

**B.TECH VIII SEMESTER
TELEVISION ENGINEERING
ECE - 402**

L T P
3 1 -

Time - 3 Hrs
Theory- 60
Sessional- 40
Credit- 3.5

OBJECTIVE: This subject is to introduce students internal architecture of T.V. & also exposure is given for transmission & reception of TV signals.

UNIT - I

ELEMENTS OF A TELEVISION SYSTEM:

Picture transmission, sound transmission, picture reception, sound reception synchronization, receiver controls. Analysis and Synthesis of Television Pictures: Gross structure, image continuity, no. of scanning lines, flicker, fine structure, tonal gradation, composite video signal, channel B.W. vestigial side band transmission and reception, TV standards.

UNIT - II

THE PICTURE TUBE:

Monochrome picture tube, Beam deflection, screen phosphor, face plate, picture tube characteristics, picture tube circuit controls. Television Camera Tubes: Basic principal, Image orthicon, Vidicon, plumbicon.

MONOCHROME SIGNAL TRANSMISSION AND RECEPTION: Block diagram of Monochrome Signal Transmitter and Receiver, Explanation of different sections, Transmitting and receiving antennas.

UNIT - III

ELEMENTS OF COLOUR TV:

Introduction, compatibility considerations, Interleaving process, three color theory, Chrominance signal, composite color signal, comparison of NTSC, PAL and SECAM systems, color television display tubes (Delta gun, PIL, Trinitron).

Color signal transmission, bandwidth for color signal transmission.

UNIT-IV

ADVANCED TOPICS IN TV ENGINEERING:

Introduction, & working and block diagram of the projector TV, 3D-TV, HDTV, Digital TV, Camcorders.

TELEVISION APPLICATIONS: Cable television, CCTV, picture phone & facsimile, television via satellite, Remote Control (Electronics control system), Introduction to Digital TV Technology and their merits.

TEXT/ REFERENCE BOOKS :

1. Dhake , A.M., "Monochrome and Color TV", 2nd Edition, TMH, 1999.
2. Gualti, R.R., "Color TV Engg.", New AGE International, 1996
3. Bali, S.P., "Color TV Theory & practice", TMH, 2005
4. Skolnik, M.I., "Introduction to Radar Systems", 2nd Edition, TMH, 1999

Note: Paper setter is requested to set eight questions in total setting two questions from each unit. Students are required to answer any five questions selecting at least one question from each unit. All questions carry equal marks.

L T P Time - 3 Hrs 3 1 - Theory- 60 Sessional- 40 Credit- 3.5 OBJECTIVE: This subject is to introduce students internal architecture of T.V. & also exposure is given for transmission & reception of TV signals.

UNIT – I ELEMENTS OF A TELEVISION SYSTEM: Picture transmission, sound transmission, picture reception, sound reception synchronization, receiver controls. Analysis and Synthesis of Television Pictures: Gross structure, image continuity, no. of scanning lines, flicker, fine structure, tonal gradation, composite video signal, channel B.W. vestigial side band transmission and reception, TV standards.

UNIT - II THE PICTURE TUBE: Monochrome picture tube, Beam deflection, screen phosphor, face plate, picture tube characteristics, picture tube circuit controls. Television Camera Tubes: Basic principal, Image orthicon, Vidicon, plumbicon. MONOCHROME SIGNAL TRANSMISSION AND RECEPTION: Block diagram of Monochrome Signal Transmitter and Receiver, Explanation of different sections, Transmitting and receiving antennas.

UNIT - III ELEMENTS OF COLOUR TV: Introduction, compatibility considerations, Interleaving process, three color theory, Chrominance signal, composite color signal, comparison of NTSC, PAL and SECAM systems, color television display tubes (Delta gun, PIL, Trinitron). Color signal transmission, bandwidth for color signal transmission.

UNIT-IV ADVANCED TOPICS IN TV ENGINEERING: Introduction, & working and block diagram of the projector TV, 3D-TV, HDTV, Digital TV, Camcorders. TELEVISION APPLICATIONS: Cable television, CCTV, picture phone & facsimile, television via satellite, Remote Control (Electronics control system), Introduction to Digital TV Technology and their merits.

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B.TECH VIII SEMESTER
RADAR ENGINEERING
ECE-404

L T P
3 1 -

Time - 3 Hrs
Theory- 60
Sessional- 40
Credit- 3.5

OBJECTIVE: The main objective of Radar Engineering is target detection and estimation. In radar engineering correlation of signals is encountered, our objective in computing the correlation between the two signals is to measure the degree to which the two signals are similar & thus extract the some information.

