VIKRAMA SIMHAPURI UNIVERSITY::NELLORE

Common Framework of CBCS for Colleges in Andhra Pradesh

(A.P. State of Council of Higher Education)

B.Sc. Electronics Core Syllabus under CBCS

(*with effect from the Academic Year 2020-21*)

Course Structure

Structure of B.Sc. Electronics Core Syllabus under CBCS

Sem	Paper	Title of Course	Credits	Hrs	Marks		
					Int	Univ	Total
I	I	Circuit Theory and Electronic Devices	4	4	25	75	100
		Lab-I	1	2	0	50	50
II	II	Digital Electronics	4	4	25	75	100
		Lab-II	1	2	0	50	50
III	III	Analog Circuits and Communication	4	4	25	75	100
		Lab-III	1	2	0	50	50
IV	IV	Microprocessor Systems	4	4	25	75	100
		Lab-IV	1	2	0	50	50
IV	V	Micro Controller And Interfacing	4	4	25	75	100
		Lab- V	1	2	0	50	50
		Total	**25**	**30**	**125**	**625**	**750**

B.SC. ELECTRONICS SYLLABUS
(Choice-Based Credit System - W.E.F. 2020-21)

SEMESTER I

COURSE I : CIRCUIT THEORY AND ELECTRONIC DEVICES

Objectives:

- To explain the basic concepts and laws of DC and AC electrical networks and solve them using mesh and nodal analysis techniques.
- To analyze circuits in time and frequency domain.
- To synthesize the networks using passive elements
- To understand the construction, working and VI characteristics of electronic devices.
- To understand the concept of power supply.

UNIT- I: (12Hrs)

SINUSOIDAL ALTERNATING WAVEFORMS:

Definition of current and voltage. The sine wave, general format of sine wave for voltage or current, phase relations, average value, effective (R.M.S) values. Differences between A.C and D.C. Phase relation of R, L and C

UNIT-II: (12hrs)

PASSIVE NETWORKS AND NETWORKS THEOREMS (D.C):

Branch current method, Nodal Analysis, Superposition Theorem, Thevenin's Theorem, Norton's Theorem, Maximum Power, Milliman and Reciprocity theorems.

UNIT-III: **RC, RL AND RLC CIRCUITS: (12hrs)**

Frequency response of RC and RL circuits, their action as low pass and high pass filters. Passive differentiating and integrating circuits. Series resonance and parallel resonance circuits, Q – Factor.

UNIT-IV: **BJT, FET and UJT: (12hrs)**

BJT: Construction, working, and characteristics of CE Configurations. Hybrid parameters and hybrid equivalent circuit of CE Transistor,

FET: Construction, working and characteristics of JFET and MOSFET. Advantages of FET over BJT, JFET as an amplifier.

UNIT-V: POWER SUPPLIES (12hrs)

Rectifiers: Half wave, full wave rectifiers-Efficiency-ripple factor- Filters- L-section & π-section filters. Three terminal fixed voltage I.C. regulators (78XX and &79XX).

TEXT BOOKS:

1. Introductory circuit Analysis (UBS Publications) ---- **Robert L. Boylestad.**
2. Electronic Devices and Circuit Theory --- **Robert L. Boylestad & Louisashelsky.**
3. Circuit Analysis by **P.Gnanasivam- Pearson Education**
4. Electronic Devices and Circuit Theory --- **Robert L. Boylestad & Louis Nashelsky.**
5. Electronic Devices and Circuits I **– T.L.Floyd- PHI Fifth Edition**

REFERENCE BOOKS:

1. Engineering Circuit Analysis **By: Hayt & Kemmerly - MG.**

2. Networks and Systems – **D.Roy Chowdary.**

3.Unified Electronics (Circuit Analysis and Electronic Devices) **by Agarwal- Arora**

4.Electric Circuit Analysis- **S.R. Paranjothi**- New Age International.

5. Integrated Electronics – **Millmam & Halkias.**
6. Electronic Devices & Circuits – **Bogart.**
7. Sedha R.S., A Text Book Of Applied Electronics, S.Chand & Company Ltd

Outcomes:-

- ✓ Apply concepts of electric network topology, nodes, branches, loops to solve circuit problems including the use of computer simulation.
- ✓ Apply time and frequency concepts of analysis.
- ✓ Synthesize the network using passive elements.
- ✓ Know about amplifier circuits, switching circuits and oscillator circuits their design and use in electronics.
- ✓ Design and construction of a power supply.

