

UNIVERSITY OF MYSORE



Estd. 1916

VishwavidyanilayaKaryasoudha
Crawford Hall, Mysuru- 570 005

No.AC.2(S)/486/16-17

Dated: 20.06.2017

NOTIFICATION

Sub: Modification in the existing Syllabus of B.Sc. in Electronics course from the Academic Year 2017-18.

Ref: 1. Decision of the Faculty of Science & Technology Meeting held on 03.03.2017.
2. Decision of the Academic Council meeting held on 30.03.2017.

The Board of Studies in Electronics (Graduate) which met on 23.12.2016 has recommended to modify the existing Syllabus of B.Sc. in Electronics from the academic year 2017-18.

The Faculty of Science and Technology and the Academic Council at their Meetings held on 03.03.2017 and 30.03.2017 respectively have also approved the above said proposal and the same is hereby notified.

The Modified B.Sc. Electronics Syllabus is annexed herewith.

The concerned may download the modified contents in the University Website i.e., www.uni-mysore.ac.in.

Draft approved by the Registrar

Sd/-
Deputy Registrar (Academic)

To:

1. The Registrar (Evaluation), University of Mysore, Mysore.
2. The Dean, Faculty of Science & Technology, DOS in Physics, MGM.
3. The Chairperson, BOS/DOS in Electronics (Graduate), Hassan PG Centre, Hassan.
4. The Principals of the Affiliated Colleges running graduate Program in Science stream only.
5. The Director, College Development Council, Moulya Bhavan, Manasagangotri, Mysore.
6. The Co-ordinator, Directorate of Online & Outreach program, Parakalamata, MGM.
7. The Principals of the Affiliated Colleges where UG Program is running in Science stream.
8. The Deputy/Assistant Registrar/Superintendent, AB and EB, University of Mysore, Mysore.
9. The P.A. to the Vice-Chancellor/Registrar/Registrar (Evaluation), UOM, Mysore.
10. Office file.

University of Mysore
Proposed Revised Syllabus for B.Sc. Electronics
2017
Scheme of Examination

Sem	Paper	Code	Title of the Paper	Duration in Hours			Marks					
							IA Marks		Exam Marks		Total	
				Th	Pr	Exam	Th	Pr	Th	Pr	Th	Pr
I	I	EL 1.0	Basic Electronics	3	3	3	10	10	60	20	70	30
II	II	EL 2.0	Analogue Electronic circuits	3	3	3	10	10	60	20	70	30
III	III	EL 3.0	Digital Electronic Circuits	3	3	3	10	10	60	20	70	30
IV	IV	EL 4.0	Linear Integrated Circuits	3	3	3	10	10	60	20	70	30
V	V	EL 5.1	Microcontroller 8051	2	3	3	10	10	60	35	70	45
	VI	EL 5.2	Analogue Communication	2	3	3	10	10	60	35	70	45
	VII	EL 5.3	Digital Communication	2		3	10	-	60	-	70	-
VI	VIII	EL 6.1	VHDL	2	3	3	10	10	70	35	70	45
	IX	EL 6.2	Signals and Systems	2	2	3	10	10	70	35	70	45 **
	X	EL 6.3	T & I	2		3	10	-	70	-	70	-
** Mini project { simple circuits like calling bells, power supplies, innovative ideas, Etc.}												

University of Mysore
Proposed Revised Syllabus for B.Sc. Electronics
2017

Scheme of IA marks Distribution

IA Marks - Theory

Semesters: I To VI

1	Test	10 Marks
2	Assignment	10 Marks
3	IA = Average of Test and Assignment	10 Marks

IA Marks - Practical

Semesters: 1) Practical's I to VII

For Record submission = 10 Marks

2) Practical's VIII

For regular Project work & Project report Submission = 10 Marks.

University of Mysore
Proposed Revised Syllabus for B.Sc. Electronics
2017
Question Paper Pattern – Marks Distribution

SEMESTERS I to VI

- ▶ there will be three Parts A, B and C.
- ▶ Part A is from Unit 1, Part B is from Unit 2 and Part C is from Unit 3.
- ▶ Each Part - 20 marks

PART A, B and C

Marks distribution of each part:

1. 2 mark questions – Total 3, to be answered 2, $2 \times 2 = 4$ marks.
2. 6 mark questions – Total 3, to be answered 2, $6 \times 2 = 12$ marks.
3. 4 mark problems – Total 3, to be answered 1, $4 \times 1 = 4$ marks.

Total for each part = 20 marks.

Grand Total (A + B + C) for one paper = 60 marks.