UNIT – I

RADAR BASICS:

Radar Block Diagram & Operation, Applications of Radar.

RADAR EQUATION:

Simple form of Radar Equation, Minimum detectable signal, Receiver noise, Signal to noise ratio, Transmitter power, Pulse repetition frequency & range ambiguities, System losses, Propagation effects.

UNIT - II

CW & FREQUENCY MODULATED RADAR:

The Doppler Effect, CW Radar, FM-CW Radar, Multiple Frequency CW Radar.

MTI & PULSE DOPPLER RADAR:

Introduction, Delay line Cancellors, Multiple or Staggered, Pulse repetition frequencies, range-Gated Doppler Filters, Other MTI delay line, Limitation of MTI performance, Noncoherent MTI pulse Doppler Radar, MTI from a moving platform.

UNIT - III

TRACKING RADAR:

Tracking with Radar, Sequential Lobbing, Conical Scan, Monopulse Tracking Radar, Tracking in range, Acquisition.

UNIT-IV

RECEIVERS, DISPLAY & DUPLEXERS:

Radar Receiver, Noise Figure, Mixer, Low-noise Front ends, Displays, Duplexer, Receiver protectors.

TEXT BOOK:

1. Skolnik, M.I., "Introduction to Radar Systems", 2nd Edition, TMH, 1999

REFERENCE BOOK:

1. Kennedy George, "Electronics Communication Systems", 4th Edition, TMH, 1999

Note: Paper setter is requested to set eight questions in total setting two questions from each unit. Students are required to answer any five questions selecting at least one question from each unit. All questions carry equal marks.

Theory- 60 Sessional- 40 Credit- 3.5

OBJECTIVE: The main objective of Radar Engineering is target detection and estimation. In radar engineering correlation of signals is encountered, our objective in computing the correlation between the two signals is to measure the degree to which the two signals are similar & thus extract the some information.

UNIT – I RADAR BASICS: Radar Block Diagram & Operation, Applications of Radar.

RADAR EQUATION: Simple form of Radar Equation, Minimum detectable signal, Receiver noise, Signal to noise ratio, Transmitter power, Pulse repetition frequency & range ambiguities, System losses, Propagation effects.

UNIT - II CW & FREQUENCY MODULATED RADAR: The Doppler Effect, CW Radar, FM-CW Radar, Multiple Frequency CW Radar.

MTI & PULSE DOPPLER RADAR: Introduction, Delay line Cancellors, Multiple or Staggered, Pulse repetition frequencies, range- Gated Doppler Filters, Other MTI delay line, Limitation of MTI performance, Noncoherent MTI pulse Doppler Radar, MTI from a moving platform.

UNIT - III TRACKING RADAR: Tracking with Radar, Sequential Lobbing, Conical Scan, Monopulse Tracking Radar, Tracking in range, Acquisition.

UNIT-IV RECEIVERS, DISPLAY & DUPLEXERS: Radar Receiver, Noise Figure, Mixer, Low-noise Front ends, Displays, Duplexer, Receiver protectors.

TEXT BOOK:

1. Skolnik, M.I., “Introduction to Radar Systems”, 2nd Edition, TMH, 1999

REFERENCE BOOK:

1. Kennedy George, “Electronics Communication Systems”, 4th Edition, TMH, 1999

Note: Paper setter is requested to set eight questions in total setting two questions from each unit. Students are required to answer any five questions selecting at least one question from each unit. All questions carry equal marks.

B.TECH VIII SEMESTER
MULTIMEDIA COMMUNICATIONS
ECE-406

L T P
3 1 -

Time - 3 Hrs
Theory- 60
Sessional- 40
Credit- 3.5

OBJECTIVE: To make students aware about various features of multimedia communication. Students are familiar introduced with compression concepts.

UNIT - I

MULTIMEDIA COMMUNICATIONS:

Introduction, multimedia networks, multimedia applications.

Multimedia information representation: Introduction, digitization principles, representation of text, images, audio & video.