ELECTRONICS LAB-I

(Circuit Theory and Electronic Devices)

LAB LIST: (any 6 experiments)

1. Thevenin's Theorem-verification
2. Norton's Theorem-verification
3. Maximum Power Transfer Theorem-verification
4. LCR series resonance circuit.
5. BJT input and output characteristics
6. FET Output and transfer characteristics
7. LDR characteristics
8. IC regulated power supply(IC-7805)

Lab experiments are to be done on breadboard and simulation software (using multisim) and output values are to be compared and justified for variation.

FIRST YEAR SEMESTER –I
SUB: ELECTRONICS
PAPER-I : CIRCUIT THEORY AND ELECTRONIC DEVICES
MODEL PAPAER

Time : 3hours ***Max marks : 75***

PART – A

Answer any FIVE questions. Each question carries 5 Marks. 5 X 5 = 25M

1) Explain the Sinusoidal wave representation of an alternating voltage signal.
2) Derive an expression for Average value of AC sinusoidal signal.
3) Explain about Node Voltage method in a circuit having two loops and two energy sources.
4) State and prove Millman's theorem.
5) Explain about R-C circuit as an integrator.
6) Distinguish between LCR series and parallel resonance circuits.
7) What are the advantages of FET over BJT.
8) Explain about Hybrid parameters.
9) Draw the circuit diagram of half wave rectifier and explain its working.
10) Explain about three terminal voltage regulators

.

PART-B

Answer any FIVE questions. Each question carries 10 Marks. 5 X 10 = 50 M

UNIT-I

11) Derive the expressions for the phase relation between Voltage and Current in an Inductor and in a capacitor.
12) Explain the differences between AC and DC.

UNIT-II

13) State and prove Thevenin's theorem.
14) State and prove Maximum power transfer theorem.

UNIT-III

15) Explain the frequency response of R – L low pass and high pass filters..
16) Explain about LCR series resonance . obtain the expressions for total impedance, resonant frequency and Q-factor.

UNIT-IV

17) Explain the input and output characteristics of CE transistor.
18) Explain the construction, working and characteristics of JFET.

UNIT-V

19) Explain the working of a full wave rectifier. Also derive the expressions for average value, RMS value, efficiency and ripple factor.

20) Explain about L-section and π-section filters

BLUE PRINT

UNIT	ESSAY QUESTIONS (10 Marks)	SHORT QUESTIONS (5 Marks)
I	2	2
II	2	2
III	2	2
IV	2	2
V	2	2

NOTE : Please strictly follow the syllabus and set the question paper as per the BLUE PRINT given. **TWO Essay** type questions and **TWO Short** questions are compulsory in each unit.

B.SC. ELECTRONICS SYLLABUS UNDER CBCS

w.e.f. 2020-21

SEMESTER –II

COURSE II : DIGITAL ELECTRONICS

Objectives:

- To understand the number systems, Binary codes and Complements.
- To understand the Boolean algebra and simplification of Boolean expressions.
- To analyze logic processes and implement logical operations using combinational logic circuits.
- To understand the concepts of sequential circuits and to analyze sequential systems in terms of state machines.
- To understands characteristics of memory and their classification.
- To implement combinational and sequential circuits using VHDL.

Unit – I **(12hrs)**

NUMBER SYSTEM AND CODES: Decimal, Binary, Hexadecimal, Octal. Codes: BCD, Gray and Excess-3 codes- code conversions- Complements (1's, 2's,9's and 10's), Addition - Subtraction using complement methods.

Unit- II **(12hrs)**

BOOLEAN ALGEBRA AND THEOREMS: Boolean Theorems, De-Morgan's laws. Digital logic gates, Multi level NAND and NOR gates, Standard representation of logic functions (SOP and POS), Minimization Techniques (Karnaugh Map Method: 2,3 variables).

Unit-III **(12hrs)**

COMBINATIONAL DIGITAL CIRCUITS:

Adders-Half & full adder, Subtractor-Half and full subtractors, Parallel binary adder, Magnitude Comparator, Multiplexers (4:1)) and Demultiplexers (1:4), Encoder (8-line-to-3-line) and Decoder (3-line-to-8-line).

UNIT-IV **(12hrs)**

SEQUENTIAL DIGITAL CIRCUITS:

Flip Flops: S-R FF , J-K FF, T and D type FFs, Master-Slave FFs, Excitation tables, Registers:-Serial In Serial Out and Parallel In and Parallel Out, Counters Asynchronous-,Mod-8,Mod-10.