University of Mysore

Proposed Revised Syllabus for B.Sc. Electronics 2017

Question Paper Pattern – Marks Distribution

Sem	Paper No.	Part A Unit 1			Part B Unit 2			Part C Unit 3			Total Marks
		Question Numbers			Question Numbers			Question Numbers			
		1 a, b, c	2 a, b, c	3 a, b, c	4 a, b, c	5 a, b, c	6 a, b, c	7 a, b, c	8 a, b, c	9 a, b, c	
		2 Question s Marks	6 Question s Marks	4 Question s Marks	2 Question s Marks	6 Question s Marks	4 Question s Marks	2 Question s Marks	6 Question s Marks	4 Question s Marks	
I	I	2/3	2/3	1/3	2/3	2/3	1/3	2/3	2/3	1/3	60
II	II	2/3	2/3	1/3	2/3	2/3	1/3	2/3	2/3	1/3	60
III	III	2/3	2/3	1/3	2/3	2/3	1/3	2/3	2/3	1/3	60
IV	IV	2/3	2/3	1/3	2/3	2/3	1/3	2/3	2/3	1/3	60
V	V	2/3	2/3	1/3	2/3	2/3	1/3	2/3	2/3	1/3	60
	VI	2/3	2/3	1/3	2/3	2/3	1/3	2/3	2/3	1/3	60
	VII	2/3	2/3	1/3	2/3	2/3	1/3	2/3	2/3	1/3	60
VI	VIII	2/3	2/3	1/3	2/3	2/3	1/3	2/3	2/3	1/3	60
	IX	2/3	2/3	1/3	2/3	2/3	1/3	2/3	2/3	1/3	60
	X	2/3	2/3	1/3	2/3	2/3	1/3	2/3	2/3	1/3	60

Subdivision a - 2 marks - Short answer question {Innovative}

Subdivision b - 6 marks - Descriptive answer question

Subdivision c - 4 marks - Problem

University of Mysore
Proposed Revised Syllabus for B.Sc. Electronics
2017

Scheme of Practical Examination marks Distribution

Sem	Practical Paper	Title of the Paper	Marks Distribution		Total Marks
			Subdivision	Marks	
I	I	Basic Electronics	1.Formula 2.Circuit diagram, Tabular column, Nature of graph, Pin-out, Truth-Table, 3.Circuit connections, Setting, Taking readings 4.Calculation, graph, result, accuracy, unit 5.Viva	01	20
II	II	Analogue Electronic circuits		05	
III	III	Digital Electronic Circuits		05	
IV	IV	Linear Integrated Circuits		05	
V	V	Microcontroller	1.Program Writing, 2.Entering 3.Execution 4.Result / Verification 5.Viva	10 10 05 05 05	35
	VI	Communication	1.Formula, Circuit, Tabular column, Nature of graph 2.Circuit connections, Setting, Taking readings. 3.Calculation, graph, 4.Result, unit 5.Viva	10 10 05 05 05	35
VI	VII	VHDL	1.Program Writing, 2. Entering, I/P setting. 3.Execution/ RUN 4.Result / Verification 5.Viva	10 10 05 05 05	35
	VIII	Mini Project	1.Prasentaion 2.Working -Verification 3.Viva	20 10 05	35

I SEMESTER
PAPER - I
BASIC ELECTRONICS

CODE: EL 1.0

Hours / week : 3 Hrs.

Examination Marks : 60

1 teaching Hours : 42 Hrs.

UNIT 1: Basic Electronics [14 Hours]

DC/AC-Power Supplies. Transformer – Types. Current and Voltage Sources- conversions. Time Constant of RL and RC (DC) circuits. AC Fundamentals (Only definitions). Phase difference between Voltage and Current in RC and RL circuits. Power factor. KVL and KCL, Mesh analysis. Thevenin's theorem, Norton's theorem, Superposition theorem – (DC source). Maximum Power transfer theorem – (DC source)

Two port networks – h, y and z parameters CRO-Block diagram and applications.

Problems.

(Text book 1:

UNIT 2: Semiconductors Devices [14 Hours]

Semiconductor Diode – PN junction. Junction theory- VI characteristics of a PN diode. The ideal diode. Static and dynamic resistance of a diode. Types of diodes – LED, Varactor diode and Zener diode (Principle, working, VI- Characteristics and application).

Half Wave Rectifier, Full Wave Rectifier and Bridge rectifier - derivation of average value, rms value, efficiency, PIV, Regulation and ripple factor. Shunt capacitor Filter. Voltage regulation with Zener diode- line and load variation. Problems.

(Text book 2:)

UNIT 3: Transistors [14 Hours]

Construction and working. Relation between α , β and Γ .

Transistor static characteristics (Input/output) in CB, CE and CC modes. Comparison jFET – Construction, working and Characteristics, Parameters.