UNIT - II

TEXT & IMAGE COMPRESSION:

Various compression principles. Text compression: Static Huffman coding, dynamic Huffman coding, arithmetic coding, Lempel-Ziv coding

IMAGE COMPRESSION:

Graphics Interchange format, tagged image file format, digitized document, digitized pictures, JPEG (Introduction)

UNIT - III

AUDIO & VIDEO COMPRESSION:

Audio compression: Differential PCM, Adaptive differential PCM, code excited LPC, MPEG audio coders, Dolby audio coders.

VIDEO COMPRESSION:

Basic principles, Video compression standard H.261, H.263, MPEG(Basic introduction)

UNIT-IV

INTERNET APPLICATIONS:

Domain name system, name structure and administration, DNS resource records, Electronic mail message structure, content transfer, Basic concept of internet telephony, World Wide Web.

TEXT/REFERENCE BOOKS:

1. Fred Halsall, "Multimedia Communications", Pearson Education Asia, 2005
2. K. Thakkar, "Multimedia Systems Design", PHI, 2003

Note: Paper setter is requested to set eight questions in total setting two questions from each unit. Students are required to answer any five questions selecting at least one question from each unit. All questions carry equal marks.

L T P Time - 3 Hrs 3 1 - Theory- 60 Sessional- 40 Credit- 3.5 OBJECTIVE: To make students aware about various features of multimedia communication. Students are familiar introduced with compression concepts.

UNIT – I MULTIMEDIA COMMUNICATIONS: Introduction, multimedia networks, multimedia applications. Multimedia information representation: Introduction, digitization principles, representation of text, images, audio & video.

UNIT - II TEXT & IMAGE COMPRESSION: Various compression principles. Text compression: Static Huffman coding, dynamic Huffman coding, arithmetic coding, Lempel-Ziv coding

IMAGE COMPRESSION: Graphics Interchange format, tagged image file format, digitized document, digitized pictures, JPEG (Introduction)

UNIT - III AUDIO & VIDEO COMPRESSION: Audio compression: Differential PCM, Adaptive differential PCM, code excited LPC, MPEG audio coders, Dolby audio coders.

VIDEO COMPRESSION: Basic principles, Video compression standard H.261, H.263, MPEG(Basic introduction)

UNIT-IV INTERNET APPLICATIONS: Domain name system, name structure and administration, DNS resource records, Electronic mail message structure, content transfer, Basic concept of internet telephony, World Wide Web.

TEXT/REFERENCE BOOKS:

1. Fred Halsall, "Multimedia Communications", Pearson Education Asia, 2005 2. K. Thakkar, "Multimedia Systems Design", PHI, 2003

Note: Paper setter is requested to set eight questions in total setting two questions from each unit. Students are required to answer any five questions selecting at least one question from each unit. All questions carry equal marks.

B.TECH VIII SEMESTER
ELECTRONIC SWITCHING SYSTEMS
ECE-408

L T P
3 1 -

Time - 3 Hrs
Theory- 60
Sessional- 40
Credit- 3.5

OBJECTIVE: To make students about the current technology of electronic switching so that they become familiar with the working of electronic exchange and gain knowledge about other telecommunication concepts.

UNIT-I

INTRODUCTION:

Statistical Bandwidth Sharing, Switching, network configurations, Elements of Switching systems, Electronics exchange, PBX.

TELEPHONE NETWORKS:

Subscribers loop, Switching Hierarchy & Routing Transmission Systems, Numbering Plan, Charging Plan, and Signaling Techniques Common Channel Signaling.

UNIT-II

ELECTRONIC SPACE DIVISION SWITCH:

Stored Program Control (SPC): Centralized & Distributed SPC, Software Architecture, and n-stage networks.

TIME DIVISION SWITCHING:

Space switching, Time switching, Time multiplexed space switching and Time switching, n-stage combination switching.

UNIT-III

TRAFFIC ENGINEERING:

Traffic load, Grade of service, Blocking probability models of switching systems, Markov processes, Birth-Death Processes, Delay systems, Models for packetized sources (voice and video), models for traffic flow in packet networks.

CELLULAR MOBILE TELEPHONY:

Analog switch system for cellular mobile, cellular digital switching, Centralized & remote controlled small switching system.

UNIT-IV

TELEPHONE NETWORK PROTOCOLS:

Protocols stacks, Digital Transmission hierarchy, SONET/SDH Signaling system. Multi Media Communication over global telephone N/W Introduction to Datagram Switches, ATM Switches.