UNIT-V **(12hrs)**

MEMORY DEVICES:

General Memory Operations, ROM, RAM (Static and Dynamic), PROM, EPROM, EEPROM, EAROM,

TEXT BOOKS:

1. M.Morris Mano, " Digital Design " 3rd Edition, PHI, New Delhi.
2. Ronald J. Tocci. "Digital Systems-Principles and Applications" 6/e. PHI. New Delhi. 1999.(UNITS I to IV)
3. G.K.Kharate-Digital electronics-oxford university press
4. S.Salivahana & S. Arivazhagan-Digital circuits and design
5. Fundamentals of Digital Circuits by Anand Kumar

Reference Books :

1. Herbert Taub and Donald Schilling. "Digital Integrated Electronics" . McGraw Hill. 1985.
2. S.K. Bose. "Digital Systems". 2/e. New Age International. 1992.
3. D.K. Anvekar and B.S. Sonade. "Electronic Data Converters : Fundamentals & Applications". TMH. 1994.
4. *Malvino and Leach. " Digital Principles and Applications". TMG Hill Edition.*

Outcomes:-

- ✓ Develop a digital logic and apply it to solve real life problems.
- ✓ Analyze, design and implement combinational logic circuits.
- ✓ Classify different semiconductor memories.
- ✓ Analyze, design and implement sequential logic circuits.
- ✓ Simulate and implement combinational and sequential logic circuits using VHDL

.

ELECTRONICS LAB-2

(DIGITAL ELECTRONICS LAB)

LAB LIST: (Any 6 experiments)

1. Verification of IC-logic gates
2. Realization of basic gates using discrete components (resistor, diodes & transistor)
3. Realization of basic gates using Universal gates (NAND & NOR gates)
4. Verify Half adder and full adder using gates
5. Verify Half subtractor and full subtractor using gates.
6. Verify the truth table Multiplexer and demultiplexer.
7. Verify the truth table Encoder and decoder.
8. Verify the truth table of RS , JK, T-F/F using NAND gates
9. 4-bit binary parallel adder and subtractor using IC 7483
10. BCD to Seven Segment Decoder using IC -7447/7448

Lab experiments are to be done on breadboard and simulation software (using multisim) and output values are to be compared and justified for variation.

FIRST YEAR SEMESTER –II
SUB: ELECTRONICS
PAPER-II : DIGITAL ELECTRONICS
MODEL PAPAER

Time : 3hours ***Max marks : 75***

PART – A

Answer any FIVE questions. Each question carries 5 Marks. 5 X 5 = 25M

1) What is a Gray Code? Explain the conversion of a Binary code to Gray code with an example.
2) Subtract $111011_{(2)}$ from $111100_{(2)}$ using 2's complement method.
3) Explain about Sum Of Products (SOP) and Product of Sums(POS) of Boolean Expressions.
4) State and explain Demorgan's Laws.
5) Explain about Half Adder.
6) Explain about 3x8 decoder.
7) What is a Flip flop? Explain about D - Flip flop.
8) Explain about serial in serial out shift register.
9) What is memory? Explain about memory operations.
10) Explain the working of Dynamic RAM.

PART-B

Answer any FIVE questions. Each question carries 10 Marks 5 X 10 = 50M

UNIT-I

11) Convert the following codes
A) $125.25_{(10)}$ = _____ (2) B) 11111101.111 (2) = _____ (10)
12) Explain about BCD and Excess – 3 codes.

UNIT-II

13) Draw the symbols and truth tables of AND, OR, NOT, NAND, NOR,eX-OR and eX-NOR Gates.
14) Simplify f(A,B,C,D) = $\sum$ m (0,1,2,4,5,7,8,10,12,13,14).

UNIT-III

15) Explain about a Full Subtractor. Derive the expressions for its Difference and Barrow.
16) Explain about two bit magnitude comparator.

UNIT-IV

17) Explain about J-K flip flop.
18) Explain about Decade (MOD – 10) counter.

UNIT-V

19) Explain about ROM organization.
20) What is PROM? Draw the organization of PROM for a Full Adder.

BLUE PRINT

UNIT	ESSAY QUESTIONS (10 Marks)	SHORT QUESTIONS (5 Marks)
I	2	2
II	2	2
III	2	2
IV	2	2
V	2	2

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B.SC. ELECTRONICS SYLLABUS

under CBCS w.e.f. 2020-21

SEMESTER-III

COURSE III : Analog Circuits and Communication

OBJECTIVES:

- **T**o understand the concepts, working principles and key applications of linear integrated circuits.
- To perform analysis of circuits based on linear integrated circuits.
- To design circuits and systems for particular applications using linear integrated circuits.
- To introduce students to various modulation and demodulation techniques of analog communication.
- To analyze different parameters of analog communication techniques.
- It also focuses on Transmitters and Receivers.

Unit – I **(12hrs)**

OPERATIONAL AMPLIFIERS: Definition, Characteristics of Op-Amp, Block diagram of op-amp, inverting, noninverting, virtual ground, , summing amplifier, subtractor, voltage follower, op-amp parameters, voltage to current convertor ,integrator, differentiator, differential amplifier, Logarithmic amplifier.