Comparison between BJT and jFET.

MOSFET – Types. Construction.

UJT and SCR – Construction, operation and characteristics. Problems.

(Text book 2:)

TEXT BOOKS:

1. Basic Electronics-Solid State – B L Theraja - S Chand And Company Ltd
2. Electronic Devices And Circuit Theory – Robert L Boylestad And Louis Nashelsky (PHI)
3. Introductory circuit analysis - Robert L Boylestad Universal Book Stall, New Delhi
4. Circuits and Networks – A. Sudhakar, S.P. Shyammohan, TMH Publications

REFERENCE BOOKS

1. Basic Electronics – Bernord Grob - Tata Mcgraw-Hill Publishing Company Limited, New Delhi..
2. Electronic Circuits – Schaum's Outlines – Mahmood Nahvi And Joseph Edminister
Tata Mcgraw-Hill Publishing Company Limited, New Delhi.

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PRACTICAL - I
BASIC ELECTRONICS LAB

CODE: ELP 1.0

Examination Marks : 20

Hrs / week : 3 hrs.

(Any 8 experiments of the following are to be performed)

1. CRO – (i) Study of Time constant in RC circuit
(ii) Lissajous figures – Study of waveform
2. Impedance measurement in RL and RC circuits
3. Thevenin's theorem
4. Norton's theorem
5. Maximum Power Transfer theorem
6. Half – wave and Bridge rectifiers with and without capacitor filters.
7. Junction diode and Zener diode – characteristics.
8. Transistor output Characteristics in CE configuration – Determination of β .
9. FET – Characteristics - Determination of parameters.
10. UJT Characteristics – Determination of intrinsic stand-off ratio and negative resistance.
11. Study of voltage regulation (line and load regulation) .
12. SCR Characteristics – Determination of Break-over voltage and negative resistance.

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II SEMESTER

PAPER - II

Analogue Electronic circuits.

CODE: EL 2.0

Hours / week: 3 Hrs.

Total teaching Hours: 42 .

Examination Marks: 60

UNIT – 1: Transistor Biasing and Feedback circuits. [14Hours]

Transistor Biasing Circuits – Operating point, Load line, and Stability factor. DC biasing.

Analysis of Fixed and Voltage divider biasing circuits.

Transistor Amplifiers – CE, CB and CC amplifiers. Comparison. Decibels and frequency response.

h- Parameter equivalent circuits in CE configuration. CE- amplifier analysis using h-parameters RC coupled two stage amplifiers (Gain at different frequencies). Multistage Amplifiers – (gain calculation). Designing of single stage CE- amplifier (for one BW & Gain).

(Text book 1:)

UNIT 2: Power Amplifiers and Feedback theory. [14Hours]

Power amplifiers –Classification, Transformer coupled Class A amplifier, Class B Push-Pull amplifier, Power efficiency derivation. Single and double Tuned amplifiers.

Feedback circuits – Types, Effect on gain, input - output resistances and bandwidth.

Problems

(Text book 1:)

UNIT – 3: Oscillators. [14Hours]

Classification of Oscillators. Basic principle of oscillations. Positive feedback.

Barkhausen criterion .

Study of oscillators - Colpitt's, Hartley, Phase shift, Wien bridge oscillators using Transistors. Frequency and condition for sustained oscillations (No derivations)

Crystal oscillators, UJT relaxation oscillator .

Multivibrators using transistors – Monostable, Bistable and Astable multivibrators.

Problems.

(Text book 1:)

TEXT BOOKS:

1. Electronic Devices And Circuit Theory – Robert L Boylestad And Louis Nashelsky (PHI)
2. Basic Electronics-Solid State – B L Theraja - S Chand And Company Ltd
3. Electronics Fundamentals and Applications – D. Chattopadhyay and P.C. Rakshit
New Age International Publishers

REFERENCE BOOKS

1. Basic Electronics – Bernord Grob - Tata Mcgraw-Hill Publishing Company Limited, New Delhi.
2. Basic Electronics And Linear Circuits – N N Bhargava, D C Kulshreshtha And S C Gupta, Tata
McGraw-Hill Publishing Company Limited, New Delhi.

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PRACTICAL – II
Analogue Electronic circuit Lab.

CODE: ELP 2.0

Examination Marks : 20

Hrs / week : 3 hrs.