TEXT/REFERENCE BOOKS:

1. Thiagarajan Vishwanathan, "Telecommunication Switching Systems & Networks", PHI, 1996.
2. Hui, J.Y., "Switching & Traffic Theory for integrated broadband networks"

Note: Paper setter is requested to set eight questions in total setting two questions from each unit. Students are required to answer any five questions selecting at least one question from each unit. All questions carry equal marks.

- 3 Hrs 3 1 - Theory- 60 Sessional- 40 Credit- 3.5 OBJECTIVE: To make students about the current technology of electronic switching so that they become familiar with the working of electronic exchange and gain knowledge about other telecommunication concepts.

UNIT-I INTRODUCTION: Statistical Bandwidth Sharing, Switching, network configurations, Elements of Switching systems, Electronics exchange, PBX.

TELEPHONE NETWORKS: Subscribers loop, Switching Hierarchy & Routing Transmission Systems, Numbering Plan, Charging Plan, and Signaling Techniques Common Channel Signaling.

UNIT-II ELECTRONIC SPACE DIVISION SWITCH: Stored Program Control (SPC): Centralized & Distributed SPC, Software Architecture, and n- stage networks.

TIME DIVISION SWITCHING: Space switching, Time switching, Time multiplexed space switching and Time switching, n- stage combination switching.

UNIT-III TRAFFIC ENGINEERING: Traffic load , Grade of service, Blocking probability models of switching systems, Markov processes, Birth-Death Processes, Delay systems, Models for packetized sources (voice and video), models for traffic flow in packet networks.

CELLULAR MOBILE TELEPHONY: Analog switch system fro cellular mobile, cellular digital switching, Centralized & remote controlled small switching system.

UNIT-IV TELEPHONE NETWORK PROTOCOLS: Protocols stacks, Digital Transmission hierarchy, SONET/SDH Signaling system. Multi Media Communication over global telephone N/W Introduction to Datagram Switches, ATM Switches.

TEXT/ REFERENCE BOOKS: 1. Thiagarajan Vishwanathan, "Telecommunication Switching Systems & Networks", PHI,

1996. 2. Hui, J.Y., "Switching & Traffic Theory for integrated broadband networks"

Note: Paper setter is requested to set eight questions in total setting two questions from each unit. Students are required to answer any five questions selecting at least one question from each unit. All questions carry equal marks.

B-TECH VIII SEMESTER
MICROWAVE (P)
ECE-410

L T P
- - 3

Time:	3hrs.
Sessional-	60
Practical-	40
Credit-	1.5

LIST OF EXPERIMENTS:

1. To study the microwave components.
2. To study the characteristics of the reflex klystron tube and to determine its electronic tuning range
3. To determine the frequency and wavelength in a rectangular in a wave guide working in TE 10 mode.
4. To determine the standing wave ratio.
5. To study the I-v characteristics of the gun diode.
6. To study the magic tee.
7. To study the isolator and attenuator.
8. To measure the coupling coefficient and directivity of a wave guide directional coupler.
9. To measure the polar pattern and the gain of a wave guide horn coupler
10. To measure the insertion loss and attenuation.

Note: At least 10 experiments are to be performed with atleast 7 from above list, remaining 3 may either be performed from the above list or designed & set by concerned institution as per the scope

L T P Time: 3hrs. - - 3 Sessional- 60 Practical- 40 Credit- 1.5

LIST OF EXPERIMENTS:

1. To study the microwave components.
2. To study the characteristics of the reflex klystron tube and to determine its electronic tuning range
3. To determine the frequency and wavelength in a rectangular in a wave guide working in TE 10 mode.
4. To determine the standing wave ratio.
5. To study the I-v characteristics of the gun diode.
6. To study the magic tee.
7. To study the isolator and attenuator.
8. To measure the coupling coefficient and directivity of a wave guide directional coupler.
9. To measure the polar pattern and the gain of a wave guide horn coupler
10. To measure the insertion loss and attenuation.

Note: At least 10 experiments are to be performed with atleast 7 from above list, remaining 3 may either be performed from the above list or designed & set by concerned institution as per the scope

B-TECH VIII SEMESTER
AUDIO VISUAL ELECTRONICS (P)
ECE-412

L T P
- - 3

Time: 3hrs.
Sessional- 60
Practical- 40
Credit- 1.5

LIST OF EXPERIMENTS:

1. Familiarization of PCBs and mechanical components of tape recoder/CD player/VCD player/COLOUR TV.
2. Study of tuner section of a COLOUR TV.
3. Study of VIF section of a COLOUR TV.
4. Study of sound section of a COLOUR TV.
5. Study of chroma section of a COLOUR TV.
6. Study of mechanical portion of VCD player.
7. Study of sound processing of VCD player.
8. Study of camcorder's mechanical portion.
9. Study of camcorder's Electronic portion.

