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North Maharashtra University, Jalgaon

Syllabus for Third Year Engineering Degree Course in

ELECTRONICS AND TELECOMMUNICATION ENGINEERING

(w.e.f. July, 2000)

North Maharashtra University, Jalgaon

Syllabus for T.E. (Electronics and Telecommunication Engineering)

(With effect from July, 2000)

Term I

Sr. No.	Subject Code	Subject	Teaching Scheme Hours / Week		Examination Scheme				
			Lectures	Practical	Paper duration Hours	Maximum Marks			
						Paper	Termwork	Practical	Oral
1		Network Analysis and Synthesis	4	2	3	100	25	25	--
2		Feedback Control Systems	4	2	3	100	25	--	--
3		Signal Conditioning and Data Conversion	4	2	3	100	25	25	--
4		Microprocessor Techniques	4	2	3	100	26	--	--
5		Electronic Design I	4	2	3	100	25	25	--
			20	10	--	500	125	75	--
			30		--	700			

Term II

Sr. No.	Subject Code	Subject	Teaching Scheme Hours / Week		Examination Scheme				
			Lectures	Practical	Paper duration Hours	Maximum Marks			
						Paper	Termwork	Practical	Oral
1		Industrial Management *	4	-	3	100	--	--	--
2		Electronic Design II	4	4	3	100	25	25	--
3		Communication System I	4	2	3	100	25	25	--
4		Power Electronics	4	2	3	100	25	25	--
5		Microprocessor Interfacing and Peripherals	4	2	3	100	25	--	--
6		Practical Training/ Special Study/ Minor Project	-	-	-	-	25	-	-
			20	10	--	500	125	75	--
		Total	30		--	700			

Grand Total — Total Marks of Term I + Term II = 1400 Marks

* Subject common with T.E. (Electronics, Industrial Electronics Engineering)

..1

Term I Paper I
Network Analysis and Synthesis

Teaching Scheme :
Lectures 4 Hrs./week
Practica 2 Hrs./week

Examination Scheme :
Paper : 100 marks
(3 Hrs. duration)
Termwork : 25 marks
Practical : 25 marks

Unit 1

Signal analysis, Complex frequency, types of networks; step, ramp, and impulse functions. Fourier series and Fourier transforms. Network topogy -- graph of a network, trees, co-trees, and loops; incidence and cut-set matrices, application in solution of network problems, initial and final conditions, step and impulse response, solution of network equations. 20 marks (10 Hrs.)

Unit 2

Laplace transforms : properties of laplace transform's, uses of laplace transforms, partial fraction expansions, poles and zeroes, initial and final value theorems. (4 Hrs.)

Transform methods in network analysis . Thevenin's and Norton's theorems, system functions -- impedance, admittance, voltage-ratio transfer function, current-ratio transfer function, step and impulse responses. Bode plots for amplitude and phase responses. 20 marks (6 Hrs.)

Unit 3

Networks functions : One-port and two-port networks, driving point functions, two-port parameters, Z parameters, Y parameters, ABCD parameters, transfer functions using two port parameters, interconnection of two ports--cascade connection of two ports, parallel connection of two ports, analysis of ladder networks. 20 marks (10Hrs.)

Unit 4

Elements of realizability theory : Hurwitz polynomials, positive real functions. (2 Hrs.)

Synthesis of one-port networks : Properties of L-C immittance functions, synthesis of L-C driving-point immittances, properties of R-C driving -point impedances, synthesis of R-C impedances or R-L admittances, properties of R-L impedances and R-C admittances, synthesis of certian R-L-C driving-point functions. (4 Hrs.)

Elements of transfer function synthesis : properties of transfer functions, zeros of transmission, analysis of Y_{21} and Z_{21} with a one ohm termination, synthesis of constant-resistance networks. (4 Hrs.)

20 marks

Unit 5

Introduction to filter design : Frequency-domain approximation of ideal low-pass filter, maximally flat low-pass Butterworth filter, equal-ripple approximation Chebyshev low-pass filter, linear phase filters, synthesis of low-pass filters, magnitude and frequency normalization, frequency transforms to generate high-pass, band-pass and band-elimination filters from normalised low-pass filter. 20 marks (10Hrs.)