(Any 8 experiments of the following are to be performed)

- 1. Voltage Divider Biasing Circuit - To draw the DC load line and determine the Q-point.**
- 2. Designing of CE Amplifier for given Gain & BW - Frequency response and bandwidth.**
- 3. FET Amplifier - Frequency response and bandwidth.**
- 4. Emitter Follower - Gain[A_v , A_i] input and output impedances.**
- 5. Voltage feedback amplifier - effect on gain and bandwidth.**
- 6. Hartley oscillator.**
- 7. Colpitt's oscillator.**
- 8. UJT relaxation Oscillator.**
- 9. Phase shift oscillator.**
- 10. Wien bridge oscillator.**
- 11. Astable Multivibrator.**
- 12. Monostable Multivibrator.**

III SEMESTER

PAPER - III Digital Electronics

CODE: 3.0

Hours / week: 3 Hrs.

Total teaching hours: 42 Hrs.

Examination Marks : 60

UNIT 1: Number systems- Binary, Octal, Hexadecimal-conversion.

Mathematical operations-Binary Addition and Subtraction.

Logic gates: OR,AND,NOT,NOR,NAND,EX-OR & EX-NOR gates.

Boolean algebra: Boolean Laws. Principle of duality, DeMorgan's theorems. Universal function. SOP & POS, Simplification of Boolean expressions – using Boolean laws and k – map methods(up to 4 variables with don't care conditions).

(Text book1:)

UNIT 2:

Logic families – TTL and CMOS - NAND and NOR gates.

Binary Codes – Weighted and Non-weighted codes. ASCII, EBCDIC, BCD, GRAY,

EXCESS – 3 codes. Conversion between Binary and Gray codes. Parity codes.

Parity generators and checkers Humming code.

Binary adder/subtractors: Half & Full adders, Half & Full subtractors(using Ex-OR, also with Universal logic).

Decoders/ Encoders:2 to 4, 3 to 8 line, BCD to Decimal & & segment display decoders. 4 to 2 & 8 to 3 line encoders, Decimal to BCD encoder.

MUX/DMUX: 8 to 1 MUX & 1 to 8 DMUX.

(Text book1:)

UNIT 3:

Flip-flops: RS, JK, D & T Flip-flops- Clocked, Synchronous & Asynchronous inputs, Race round condition & MS Flip-flops(with NAND gates)

Shift registers:SISO, SIPO, PISO & PIPO (Block diagrams only).

Counters:Asynchronous, Synchronous- Mod-3, Mod-5 & Decade counters. Ring & Jonson counters.

Memory:- RAM and ROM. Addressing- writing into & reading from memory (Block diagrams).

RAM- Static memory cell(Block diagrams) & Dynamic memory cell.

ROM:Masked ROM,PROMs,UV-EPROMS,EEPROMS. On chip decoding(diode matrices).Problems.

(Text book1:)

TEXT BOOKS:

1. Digital Fundamentals – Floyd L Thomas, Universal Book Stall, New Delhi
2. Digital Principles and Applications – Albert Paul Malvino and Donald P Leach McGrawHill
3. Modern Digital Electronics – R. P. Jain – TMH Publishing Company Limited

REFERENCE BOOKS

1. Digital Circuits - Part I and Part II - D. Raychaudhuri – Eureka Publisher, Kolkata

PRACTICAL - III
DIGITAL ELECTRONICS LAB

CODE: ELP 3.1

Examination Marks : 40

Hours / week : 3 Hrs.

(Any 8 Digital experiments of the following are to be performed)

- 1. Basic logic gates using diode & Transistors: OR,AND & NOT gates.**
- 2. Realization of OR, AND, NOT, NAND, NOR, XOR and XNOR gates using Universal Gates.**
- 3. Verification of DeMorgan's theorems & Principle of Duality.**
- 4. Realization of 2-variable simple Boolean expressions.**
- 5. Half Adder, Full Adder,**
- 6. Half Subtractor and Full Subtractor**
- 7. BCD to Gray & Gray to BCD convertor using Ex-OR gate.**
- 8. Parallel Adder and Subtractor**
- 9. Counters – Modulo – 3 &5 counters**
- 10. Study of MUX/DMUX: 8 to 1 MUX / 1 to 8 DMUX**
- 11. Study of RAM: W/R (IC 7489).**
- 12. Study of Decoder and Encoder.**

IV Semester

PAPER - IV

Linear Integrated circuits

CODE: 4.0

Hours / week: 3 Hrs.

Total teaching hours: 42 Hrs.

Examination Marks : 60

UNIT 1: OP. AMPS. – Differential Amplifier – types. Op. Amp – block diagram, Ideal Op-amp, Ideal voltage transfer curve. Equivalent circuit. Open-loop and close-loop Op-amp configurations. Open-loop Op-amp configurations: Differential, Inverting & Noninverting amplifiers. Op-amp parameters: Input Offset-voltage, CMRR, Slew rate & output voltage swing. Block diagram of feedback configurations, Voltage series feedback amplifiers- Negative feedback, closed-loop voltage gain, difference input voltage ideally zero, input resistance with feedback, output resistance with feedback & voltage follower. Problems.