Note: At least 10 experiments are to be performed with atleast 7 from above list, remaining 3 may either be performed from the above list or designed & set by concerned institution as per the scope

L T P Time: 3hrs. - - 3 Sessional- 60 Practical- 40 Credit- 1.5 LIST OF EXPERIMENTS:

1. Familiarization of PCBs and mechanical components of tape recoder/CD player/VCD player/COLOUR TV.
2. Study of tuner section of a COLOUR TV.
3. Study of VIF section of a COLOUR TV.
4. Study of sound section of a COLOUR TV.
5. Study of chroma section of a COLOUR TV.
6. Study of mechanical portion of VCD player.
7. Study of sound processing of VCD player.
8. Study of camcorder's mechanical portion.
9. Study of camcorder's Electronic portion.

Note: At least 10 experiments are to be performed with atleast 7 from above list, remaining 3 may either be performed from the above list or designed & set by concerned institution as per the scope

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DEPARTMENTAL ELECTIVE-II

B.TECH VIII SEMESTER

EMBEDDED SYSTEMS DESIGN

ECE-422

L T P
3 1 -

Time - 3 Hrs
Theory- 60
Sessional- 40
Credit- 3.5

OBJECTIVE: This embedded system design introduced new PIC controller & their application in real time to students. With the help of this subject students will be able to prepare & program PIC microcontroller devices as minor & major projects.

UNIT-1

INTRODUCTION:

Different types of microcontrollers: Embedded microcontrollers, External memory microcontrollers; processor architectures: Harvard v/s Princeton, CISC v/s RISC; Microcontroller's memory types; Microcontroller's features: clocking, I/O pins, interrupts, timer, peripherals.

UNIT-2

MICROCONTROLLER ARCHITECTURE:

Introduction to PIC microcontrollers, architecture and pipelining, program memory consideration, addressing modes, CPU registers, instruction set, simple operations.

UNIT-3

INTERRUPTS AND I/O PORTS:

Interrupt logic, timer2 scalar initialization, intservice, interrupt service routine, loop time subroutine, External interrupts and timers, synchronous serial ports module, serial peripheral device, o/p port Expansion, i/p port expansion, UART.

UNIT-4

PROGRAMMING WITH MICROCONTROLLER:

Arithmetic operations, Bit addressing, loop control, stack operation, subroutines, RAM direct addressing, state machines, oscillators, Timer interrupts, Memory mapped i/o.

DESIGNING USING MICROCONTROLLER:

Music box, mouse wheel turning, PWM motor control, Aircraft Demonstration, ultra sonic distance measuring, Temperature sensor, pressure sensor.

TEXT BOOK:

1. John B. Peatman, Design with PIC microcontrollers, Pearson Education, 2003.

REFERENCE BOOKS:

1. Predko Myke, "Programming and Customizing the 8051 Microcontrollers", TMH, 2006
2. John catsoulis, "Designing Embedded Hardware", 2nd Edition, SHROFF PUB. & DISTR.ND, May 2005.

Note: The question paper shall have eight questions in all organized into four sections, each section having two questions from each of the four units. The candidate shall have to attempt five questions in all, selecting atleast one question from each unit.

DESIGN ECE-422 L T P Time - 3 Hrs 3 1 - Theory- 60 Sessional- 40 Credit- 3.5

OBJECTIVE: This embedded system design introduced new PIC controller & their application in real time to students. With the help of this subject students will be able to prepare & program PIC microcontroller devices as minor & major projects.

UNIT-1 INTRODUCTION: Different types of microcontrollers: Embedded microcontrollers, External memory microcontrollers; processor architectures: Harvard v/s Princeton, CISC v/s RISC; Microcontroller's memory types; Microcontroller's features: clocking, I/O pins, interrupts, timer, peripherals.

UNIT-2

MICROCONTROLLER ARCHITECTURE: Introduction to PIC microcontrollers, architecture and pipelining, program memory consideration, addressing modes, CPU registers, instruction set, simple operations.