References :

1 Network Analysis and Synthesis, 2nd edition, Franklin F. Kuo, New Age International.
2 Introduction to Modern Network Synthesis, M.E. Van Valkenburg, Wiley Eastern.
3 Network Theory and Filter Design, 2nd edition, V.K. Aatre, New Age International.

List of Experiments :

1. Pole and zero plot of a one-port network.
2. Measurement of Z parameters of a two-port network.
3. Measurement of Y parameters of a two-port network.
4. To plot amplitude and phase response of an all pass network.
5. To plot the frequency response of a one-port RC driving-point function in Foster form.
6. To plot the frequency response of a one-port RC driving-point function in cauer form.
7. To design and test a low-pass second order Butterworth filter.
8. To design and test a band-pass second order Butterworth filter.
9. To design and test a low-pass second order Chebyshev filter.
10. To design and test a band-pass second order Chebyshev filter.

The termwork should include a minimum of eight experiments from the above list. The termwork marks will be based on performance in theory and practicals having a weightage of 40% and 60% respectively.

Term I Paper 2
Feedback Control Systems

Teaching Scheme :
Lectures : 4 Hrs./week
Practical : 2 Hrs./week

Examination Scheme :
Paper : 100 marks
(3 Hrs. duration)
Termwork : 25 marks

Unit 1

Elements of control systems, open-loop and closed-loop; feedback and its effects on overall gain, stability, sensitivity, external disturbance or noise; types of feedback control systems, linear and nonlinear, time-invariant and time-varying, continuous-data control systems, sampled-data and digital control systems.

Transfer function, block diagram and signal flow graph : Impulse response and transfer functions of linear systems, single and multivariable systems, block diagrams of control systems (Single-input, single-output), signal flow graphs, basic properties, definitions, signal flow graph algebra, signal flow graph of a feedback control system, examples of construction of signal flow graphs, general gain formula for signal flow graphs, application of general gain formula to block diagrams. State diagram and state equations. 20 marks (10 Hrs.)

Unit 2

Control system components : potentiometer, synchros, tachometer, dc and ac motors, principle of operation, modelling and transfer function.

Time-domain analysis of control systems : Introduction, typical test signals, step input, ramp input, and parabolic input; steady state error of linear systems; transient performance of linear control systems, maximum overshoot, delay time, risetime and settling time, transient response of a second order system. Methods of determining stability of linear control systems. 20 marks (10 Hrs.)

Unit 3

Root-locus technique : introduction, basic properties of root loci, construction of the complete root loci, calculation of K on the root loci, root sensitivity-robustness of system. 20 marks (10 Hrs.)

Unit 4

Frequency domain analysis of control systems : Transfer function of single variable, single loop control system, typical gain and phase characteristics of a feedback control system; Nyquist stability criterion, frequency domain characteristics, relative stability--gain margin and phase margin, Bode plots for relative stability. 20 marks (10 Hrs.)

Unit 5

State variable analysis of linear dynamic systems : State equations in matrix form, state transition matrix, properties; state transition equation, relationship between state equations and transfer functions, characteristic equation, eigen values and eigen vectors ; controllability and observability of linear systems. 20 marks (10 Hrs.)

References :

1. Automatic Control Systems, fifth edition, Benjamin C. Kuo, Prentice Hall of India.
2. Control Syatems : Principles and Design, M. Gopal, Tata McGraw-Hill.
3. Linear Control System Analysis and Design, fourth edition, John D'Azzo, and Constantine Houpis, McGraw-Hill International edition.

List of Experiments :

1. Closed-loop dc motor position control system.
2. Closed-loop ac motor position control system.
3. Study of Synchros.
4. Study of tachometer.
5. Transient response of a second order system.
6. To study frequency response of a lag n/w and to find its transfer function.
7. To study frequency response of a lead n/w and to find its transfer function.
8. To draw Bode plots of a given network and find gain and phase margins.

The termwork should include a minimum of six experiments from the above list. The termwork marks will be based on performance in theory and practicals having a weightage of 40% and 60% respectively.