(Text book: 1-2,1-3, 3-3,3-4,3-5,3-6,3-6.1,3-6.2,3-6.3,3-2 & 6-10. 4-1,4-2,4-3,4-3.1,4-3.2,4-3.3,4-3.4, 4-3.5,4-3.8)

UNIT 2: amplifiers and applications:

Voltage shunt feedback amplifiers- closed-loop voltage gain, inverting input terminal at virtual ground, v input resistance with feedback, output resistance with feedback, Band width with feedback & Inverter.

Summing, subtracting, scaling and averaging amplifiers(both inverting & noninverting configurations).

Differentiator. Integrator.

Voltage to current convertor with floating load, low-voltage DC- voltmeter, Voltage to current convertor with grounded load and current to voltage converter.

ADC & DAC: Binary weighted resistors & R-2R ladder DAC, Successive-approximation ADC.

Problems.

(Text book: 4-4.1 to 4-4.5,4-4.8,7-5,7-5.1,7-5.2,7-8,7-8.1,7-9,7-10,9-11.1a & b,9-11.2a)

UNIT 3: Oscillators & Voltage regulators.

Oscillators – Phase shift oscillator. Wien bridge oscillator. Square wave and triangular wave generators, , VCOs, Schmitt Trigger, Comparator.

555 timer – pin and functional diagram. Analysis of Astable Multivibrator. Square wave generator. Analysis of Monostable Multivibrator. Frequency divider. Ramp, generator.

Transistor voltage regulator, Op. Amp. voltage regulator,

IC voltage regulators – Fixed voltage and adjustable voltage regulators.

PLL

Problems **06Hrs**

(Text book:8-11,8-12,8-13,8-15,8-17,8-18,9-4,9-5,10-4.1to 10-4.4,10-5.1,10-7.1,10-7.2a&b)

TEXT BOOKS:

1. Op-Amps and Linear Integrated Circuits.(Third Edition) Ramakanth A Gayekwad:
Pearson Education Asia

REFERENCE BOOKS

1. Basic Electronics-Solid State – B L Theraja - S Chand And Company Ltd
2. Integrated Circuits – K. R. Botkar Khanna Publishers.
3. Linear Integrated Circuits and Applications – U.A. Bakshi, A.P.Godse
Technical Publications, Pune.
4. Jacob Millman and Christos C Halkias: Integrated Electronics, TMH, 2005
5. Robert F Coughlin and Frederick F Driscoll – Operational Amplifiers and Linear Integrated
Circuits, Prentice – Hall of India, 2003

PRACTICAL – IV
LINEAR INTEGRATED CIRCUITS LAB

CODE: ELP 4.0

Examination Marks : 20

Hrs / week : 3 Hrs.

(Any 8 of the following are to be performed)

- 1. Measurement of Op. Amp. parameters**
- 2. Inverting and Non-Inverting DC amplifiers**
- 3. Inverting and Non-Inverting AC amplifiers**
- 4. Op. Amp. Adder and Subtractor**
- 5. Op. Amp. Differentiator and Integrator**
- 6. Voltage to current converter**
- 7. Op. Amp. Wien Bridge Oscillator**
- 8. Op. Amp. Phase shift Oscillator**
- 9. Schmitt Trigger**
- 10. Op. Amp. R-2R ladder network .for D/A conversion**
- 11. Op-Amp square wave generator.**
- 12. IC 555 – Astable Multivibrator**
- 13. IC Voltage regulators (+/- fixed)**

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V SEMESTER
PAPER - V
Microcontroller 8051

CODE: EL 5.1

Hours / week :2 Hrs.

Examination Marks : 60

Total teaching Hours : 28 Hrs.

Unit 1:

Microprocessors and Microcontrollers:

10Hrs

Introduction, Microprocessors -Introduction to microcontrollers, difference between microprocessors and microcontrollers. RISC and CISC CPU Architectures, Harvard and Von-Neumann CPU Architecture

Text book : Chapter 1 – 1.0 to 1.1

The 8051 Architecture:

Introduction, 8051 and Microcontroller Hardware, Input/Output pins, ports and circuits, External memory, Counter and Timers, Serial Data Input /Output, Interrupts.

Text book: Chapter 3 – 3 .0 to 3.6

Unit 2:

Moving Data & Logical Operations:

09Hrs

Introduction, Addressing Modes, External data Moves, Code Memory, Read Only Data Moves, PUSH and POP opcodes, Data exchanges, Example Programs.