UNIT-3 INTERRUPTS AND I/O PORTS: Interrupt logic, timer2 scalar initialization, intservice, interrupt service routine, loop time subroutine, External interrupts and timers, synchronous serial ports module, serial peripheral device, o/p port Expansion, i/p port expansion, UART.

UNIT-4 PROGRAMMING WITH MICROCONTROLLER: Arithmetic operations, Bit addressing, loop control, stack operation, subroutines, RAM direct addressing, state machines, oscillators, Timer interrupts, Memory mapped i/o.

DESIGNING USING MICROCONTROLLER: Music box, mouse wheel turning, PWM motor control, Aircraft Demonstration, ultra sonic distance measuring, Temperature sensor, pressure sensor.

TEXT BOOK:

1. John B. Peatman, Design with PIC microcontrollers, Pearson Education, 2003.

REFERENCE BOOKS:

1. Predko Myke, "Programming and Customizing the 8051 Microcontrollers", TMH, 2006
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Note: The question paper shall have eight questions in all organized into four sections, each section having two questions from each of the four units. The candidate shall have to attempt five questions in all, selecting atleast one question from each unit.

B.TECH VIII SEMESTER
NEURAL NETWORKS
ECE-424

L T P
3 1 -

Time - 3 Hrs
Theory- 60
Sessional- 40
Credit- 3.5

OBJECTIVE: The objective of this course is to introduce the student with the concept of artificial neural networks & designing of neural networks.

UNIT- I

INTRODUCTION:

Introduction: Biological neurons and memory: Structure and function of a single neuron; Artificial Neural Networks (ANN), Typical applications of ANNs; Classification, Clustering, Vector quantization, Function Approximation, Basic Approach to the working of ANN-Training, Learning and Generalization.

UNIT- II

SUPERVISED LEARNING:

Single-layer networks; perception, Linear separability, Training algorithm, Limitations; Multilayer, networks-architecture, back propagation algorithm (BPA) and other training algorithms; Recurrent Networks; Feed-forward Networks; Radial-Basis-Function (RBF).

UNIT- III

UNSUPERVISED LEARNING :

Winner-takes-all networks; Hamming networks; Simple competitive learning; Kohonen's Self-organizing Maps; Principal Component Analysis.

UNIT- IV

ASSOCIATED MODELS:

Hopfield Networks, Brain-in-a-Box network; Boltzmann machine.

OPTIMIZATION METHODS:

Hopfield Networks for TSP, solution of simultaneous linear equations; Iterated Gradient Descent; Simulated annealing; Genetic Algorithm.

TEXT/REFERENCE BOOKS:

1. K. Mehrotra, C.K. Mohan and Sanjay Ranka, "Elements of Artificial Neural Networks", MIT, 1997.
2. Simon Haykin, "Neural Networks – A Comprehensive Foundation", Macmillan Pub. Co. New York, 1994

Note: The question paper shall have eight questions in all organized into four section, each section having two question from each of the four units. The candidates shall have to attempt five questions in all, selecting at least one question from each unit.

Theory- 60 Sessional- 40 Credit- 3.5 OBJECTIVE: The objective of this course is to introduce the student with the concept of artificial neural networks & designing of neural networks.

UNIT- I INTRODUCTION: Introduction: Biological neurons and memory: Structure and function of a single neuron; Artificial Neural Networks (ANN), Typical applications of ANNs; Classification, Clustering, Vector quantization, Function Approximation, Basic Approach to the working of ANN-Training, Learning and Generalization.

UNIT- II SUPERVISED LEARNING: Single-layer networks; perception, Linear separability, Training algorithm, Limitations; Multilayer, networks-architecture, back propagation algorithm (BPA) and other training algorithms; Recurrent Networks; Feed-forward Networks; Radial-Basis-Function (RBF).

UNIT- III UNSUPERVISED LEARNING : Winner-takes-all networks; Hamming networks; Simple competitive learning; Kohonen's Self-organizing Maps; Principal Component Analysis.

UNIT- IV ASSOCIATED MODELS: Hopfield Networks, Brain-in-a-Box network; Boltzmann machine.

OPTIMIZATION METHODS: Hopfield Networks for TSP, solution of simultaneous linear equations; Iterated Gradient Descent; Simulated annealing; Genetic Algorithm.

TEXT/ REFERENCE BOOKS:

1. K. Mehrotra, C.K. Mohan and Sanjay Ranka, "Elements of Artificial Neural Networks", MIT, 1997.
2. Simon Haykin, "Neural Networks – A Comprehensive Foundation", Macmillan Pub. Co. New York, 1994

Note: The question paper shall have eight questions in all organized into four section, each section having two question from each of the four units. The candidates shall have to attempt five questions in all, selecting at least one question from each unit.