Term I Paper 3
Signal Conditioning and Data Conversion

Teaching Scheme :
Lectures : 4 hrs./Week
Practical 2 Hrs./Week

Examination Scheme :
Paper : 100 marks
(3 Hrs. duration)
Termwork : 25 marks
Practical : 25 marks

Unit 1

Op-Amps Block diagram of an op-amp, analysis of op-amp circuits ; op-amp parameters, input offset voltage, input offset current, input bais current, input voltage range, common-mode rejection ratio (CMRR), supply voltage rejection ratio (SVRR), open-loop voltage gain, output voltage swing, output resistance, slew rate, gain-bandwidth product; op-amp applications, dc and ac amplifiers, instrumentation amplifier, current-to-voltage converter, integrator, and differentiator.
20 marks (10 Hrs.)

Unit 2

Active filters : low and high pass first and second order Butterworth filters, band-pass and band-reject filters, All-pass filter.

Waveform generators : Square wave generator, triangular wave generater, sawtooth wave generator, voltage controlled oscillator 566
20 marks (10 Hrs.)

Unit 3

Comparators and converters : basic comparator, zero-crossing detector, Schmitt trigger, voltage limiters, digital-to-analog converter, analog-to-digital converter, clippers and clampers, precision half-wave and full-wave rectifiers.
20 marks (10 Hrs.)

Unit 4

Timer 555 : as a monostable multivibrator, astable multivibrator. Phase-locked loops (PLL) : operating principles, PLL 565 applications, frequency multiplier, frequency shift keying (FSK) demodulator.

Voltage regulators : fixed voltage regulators, adjustable voltage regulators.
20 marks (10 Hrs.)

Unit 5

Function generator ICL 8038 : Block diagram, connection diaram, application.

RF and IF amplifier ICs, Power amplifier IC, filter ICs, block diagram, connection diagram and application of each type.
20 marks (10 Hrs)

References :

1 Op-Amps and Linear Integrated Circuits, second edition, Ramakant A. Gayakwad, Prentice-Hall of India.
2. Analog Integrated Circuits, Gray and Meyer.
3 Operational Amplifiers Design and Applications, Graeme, Tobey, and Huelsman, McGraw-Hill International edition

List of Experiments :

1 Op-amp parameters (2 expts.)
2. Op-amp integrator/differentiator.
3. Low-pass/high-pass Butterworth filter.
4. Band-pass/band-reject filter.
5 Square wave / triangular wave generater.
6 VCO 566
7 Schmitt trigger
8 555 as a monostable multivibrator.
9 PLL565 as frequency multiplier.
10. Op-amp clippers/clamper.
11 Precision half-wave rectifier
12. Function generator IC.

The termwork should include a minimum of eight experiments from the above list. The termwork marks will be based on performance in theory and practical having a weightage of 40% and 60% respectively.

Term I Paper 4
Microprocessor Techniques

Teaching scheme:
Lectures: 4 Hrs/week
Practicals: 2 Hrs/week

Examination Scheme:
Paper: 100 marks
(3 Hrs. duration)
Termwork: 25 marks

Unit 1

Semiconductor memories: RAM, ROM, PROM, EPROM and EEPROM. Static and dynamic RAMs - their features and memory organization.
Concepts of PLA, PAL and PLDs. 20 marks (10 Hrs)

Unit 2

8085 microprocessor architecture, instruction set, instruction cycle, timing diagram. Assembly and machine language programming. 20 marks (10 Hrs)

Unit 3

Stack, subroutines, interrupt structure, intrrupt handling and ISR, WAIT, HOLD interrupt states, Pseudo instructions. I/O addressing: I/O mapped I/O and memory mapped I/O. 20 marks (10 Hrs)

Unit 4

Supporting peripheral chips: 8155, 8255, 8253, 8259, 8251, 8257, 8279, connection diagram and interfacing 20 marks (10 Hrs)

Unit 5

RS 232c and IEEE 488 Bus standards.
Comparative reviw of architectare and instruction set of Z80, and 6800. Microprocessor development systems. 20 marks (10 Hrs)

References:

1. Microprocessors and Digital systems, 2nd edition, Douglas V. Hall, McGraw Hill International edition.
2. Microprocessor Architecture, Programming and Applications with the 8085, third edition, Ramesh S Gaonkar, Penram International (India).
3. Introduction to microprocessors, 3rd edition, A.P.Mathur, Tata McGraw-Hill.

