

DAVANGERE  UNIVERSITY

Subject : ELECTRONICS

Semester : V

Title : Analog and Digital Communication

Paper : VI

No of hours : 45

No of hours per week : 3

Unit 1 : Amplitude Modulation :

Radio Communication: Introduction Ground Wave and SKY-Wave Propagation, S/N ratio and Shannon-Hartley law.

Amplitude Modulation :

Modulation definition, Types and definition, Necessity of modulation. AM-mathematical expression, frequency spectrum, modulation factor m , m in terms of maximum and minimum voltages, power relation in AM. Class-C collector modulator, DSB, DSB-SC, SSB & VSB Signals, AM transmitter-Block diagram & explanation.

Demodulation : Definition, Linear diode detector, AM Receivers-Basic functions, Qualities of good receiver, Super heterodyne receiver (SHR)-Block diagram and working.

Unit 2 : Frequency Modulation :

Definition, Mathematical representation of FM, FM Spectrum, FM-generation-ET reactance modulator, FM-transmitter Block diagram & explanation, FM-Demodulation-definition, Slope Detector and Balanced Slope detector, Foster-Jeeley discriminator with phasor diagram, pre-emphasis and De-emphasis, FM-receiver-Block diagram and explanation, Comparison of AM and FM.

Unit 3 : Digital Communication:

Need for digital Communication, Sampling theorem, Pulse Amplitude Modulation (PAM), Pulse Width Modulation (PWM) and Pulse Position Modulation (PPM), Pulse Code Modulation-Generation, Digital Modulation Schemes-ASK, FSK, PSK and DPSK, Frequency Division Multiplexing and Time Division Multiplexing.

Modems - Introduction, Classification, Modes of Modem, Modem data transmission Speed, Modem interconnection, Modem interfacing, applications.

References :

1. Anok Singh, (2004) Principles of Communication Engineering, Sathyaprakasm Publications,.
2. George Kennedy, Electronic Communication Systems, McGraw Hill Book Company
3. Roddy & Coolen, (2005) Communication System, 4th ed, Pearson Education, Anjeev Gupta, Electronic Communations, Khanna Publications




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Subject : ELECTRONICS PRACTICAL

Semester : V

Paper : VI

Title : Analog and Digital Communication Lab No of hours per week : 3

1. Amplitude Modulator and Demodulator using Transistor
2. IF Amplifier
3. Class-C Tuned Amplifier
4. Pre-emphasis and De-emphasis Circuits using Opamp
5. AGC Circuit
6. Frequency Modulation and Demodulation using IC 8038
7. Frequency Mixer
8. Astable Multivibrator using IC 555
9. Monostable Multivibrator using IC 555
10. Schmitt Trigger using IC 555/741
11. Waveform Generators using UJT/555/741
12. ASK-using MATLAB/SCI Lab
13. FSK, PSK-using MATLAB/SCI Lab
14. Pulse amplitude modulation
15. Pulse width modulation




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Subject : ELECTRONICS
Semester : V **Paper : V**
Title : Digital Electronics and C-programming **No of hours : 45**
No of hours per week : 3

Unit 1. Combinational Circuits:

Designing of Adder, subtractor, serial adder, Parallel adder, Case study: IC 74183, Multiplexer & De-multiplexer, Case study : IC 74153 & 74155, Encoder: BCD encoder, priority encoder. Case study: IC74147. Realization of 2-4 line decoder and 3-8 line decoder, BCD - decimal decoder. Case study: IC 7447. Parity generator / checker using XOR gates, binary to gray to binary code converters.

Unit 2. Sequential Circuits:

Flip Flops: S-R flip-Flop, Clocked S-R Flip-Flop, D flip flop using SR flip flop, J-K flip-flop, D & T Flip-Flop using JK flip flop, JK master slave Flip Flops – working principle and drawbacks and description of preset and clear terminals. Registers: Types of shift registers, working of three bit SISO, SIPO, PISO, PIPO.

Counters: Ripple counters and synchronous counters. Design of 4 bit asynchronous counter, decade counter & up-down counter – working with timing diagram. Synchronous counter: transition table for J-K Flip-Flop and designing of 3 bit synchronous counter. Comparison of ripple and synchronous counter, Johnson counter & ring counter. Memories: static & dynamic RAMs, types of ROM- PROM, EPROM, & EAROM

Unit 3: Introduction to C programming- basic structure of C, C tokens, data types, operator, decision making statements – if statement, if – else statements, switch statement, looping statements- while, do- while & for. Arrays- one dimensional array, simple programs.

Reference Books:

1. R.P. Jain ,Modern Digital Electronics 2/e, Tata McGraw Hill Publishing Co. Ltd., New Delhi.
2. A.P.Malvino & D.P.Leach, Digital Principles and Applications, Tata McGraw Hill Publishing .
3. T.L. Floyd, Digital Fundamentals - Pearson Education, 8/e.
4. A. Marris Mano, Computer System Architecture, 2nd Edition, Prentice Hall
5. Balaguruswamy, C Fundamentals, TMH Publications




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Subject : ELECTRONICS PRACTICAL

Semester : V

Paper : V

Title : Digital Electronics and C-programming Lab No of hours per week : 3

1. Realization of Half/Full adder using basic and universal gates.
2. Realization of Half/Full subtractor using basic and universal gates
3. Parallel adder using IC 7483
4. Encoder and Decoder using IC 74147 and IC 74148 respectively
5. Truth table verification of
 - a. RS Flip flop
 - b. JK flip flop
 - c. JK Master Slave
 - d. T type
 - e. D Type
6. Realization of Multiplexer/ De-Multiplexer using logic gates and appropriate IC
7. Design of synchronous & asynchronous 3 bit mod n counter using IC 7476 ,IC 7490 & IC 74193
8. Design of 4-bit Shift Register:SISO,SIPO,PISO,PIPO using IC 7474 ,IC 7476 & IC 74175
9. Implementation of Johnson & ring counter
10. Design of code converters- binary to gray , gray to binary.