Logical Operations:

Introduction, Byte level logical operations, Bit level logical operations, Rotate and Swap operations, Example programs.

Text book: Chapter 5 & 6 (5.0 to 5.6, 6.0 to 6.6)

Unit 3:

09Hrs

Arithmetic Operations, Jump Operations

Arithmetic Operations:

Introduction, Flags, Incrementing and Decrementing, Addition, Subtraction, Multiplication and Division, Decimal Arithmetic, Example programs.

Jump & CALL instructions:

Introduction, The JUMP and CALL program range, Jumps, calls and Subroutines, Interrupts and Returns, More Detail on Interrupts, Example programs.

Text book: Chapters 7, 8 –(7.0 to 7.6 , 8.0 to 8.6)

Text book:

The 8051 Microcontroller Architecture , programming and Applications – Kenneth J Ayala , 2e, Perm international , 1996 (latest edition)

Reference books

1. Programming and Customizing the 8051 Microcontroller – Predko, TMH
2. The 8051 Microcontroller and Embedded Systems – Muhammed Ali Mazidi and Janice Gillispie Mazidi, Pearson Education, 2003.

PAPER - VI
Analogue Communication

CODE:EL 5.2

Hours / week :2 Hrs.

Total teaching hours:28 Hrs.

Examination Marks : 60

UNIT 1:

Transmitters: Elements of analog communication system. Modulation, AM,FM & PM.

Need for modulation.Theory of AM, Frequency Spectrum of AM wave, representation of AM, Power relation, Current calculation. Modulation by several sine waves. DSBSC – Suppression of carrier, SSB-Suppression of unwanted side band. Numerical Problems.

(Text book:3.1,1.2.2,1.3,3.2.1,3.2.2,3.2.3)

UNIT 2:

Generation of AM signal:-Using analog Multiplier &Using a Nonlinear Resistance Device.

Generation of DSBSC signal- Using analog Multiplier & Using a Balanced Modulator.

Generation of SSB signal- Using analog Multiplier & Phase shift method.

Frequency and Phase Modulation – Theory of Frequency and Phase modulation.

Comparison – FM and AM.Generation of FM – Basic reactance Modulation. Numerical Problems.

(Text book:3.3.1,3.3.2,3.3.3,4.1.1,4.1.2,4.2.6,4.3.1)

UNIT 3:

Receivers:

Receivers types, AM receiver- TRF receivers, Superheterodyne receiver.

RF section & Characteristics – Sensitivity, Selectivity, Image frequency and its rejection, double spotting. IF & IF amplifiers. Detection & AGC

FM receivers, Basic FM demodulator – Slope detector & Balanced Slope detector.

Transmission lines – Fundamentals of T-lines, Characteristic Impedance.

Antennas –Basic considerations.Antenna with parabolic reflector(Geometry of parabola, properties of paraboloidal reflector). Numerical Problems

(Text book:7.3,7.3.1,7.3.2,7.4.1,7.4.3,7.4.4,7.5,7.5.3,9.1.1,9.1.2,11.1,11.7.1)

Problems

TEXT BOOKS:

1. Electronic Communication Systems – George Kennedy - TMH

REFERENCE BOOKS

1. Electronic Communication, 4th Edition,- Dennis Roddy & John Coolen-PHI
2. Electronic Communication Systems – Willium Schweber – PHI

PAPER - VII
Digital Communication & Cellular Telephone Systems

CODE:EL 5.3

Hours / week :2 Hrs.

Examination Marks : 60

Total teaching hours:28 Hrs.

Unit1:

Digital Modulation: Introduction, Information Capacity, Bits, Bit Rate, Baud & M-ary encoding, ASK, FSK, PSK, QAM, Bandwidth efficiency, carrier recovery, Clock recovery, DPSK.
(Text Book: 9-1 to 9-10,)

Unit2:

Digital Transmission: Introduction, PAM, PWM, PPM, Pulse Digital Modulation Techniques-PCM, PCM Sampling, Signal-to- Quantization noise Ratio, Linear V/s nonlinear PCM codes, Idle channel noise, Coding methods, Companding (analog & Digital), Vocoders (channel, Formant & Linear Predictive),
(Text Book: 10-1 to 10-10,)
PCM Line speed, Delta modulation, Adaptive Delta modulation, Differential PCM, Pulse transmission, Signal Power in Binary Digital signals.
(Text Book: 10-11 to 10-16)

Unit3:

Cellular Telephone Systems: Introduction , Evolution of cellular telephone, Cellular Telephone, Frequency Reuse, Interference, Cell splitting, sectoring, segmentation & dualization, Cellular Telephone network components, Cellular Telephone call processing.
(Text Book: 19-1 to 19-11)

TEXT BOOKS:

1. Electronic Communication Systems – Tomasi – 5e, Pearson Education.

REFERENCE BOOKS

1. Electronic Communication Systems – George Kennedy – 5e, Tata McGraw Hill.
2. Electronic Communication, 4th Edition, - Dennis Roddy & John Coolen-PHI
3. Electronic Communication Systems – Willium Schweber – PHI

PRACTICAL - V
Microcontroller-8051 Programing

CODE:ELP 5.1

Examination Marks: 35

Hours / week :3 Hrs.