List of Experiments:

1. Study of RAM ICs
2. 8085 Programming assignments based on
   a) addressing modes (2 expts) b) stacks, subroutines (2 expts)
3. Study of 8255, 8155 (2 expts) 4. Study of 8253
5. Interrupt driven datatransfer ISR 6. Study of 8279

The term work shuld include a minimum of six experiments from the above list. The termwork marks will based on performance in theory and practicals having a weightage of 40% and 60% respectively.

Term I Paper 5
Electronic Design I

Teaching Scheme:
Lectures : 4 Hrs./week
Practical : 2 Hrs./week

Examination Scheme :
Paper : 100 marks
(3 Hrs. duration)
Termwork 25 marks
Practical : 25 marks

Unit 1

Single-transistor amplifiers : Inverting and noninverting amplifiers using BJT and FET. 20 marks (10Hrs.)

Unit 2

Multistage amplifiers using BJTs and FETs : ac-coupled amplifiers, direct-coupled amplifiers, differential amplifiers. 20 marks (10 Hrs.)

Unit 3

Frequency response of single-transistor amplifiers using BJT and FET. 20 marks (10 Hrs.)

Unit 4

Frequency response of multistage amplifiers using BJTs or FETs . differential amplifier, cascode amplifier, ac-coupled amplifier. 20 marks (10 Hrs.)

Unit 5

Tuned amplifiers . Single tuned, use of a tapped inductor, multiple tuned circuits--synchronous and stagger tuning using FETs and BJTs. 20 marks (10 Hrs.)

References :

1 Microelectronic Circuit Design, Richard C. Jaeger, McGraw-International edition.
2. Practical Transistor Circuit Design and Analysis, Gerald E. Williams, Tata McGraw-Hill.
3. Transistor Circuit Design, Texas Instruments Inc., McGraw-Hill International edition.
4 Electronic Devices and circuits, third edition, David A Bell, Prentice-Hall International.

List of Experiments :

Group A

1 Single–transistor amplifier using BJT. 2. Single–transistor amplifier using FET.
3. AC–coupled amplifier using BJTs. 4. AC–coupled amplifier using FETs.
5. Direct coupled amplifier using BJTs or FETs. 6. Differential amplifier using BJTs or FETs.

Group B

7. Frequency response of single transistor amplifier using BJT.
8. Frequency response of single-transistor amplifier using FET.
9. Frequency response of cascode amplifier.
10. Frequency response of ac-coupled amplifier.
11 Single tuned amplifier
12 Double tuned amplifier.

The termwork should include a minimum of eight experiments four each from groups A and B of the above list. The termwork marks will be based on performance in theory and practicals having a weightage of 40% and 60% respectively.

In the theory paper, no design manuals or databooks will be required. The questions will be set to analyse a part of the designed circuit or to design a part of the circuit using specified devices and components, the pattern of the question paper will be the same as in other theory papers.

Term II Paper 1
Industrial Management

Teaching Scheme :
Lectures : 4 Hrs./week

Examination Scheme :
Paper : 100 marks
(3 Hrs. duration)

Unit 1

Management science : Its growth, management, administration and organisation concept. Definitions of management. Functions of management. Division of labour. Authority and responsibility. Unity of command and direction 20 marks (10 Hrs.)

Unit 2

Business organisation : Form of organisations - their formation and working. Organisation structures in industry - line organisation, functional organisation, line and staff organisation. 20 marks (10 Hrs.)

Unit 3

tors govern ng plant location. Objectives of good plant layout. Process layout, product layout and combination layout. Work study Work measurement. Time study and motion economy. Flow process charts. Two handed process charts. Flow diagrams Simo charts, string diagrams. Therbligs 20 marks (10 Hrs.)

Unit 4

Personnel management : Manpower planning, Sources of recruitment, selection and training. Job evaluation. Merit rating. Performance appraisal. Wage administration and systems of wage payments. Incentives. Motivation. 20 marks (10Hrs.)

