Year Question Discussion	,,		
49	Module-5/1	13-05-17	**Phase locked loop:** Basic Principles	Board, chalk, duster		
50	Module-5/2	15-05-17	Phase detector/comparator	,,		
51	Module-5/3	16-05-17	VCO	,,		
52	Module-5/4	17-05-17	DAC using R-2R	,,		
53	Module-5/5	18-05-17	ADC using Successive approximation	,,		
54	Module-5/6	19-05-17	555 timer	,,		
55	Module-5/7	20-05-17	Basic timer circuit	,,		
56	Module-5/8	24-05-17	555 timer used as astable	,,		
57	Module-5/9	23-05-17	555 timer used as monostable multivibrator	,,	Assignment –V	
58	Module-5/10	24-05-17	Numerical for Multivibrator	,,		
59			Revision	,,		
60			Revision	,,		

Signature of faculty Signature of HOD Signature of Principal