B.TECH VIII SEMESTER
MICROCONTROLLERS
ECE-426

L T P
3 1 -

Time - 3 Hrs
Theory- 60
Sessional- 40
Credit- 3.5

OBJECTIVE: The main objective of microcontroller is to know the operation of 8051 microcontroller & develop programming with 8051 microcontroller along with interfacing.

UNIT – I

INTRODUCTION:

Comparing Microprocessors and Micro-controllers. Technological trends in Microcontrollers development. Survey of microcontrollers – 4bit, 8bit, 16bit, 32bit microcontrollers. Application of microcontrollers.

UNIT - II

8051 ARCHITECTURE:

Block diagram, pin diagram of 8051. Functional descriptions of internal units, registers, PSW, internal RAM, ROM, Stack, Oscillator and Clock. I/O Pins, Ports and Circuits Connecting external memory, Counters and Timers, Serial data interrupt, Serial data transmission/reception and transmission modes, Timer flag interrupt, External interrupt, Software generated interrupts, External memory and memory space decoding I/Os, memory mapped I/O Reset & CLK Circuits.

UNIT - III

8051 INSTRUCTION SET AND PROGRAMMING:

8051 Instruction syntax ,addressing modes, Data transfer instructions, logical instructions, arithmetic instructions, Jump and Call instructions. Interrupt and interrupt handler subroutines. Writing assembly Language programs.

UNIT-IV

8051 APPLICATIONS:

Program for interfacing & matrix keyboards, interfacing multiplexed displays, interfacing ADC's & DAC's.

PIC MICROCONTROLLER

Introduction to 68HC11 family of microcontroller, CPU, architecture & pipelining memory organization, CPU family registers, addressing modes, instruction sets, assembly language programming

TEXT/ REFERENCE BOOKS :

1. Ayala K.J., "The 8051 Microcontroller", 2nd ed., Penem International, 1997.
2. Muhammed Ali mazidi & JG Mazadi, "The 8051 microcontroller & Embedded systems", Pearsons education.
3. Intel's manual on "Embedded Microcontrollers".

Note: The question paper shall have eight questions in all organized into four section, each section having two question from each of the four units. The candidates shall have to attempt five questions in all, selecting at least one question from each unit

L T P Time - 3 Hrs 3 1 - Theory- 60 Sessional- 40 Credit- 3.5 OBJECTIVE: The main objective of microcontroller is to know the operation of 8051 microcontroller & develop programming with 8051 microcontroller along with interfacing.

UNIT – I INTRODUCTION: Comparing Microprocessors and Micro-controllers.

Technological trends in Microcontrollers development. Survey of microcontrollers – 4bit, 8bit, 16bit, 32bit microcontrollers. Application of microcontrollers.

UNIT - II 8051 ARCHITECTURE: Block diagram, pin diagram of 8051. Functional descriptions of internal units, registers, PSW, internal RAM, ROM, Stack, Oscillator and Clock. I/O Pins, Ports and Circuits Connecting external memory, Counters and Timers, Serial data interrupt, Serial data transmission/reception and transmission modes, Timer flag interrupt, External interrupt, Software generated interrupts, External memory and memory space decoding I/Os, memory mapped I/O Reset & CLK Circuits.

UNIT - III 8051 INSTRUCTION SET AND PROGRAMMING: 8051 Instruction syntax ,addressing modes, Data transfer instructions, logical instructions, arithmetic instructions, Jump and Call instructions. Interrupt and interrupt handler subroutines. Writing assembly Language programs. UNIT-IV 8051 APPLICATIONS: Program for interfacing & matrix keyboards, interfacing multiplexed displays, interfacing ADC's & DAC's. PIC MICROCONTROLLER Introduction to 68HC11 family of microcontroller, CPU, architecture & pipelining memory organization, CPU family registers, addressing modes, instruction sets, assembly language programming

TEXT/ REFERENCE BOOKS :

1. Ayala K.J., "The 8051 Microcontroller", 2nd ed., Penem International, 1997.
2. Muhammed Ali mazidi & JG Mazadi,"The 8051 microcontroller & Embedded systems", Pearsons education.
3. Intel's manual on "Embedded Microcontrollers".

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