Unit 5

Financial management : Capital structure. Fixed capital. Working capital. Sources of finances and financing institutions. costing and cost control. Prime cost and overhead costs. Depreciation and depreciation methods. Break-even and minimum cost analysis. Value analysis : Introduction and objectives of value engineering. Types of values. Value analysis. Value control. 20 marks (10 Hrs.)

References :

1. Management for Business and Industry, C.S. George Jr.
2. Principles of Management, Koontz and O'Donnell.
3. Industrial Management, Spriegal W.R. and Lansburgh R.H.
4. Business Organisation and Management, M.C. Shukla.
5. Industrial Engineering and Management, O.P. Khanna.
6. Business Organisation and Management, S.A. Sherlekar.

Term II Paper 2

Electronic Design II

Teaching Scheme :
Lectures : 4 Hrs./week
Practical : 4 Hrs./week

Examination Scheme :
Paper : 100 marks
(3 Hrs. duration)
Termwork : 25 marks
Practicals : 25 marks.

Unit 1

Feedback amplifiers : Voltage amplifiers, transresistance amplifiers. 20 marks (10 Hrs.)

Unit 2

Feedback amplifiers : Current amplifiers, transresistance amplifiers. 20 marks (10 Hrs.)

Unit 3

Using feedback to control frequency response of an amplifier. Stability of feedback amplifiers, Nyquist plot, gain margin and phase margin, determining stability from Bode plot. 20 marks (10 Hrs.)

Unit 4

RC oscillators : Wien-bridge and phase-shift oscillators, Amplitude stabilization in RC oscillators. 20 marks (10 Hrs.)

Unit 5

LC oscillators : Colpitts and Hartley oscillators. Amplitude stabilization in LC oscillators. Crystal oscillators 20 marks (10 Hrs.)

References :

1. Microelectronic Circuit design, Richard C. Jaeger, McGraw-Hill International edition.
2. Modern Communication Circuits, second edition, Jack R. Smith, McGraw-Hill International edition.

List of Experiments.

Group A

1. Voltage amplifier.
2. Transresistance amplifier.
3. Current amplifier.
4. Transconductance amplifier

Group B

5. Wien-bridge oscillator.
6. Phase-Shift oscillator.
7. Colpitts oscillators.
8. Harley oscillator.
9. Crystal oscillator.

The termwork should include a minimum of six experiments three each from groups A and B. The termwork

marks will be based on performance in theory and practicals having a weightage of 40% and 60% respectively.

In the theory paper, no design manuals or databooks will be required. The questions will be set to analyse a part of the designed circuit or to design a part of the circuit using specified devices and components. The pattern of the question paper will be the same as in other theory papers.

Term II Paper 3

Communication Systems I

Teaching Scheme 4 Hrs./week
Lectures : 4 Hrs./week
Practical 2 Hrs./week

Examination Scheme :
Theory : 100 marks
(3 Hrs. duration)
Termwork : 25 marks
Practical : 25 marks

Unit 1

Signals and spectra : Line spectra and Fourier series; continuous spectra and Fourier transform; time and frequency relations, superposition, time delay and scale change, frequency translation and modulation, differentiation and integration, construction and multiplication, correlation and spectral density.

Random signals and noise : radom processes, description of random processes, random signals, signal power and time average, power spectrum, superposition and modulation, noise, thermal noise and available power, white noise and filtered noise, noise equivalent bandwidth, signal transmission with noise, additive noise and signal-to-noise ratio.

20 marks (10 Hrs.)

Unit 2

Single-side band AM techniques : Evolution and description of SSB, suppression of carrier, balanced modulator suppression of unwanted sideband, filter system, phase-shift method; extensions of SSB, forms of amplitude modulation, carrier reinsertion-pilot-carrier systems, independent-side band (ISB) systems, vestigial-sideband transmission.

20 marks (10 Hrs.)

Unit 3

Demodulation of SSB ; Product demodulator, detection with the diode balanced modulator. SSB receivers pilot carrier receiver, suppressed-carrier receiver. AM receiver circuits : RF amplifiers, FET mixer, bipolar transistor mixer, IF amplifiers, Automatic gain control (AGC), delayed AGC circuit, squelch (muting) circuit. 20 marks (10 Hrs.)