(Any 8 of the following are to be performed)

Exam: 3 Hours - 45 Marks

Programming for -

1. Binary addition and subtraction
2. 8 bits multiplication and division
3. Factorial of a number.
4. Fibonacci series
5. Average of a number
6. Square of a number
7. Square root of a number.
8. Palindrome
9. Binary to ASCII conversion
10. ASCII to binary conversion
11. BCD to Binary conversion
12. Finding the smallest and largest numbers from the given N binary numbers
13. To arrange the given N binary numbers in ascending/descending order
14. Decimal counter

PRACTICAL - VI
COMMUNICATION LAB

CODE: ELP 5.2

Examination Marks: 35

Hours / week: 3 Hrs.

(Any 8 of the following are to be performed)

- 1. AM Modulation**
- 2. AM Detection**
- 3. FM Modulation**
- 4. IF Amplifier**
- 5. RF Amplifier**
- 6. Frequency Mixer**
- 7. Radiation pattern of LED**
- 8. PAM**
- 9. PWM using IC 555**
- 10. PPM using IC 555**
- 11. Analog fiber Optic link - Frequency response**
- 12. Numerical aperture and attenuation loss in fibers**

VI SEMESTER

PAPER - VIII VHDL

CODE:6.1

Hours / week :2 Hrs.

Examination Marks : 60

Total teaching Hours : 28 Hrs.

Unit 1:

10Hrs

Basic Language Elements:

Identifiers, Data Objects, Data Types, Operators.

(Text book : 3.1 to 3.4)

Behavioral Modelling:

Entity Declaration, Architecture Body, Process Statement, Variable Assignment Statement, Signal Assignment Statement, Wait Statement, If Statement, Case Statement, Null Statement, Loop Statement, Exit Statement, Next Statement, Assertion Statement, Report Statement, More on Signal Assignment statement, Other Sequential Statements,

(Text book: 4.1 to 4.16)

Unit 2

09Hrs.

Dataflow Modelling:

Concurrent Signal Assignment Statement, Concurrent versus Sequential Signal Assignment, Delta Delay Revisited, Multiple Drivers, Conditional Signal Assignment Statement, Selected Signal Assignment Statement, The UNAFFECTED Value, Block Statement, Concurrent Assertion Statement, Value of Signal.

(Text book : 5.1 to 5.10)

Unit 3:

09Hrs.

Structural Modelling:

An Example, Component Declaration, Component Instantiation, Other Examples, Resolving Signal Values.

(Text 1: 6.1 to 6.5)

Generics and Configurations:

Generics, Why Configuration? Configuration Specification, Configuration Declaration, Default Rules, Conversion Functions, Direct Instantiation, Incremental Binding

(Text 1: 7.1 to 7.8)

Text Book :

1. VHDL Primer, J. Bhasker – 3rd Edition, Pearson Education.

Reference Book:

1. VHDL Programming by Example, Douglas L. Perry – 4th Edition, TMH.

PAPER – IX
SIGNALS AND SYSTEMS

CODE: EL 6.2

Hours / week : 2Hrs.

Examination Marks : 60

Total teaching Hours : 28 Hrs.

UNIT 1: Introduction:

Introduction. Classification of Signals. Basic Operations on Signals. Basic continuous- Time signals. Basic Discrete – Time Signals. Properties of Systems- Linearity, Causality, Time-Invariance, Memory, Stability Invertibility. Linear Time Invariant Systems- Convolution SUM, Convolution Integral. Representation for LTI Systems- Two systems in parallel, Two systems in cascade.

(Text book: 1.1,1.1.2,1.2,1.3,1.3.1 to 1.3.7,1.4, 1.4.1 to 1.4.7,1.6,1.6.1 to 1.6.6,1.7, 1.7.1,1.7.2,1.8, 1.8.1,1.8.2.)

UNIT 2: Z – Transform: – Introduction, Definition of Z – transform.

Z – Transform and ROC of Finite Duration Sequences- RSS and LSS.

Z – Transform and ROC of Infinite Duration Sequences-PTES,NTES & DSES.

ROC & Stability, Properties of ROC

Problems.