(Minimum 8 experiments should be performed)




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Subject : ELECTRONICS

Semester : VI

Paper VII : Microcontroller and Applications

Paper : VII

No of hours : 45

No of hours per week : 3

Unit 1. Architecture:

Microprocessors & Micro controllers: History of micro controller, Comparison of Microprocessor & Microcontroller. RISC, CISC, and Harvard & Non-Neumann CPU architectures. The 8051 Architecture: general feature, PIN diagram, Block diagram of description of 8051. Function of various registers, PSW, SFRs, internal memory organization. Stack, internal and external memory.

Unit 2. Instruction set & Programming:

Introduction, addressing modes, classification of instruction set and simple programs. Bit level and Byte level logical instructions rotate swap jump and call interactions. Programs: Addition, subtraction, multiplication division, finding biggest and smallest value of given series and arranging numbers in ascending and descending order.

Unit 3: Hardware features & Interfacing:

Timers and counter: introduction structure of TCON and TMOD,

interrupts: types, IE and IP registers.

Serial communication: structure of SCON, SBUF register and working of serial port.

Interfacing & Applications: introduction, need for interfacing, 16x2 line LCD, LED, keyboard, ADC, DAC and stepper motor.

Reference Books:

- 1. Kenneth. J. Ayala, "The 8051 Microcontroller Architecture, Programming and Application" II Edition.
- 2. Mohammed Ali Maszidi, "The 8051 Microcontroller and Embedded system"
- 3. Umamaheshwar V "Microcontroller and applications"
- 4. V.Udayshankara and M. S. Mulikarjun, "8051 Microcontroller: Hardware, Software and Applications", Swami-McGraw Hill.




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Subject : ELECTRONICS PRACTICAL

Semester : VI

Paper : VII

Title : Microcontroller Lab

No of hours per week : 3

Programming

1. Data transfer: Block move, Exchange
2. Arithmetic Instructions: Addition, subtraction, multiplication, division, square and cube
3. Counters
4. Boolean and Logical Instructions.
5. Finding largest and smallest value of given series
6. Arranging the given series of numbers in ascending and descending order
7. Code conversion: BCD-ASCII, ASCII-Decimal, Decimal-ASCII, Hex-Decimal and Decimal-Hex

Interfacing

Write C /assembly language programs to interfacing modules to microcontroller

1. Interface alphanumeric 2x16 LCD panel to 8051 interface
2. Interface DAC to 8051 to generate different wave forms such as sine, square, triangular, ramp with varying frequency and amplitude
3. Interface stepper motor to 8051 to rotate in clockwise and anticlockwise direction
4. Hex key board – case study.
5. Interfacing ADC to verifying digital data.

(Minimum 8 experiments should be performed)

 Comment [U1]:


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Subject : ELECTRONICS
Semester : VI
Title : Communication Systems

Paper : VIII
No of hours : 45
No of hours per week : 3

Unit 1 : Television Communication :

Elements of TV System, Monochrome TV transmitter and receiver-block diagram and working. Aspect ratio, scanning-progressive scanning and interlaced scanning, Horizontal and Vertical scanning, CCIR-Standards. Composite video signal, channel bandwidth. Vestigial sideband transmission-merits and demerits, Camera tube: Image orthicon and vidicon camera tubes. Monochrome picture tube- Block diagram and working. Colour TV : primary colours, E_R , E_B , E_G signals, chrominance signal, additive mixing, compatibility,

Unit 2 : Fiber Optic Communication :

Principle of light transmission through fiber, Modes of fiber, Losses in fibers. Sources-LED & Semiconductor laser, photodiode detector, connectors and splicers. OFC transmitter and receiver-Block diagram, Merits and demerits of fiber.

Unit 3 : Satellite, Radar and Mobile Communication :

Satellite communication system, geosynchronous and non-synchronous satellite system. orbital velocity, Block diagram of satellite electronic system and Earth station.

Radar : Block diagram and Operation, Simple radar range equation. CW-radar-block diagram and working, Displays – A – Scope and PPI, Applications and limitations of radar.

Mobile Communication : Introduction, Basic cellular system, Frequency re-use. Hand off and cell splitting, Block diagram of mobile hand set, Advantages and disadvantages.

References books:

1. Anok Singh, (2004) Principles of Communication Engineering, Sathyaprakasam Publications.
2. George Kennedy, Electronic Communication Systems, McGraw Hill Book Company
3. Julati R.R., Monochrome and Colour Television, 1st ed, New Age International Publishers.
4. Roddy and Coolen, (2005) Communication System, 4th ed, Pearson Education.
5. Sanjeeva Gupta, Microwave Engineering
6. Sankar S.K., Optical Fibers and Fiber Optic Communication Systems, S.Chand and Company Ltd., New Delhi.
7. William CY Lee, Mobile Cellular Telecommunication, II Edition., TMH

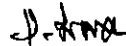
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Subject : ELECTRONICS PRACTICAL
Semester : VI
Title : Project

Paper : VIII
No.of Hours: 03H

1. Projects should be executed.
2. Projects must include Electronic Hardware and the Demonstration is Compulsory. Project Work shall be Completed Batch wise.
3. The Batch shall Consists a Maximum of 4 Candidates.
4. Project Viva-Voce Examination shall be Conducted Batch wise.




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