Unit 4

FM receiver circuits : RF amplifiers, amplitude limiter, phase discriminator, ratiodetector, balanced ratio detector, pre-emphasis and de-emphasis circuits. Noise figure , noise calculations, addition of noise due to several sources, addition of noise due to several amplifiers in cascade, noise in reactive circuits; calculation of noise figure, noise figure from equivalent noise resistance; Noise figure from measurement, noise temperature. 20 marks (10 Hrs.)

Unit 5

Broadband communication systems Communication medias, coaxial cables, fiber-optic links, microwave links, tropospheric scatter links; submarine cables, fiber-optic submarine cables, satellite communications. Elements of long-distance telephones, routing codes and signalling systems, telephone exchanges and routing; practical aspects, international gateways, echo and echo suppressors; introduction to traffic engineering, measurement of traffic and grade of service.

20 marks (10 Hrs.)

References :

1 Electronic Communication Systems, fourth edition, George Kennedy and Bernard Davis, Tata McGraw-Hill.
2 Communication Systems : An Introduction to Signals and Noise in Electrical Communication, third edition, A. Bruce Carlson, McGraw-Hill International edition.
3. Modern Communication Circuits, second edition, Jack R. Smith, McGraw-Hill International edition.
4 Principles of Communication Systems, second edition, Herbert Taub and Donald L. Schilling, Tata Mc-Graw-Hill
5 An Introduction to Fiber Optic Systems, second edition, John Powers, Irwin/McGraw-Hill International edition.

List of Experiments :

Group A

1. RF amplifier for AM receiver. 2. FET mixer.
3. Bipolar transistor mixer.

4. IF amplifier.
5. Automatic gain control.
6. Squelch circuit.

Group B

7. Testing of AM receiver.
8. Testing of FM receiver.
9. RF amplifier for FM receiver.
10. Amplitude limiter for FM receiver.
11. Phase descriminator.
12. Ratio detector.

The termwork should include a minimum of eight experiments, four each from groups A and B of the above list. The termwork marks will be based on performance in theory andpracticals having a weightage of 40% and 60% respectively.

Term II Paper 4
Power Electronics

Teaching Scheme :
Lectures : 4 Hrs./week
Practical : 2 Hrs./week

Examination Scheme :
Paper : 100 mark
(3 Hrs duration)
Termwork : 25 marks
Practical : 25 marks

Unit 1

Thyristors : SCR, Triac, Diac, SCS, SUS, LASCR, Symbols and characteristics. Methods of SCR turning on, characteristics, turn-off characteristics. Device specifications. Commutation of an SCR, natural and forced, class A,B C,D,E and F. Gate triggering circuits, R, RC, pulse, UJT triggering. Internal power dissipation and temperature rise.
20 marks (10 Hrs.)

Unit 2

Multiple connections of SCRs : Series operation, triggering; parallel operation, triggering; string efficiency.
SCR applications : Static circuit breaker, ac and dc; overvoltage protection; zerovoltage switch; integral-cycle triggering; time delay circuit; soft start circuit.
AC power control : phase control, half-wave control circuit, load current and voltage waveforms, effect of free wheeling diode; full-wave control circuit, load current and voltage waveforms. 20 marks (10 Hrs.)

Unit 3

Controlled rectifiers : full-wave, M-2 and M-6 connections; bridge circuits, Single-phase B-2 connection, three-phase B-6 connection, analysis of bridge circuits, effect of source inductance; half-controlled bridge circuits, single phase and three-phase; line commulated controlled rectifiers, input-output characteristics of bridge circuits, effect of source impedance, effect of load inductance. 20 marks (10 Hrs.)

Unit 4

Inverters : line-commutated two-pulse and six-pulse inverters; parallel inverter, principle of operation, output voltage and waveform control; series inverter, circuit operation; bridge inverter, commutation circuits, operation of bridge inverter; inverter applications--speed control of induction motor, uninterrupted power supply. 20 marks (10 Hrs.)