(Text book:2.1,2.2,2.3,2.3.1 to 2.3.3,2.4,2.4.1 to 2.4.3,2.5,2.6,)

UNIT 3: Properties of Z-Transform-Linearity, Time Shift or Translation, Multiplication by an Exponential, Multiplication by a Ramp, Convolution (Time-domain), Time-reversal, Convolution(Z-domain), Initial- value theorem, Final value theorem. Transforms of some useful Sequences. Inverse Z- transform-Partial fraction expansion method, Inverse Z- transform by long division method.

DFT - Introduction. Definition of DFT and IDFT. Periodicity of $X(k)$ and $x(n)$.

FFT – Introduction.

Design of IIR Filters: Analogue filter specifications, Classification of Analogue filters,

Butterworth filters, Frequency Transformations/ spectral Transformations, Design of low pass Butterworth filters.

(Text book:2.7,2.7.1 to 2.7.9,2.8,2.9,2.9.1,2.9.2,3.1,3.2,3.2.1 to 3.2.3,3.12,4.2,4.3,4.4,4.5,4.6.)

TEXT BOOKS:

1. Digital Signal Processing – DR. D Ganesh Rao and Vineeta P Gejji – Sanguine Technical Publishers, Bangalore

REFERENCE BOOKS

1. Digital Signal Processing – Ramesh babu P – Scitech Publicaions(India) Limited
2. Proakis and Manolakis – Digital Signal Processing – Principles, algorithm and application, 3e, Pearson/PHI
3. Oppenheim and Schaffer – Discrete Time Signal Processing, Pearson/PHI

PAPER – X
TRANSDUCERS & INSTRUMENTATION

CODE: EL 6.3

Hours / week : 2Hrs.

Examination Marks : 60

Total teaching Hours : 28 Hrs.

2 Hrs/week

Unit: 1

Performance Characteristics of Instruments

10Hrs

Elements of a measurement system, Review of instrument types, Static and Dynamic characteristics of Instruments, Errors – Systematic errors and their reduction, Random errors, Signal transmission – Electrical, pneumatic and fiber optic transmissions, Radio telemetry.

Text Book: Articles[1.3, 2.1.1 to 2.1.5, 2.2 (2.2.1.to 2.2.11), 2.3 (2.3.1 to 2.3.3), 3.1, 3.2 (3.2.1 to 3.2.4), 3.3 (3.3.1 to 3.3.6), 3.4]

Unit 2

Signal transmission, Intelligent Devices & Sensor Technologies

09Hrs

Signal transmission – Electrical, pneumatic and fiber optic transmissions, Radio telemetry.

Intelligent Devices, Intelligent sensors and transmitters

Capacitive, Magnetic and resistive sensors, Hall effect sensors, Piezoelectric transducers, strain gauges, Piezoresistive sensors, Optical sensors, Ultrasonic transducers,

Text Book:[8.1 (8.1.1 to 8.1.3), 8.2, 8.3 (8.3.1 to 8.3.3), 8.5 9.2 (9.2.1 to 9.2.6), 13.1 to 13.9 (13.9.1 to 13.9.10), 13.10, 13.11]

Unit 3

Pressure measurement –

09Hrs

Diaphragms, Capacitive and fiber optic pressure sensors, Elastic element sensors, Manometers, Resonant wire devices, Dead-weight gauges, Low-pressure and High-pressure measurements, intelligent pressure transducers.

Text Book: [15 (15.1 to 15.10)]

Text book:

1. Measurement and Instrumentation Principle, Alan S. Morris . Elsevier Publication, 2006.

Reference book:

1. Handbook of biomedical instrumentation: Khandpur R S, TMH

PRACTICAL – VII

VHDL

CODE: ELP 6.1

Examination Marks: 35

Hours / week: 3 Hrs.

(Any 8 of the following are to be performed)

1. Behavioral modeling & simulation of basic gates
2. Structural modeling & simulation of simple Boolean expressions
3. Modeling and simulation of adders and subtractors (Half adder and subtractor & Full adder and subtractor)
4. Modeling and simulation of magnitude comparators
5. Modeling and simulation of flip-flops (SR, JK & D)
6. Modeling and simulation of shift registers
7. Modeling and simulation of counters (UP / DOWN counters)
8. Modeling and simulation of encoders and decoders
9. Modeling and simulation of multiplexers (4 x 1; 1 x 4)
10. modelling and simulation of binary to Gray converter
11. modelling and simulation of ALU
12. Modelling and simulation of 4 bit adder.

PRACTICAL - VI
Mini-Project

CODE: ELP 6.2
Examination Marks : 35

Hours / week : 3 hrs.