Unit 5

Choppers : Control of dc motors ; oscillating chopper, circuit performance; improved chopper circuits - Jones and Morgan choppers; Step-up chopper; two-quadrant chopper; AC choppers. (6 Hrs.)
AC regulators : Single-phase ac regulators, with resistance load, with R-L load, with inductance load, sequence control of ac regulators. two-stage sequence control, multistage sequence control and sinusiodal voltage regulator. (4 Hrs.)
20 marks

References

1. An Introduction to Thyristors and their Applications, second edition, M.Ramamoorty, East-West Press.
2. Thyristorised Power Controllers, G.K. Dubey, S.R. Doradla, A. Joshi, R.M.K. Sinha, New Age International.
3. Power Electronics, P.C. Sen, Tata McGraw-Hill.
4. Power Electronics : Thyristor controlled power for electronic motors, Raymond Ramshaw, ELBS.
5. Power Electronics , M.D. Singh, K.B. Khanchandani, Tata McGraw-Hill.

List of Experiments :

Group A

1. Triggering circuits for SCR : R, RC and UJT.
2. Commutation circuits for SCR (2 expts.)
3. Single-phase line-commutated half-controlled bridge rectifier.
4. Single-phase line-commutated fully-controlled bridge rectifier.

Group B

5. Series inverter.
6. Parallel inverter.
7. Bridge inverter.
8. Jones Chopper/Morgan chopper.
9. AC chopper.
10. AC regulator.

The termwork should include a minimum of eight experiments, four each from groups A and B of the above list. The termwork marks will be based on performance in theory and practicals having a weightage of 40% and 60% respectively.

Term II Paper 5

Microprocessor Peripherals and Interfacing

Teaching scheme :
Lectures : 4 Hrs/week
Practical : 2 Hrs/week

Examination Scheme :
Paper : 100 Marks
(3 Hrs. duration)
Termwork : 25 marks

Unit 1

Floppy disc data storage format.
Floppy disc controller 8272.
CRT controller 8275, 8845. — 20 marks (10 Hrs)

Unit 2

Microprocessor compatible ADCs and DACs, 0808/0809, their interfacing techniques, different conversion techniques — 20 marks (10 Hrs)

Unit 3

8-bit microcontroller 8051 : architechture, instruction set and applications. — 20 marks (10 Hrs)

Unit 4

8086 and 80000 microprocessors : architechture, instuction set. — 20 marks (10 Hrs)

Unit 5

Assembly language programming of 8086 — 20 marks (10 Hrs)

References :

1. Microprocessor Architecture, programming and application with the 8085, third edition, Ramesh S. Gaonkar, Penram International (India)
2. Microprocessors and Interfacing : Programming and Hardware, second edition, Douglas V. Hall, Tata Mcgraw-Hill
3. Introduction to Microprocessors : Software, Hardware, programming, Lance A. Leventhal, Prentice-Hall of India.

List of Expriments :

1. ADC DAC interfacing. (2 expts.)
2. Serial communication
3. Microcontroller 8051. (2 expts.)
4. 8086 Programming exercises. (6 expts.)

The termwork shuld include a minimum of six experiments form the above list. The termwork marks will be based on performance in theory and practicals having a weightage of 40% and 60% respectively.

Term-II (~~Paper-6~~)

Practical Training/ Special Study/Minor Project

(Common with TE (Electronics, Industrial Electronics, Electronic and Telecommunication Engineering & Computer Engg., Electrical Engg., ~~Instrumentation~~, Mech., & Production Engg.)

Examination scheme :
Termwork : 25 marks

Every student need to complete following requirements for termwork of Practical Training/Special Study/ Minor Project.

Practical training in any industry for a period of minimum two weeks and submit training report certified by personnel manager or works manager or any other higher authority of that industry.

OR

Special study on a recent topic from reported literature and submit a report on it.

OR

One mini theoritical or fabrication project and submit a report on it.

OR

Attend a course of Entrepreneurship Development course conducted by college and submit a report on it.

NOTE:-

1. Practical training is to be undergone in Summer Vacation after S.E. and / or in Winter Vacation after first term of T.E.

2. Report should be typed on A4 size paper and three copies paper bounded are to be prepared, one copy is for the candidate, one for the library and one for the teacher concerned.

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