Unit- II: **(12hrs)**

OP-AMP CIRCUITS: voltage regulator, comparator, zero cross detecting circuit, instrumentation amplifier, Schmitt trigger. sine wave generator, square wave generator, triangular wave generator.

UNIT –III (12Hrs) AMPLITUDE MODULATION:

Need for modulation, amplitude modulation-frequency spectrum of AM wave, representation of AM, power relations in the AM wave. Generation of AM- Transistor modulators. Detection of AM signals – Diode detector.

UNIT-IV FREQUENCY MODULATION: ***(12hrs)***

Theory of FM, Frequency deviation and carrier swing, modulation index, deviation ratio, percent modulation. Mathematical representation of FM, frequency spectrum and bandwidth of FM waves, Generation of FM signals – Varactor diode modulator and Reactance modulator. Detection of FM waves – FM demodulation with discriminator.

UNIT-V RADIO BROADCASTING AND RECEPTION: ***(12hrs)***

Spectrum of electromagnetic waves, Radio broadcasting and reception, Transmitter, AM receivers- Straight forward receiver, Super heterodyne receiver. FM receivers.

TEXT BOOKS:

1. Op Amp and Linear Integrated Circuits By Ramakant Gaykwad
2. Linear Integrated Circuits By Roy Choudary
3. Unified Electronics Vol II – J.P. Agarwal and Amit Agarwal.
4. Electronic Communications - George Kennedy
5. Antennas and Wave Propagation – G.S.N.Raju – PHI
6. Principles of communication system –Herbert Taub & D.L.Schilling

Reference Books :

1. Jacob Millan ,Micro Electronics, McGraw Hill.
2. Mithal G K, Electronic Devices and Circuits Thana Publishers.
3. Allan Motter shead ,Electronic Devices and Circuits – An Introduction- Prentice Hall
4. Electronic Communications – Roody & Colen
5. Communication Systems – Hayken --- 4th Edition
6. Modern digital and analog communication system –B.P. Lathi

OUTCOMES:

✓ Understand the fundamentals and areas of applications for the integrated circuits.
✓ Analyze important types of integrated circuits.
✓ Demonstrate the ability to design practical circuits that perform the desired operation.
✓ Select the appropriate integrated circuit modules to build a given application.
✓ Use of different modulation and demodulation techniques used in analog communication.
✓ Identify and solve basic communication problems.
✓ Analyze transmitters and receiver circuits.

Electronics Lab - 3

(Analog Circuits and Communication)

LAB LIST: (Any 6 experiments)

1. Op-Amp as inverting and non-inverting
2. OpAmp Voltage follower and current follower.
3. Op-Amp as integrator and differentiator
4. Op-Amp as adder & subtractor
5. Op-Amp as voltage to current converter
6. Op-Amp as square wave generator
7. Amplitude modulation and demodulation.
8. AM Transmitter and Receiver.
9. FM Transmitter and Receiver.
10. OP-AMP as a wein bridge oscillator.

SECOND YEAR SEMESTER –III
SUB: ELECTRONICS
PAPER-III : ANALOG CIRCUITS AND COMMUNICATION
MODEL PAPAER

Time : 3hours ***Max marks : 75***

PART – A

Answer any FIVE questions. Each question carries 5 Marks. 5 X 5 = 25M

1) What are the characteristics of an ideal OP-AMP.
2) Explain the working of OP-AMP as an integrator.
3) Explain OP-AMP as a comparator.
4) Explain about OP-AMP as a voltage regulator.
5) What is need for modulation.
6) Derive the power relations in AM wave.
7) Explain about frequency deviation, carrier swing, modulation index of FM wave.
8) Explain about varactor diode reactance modulator.
9) Explain about radio broadcasting and reception.
10) Draw the block diagram of AM transmitter.

PART-B

Answer any FIVE questions. Each question carries 10 Marks. 5 X 10 = 50 M

UNIT-I

11) Draw the block diagram of Operational amplifier and explain its working.
12) Discuss the parameters of OP-AMP.

UNIT-II

13) Explain the working of OP-AMP as an Astable Multivibrator.
14) Explain the working of OP-AMP as a sine wave generator.

UNIT-III

15) Explain about the mathematical analysis of AM wave.
16) Explain about detection of AM wave.

UNIT-IV

17) Explain the mathematical representation of FM wave.
18) Explain about FM demodulation.

UNIT-V

19) What is super heterodyning? Explain about AM receiver.
20) Draw and explain the block diagram of FM transmitter.

BLUE PRINT

UNIT	ESSAY QUESTIONS (10 Marks)	SHORT QUESTIONS (5 Marks)
I	2	2
II	2	2
III	2	2
IV	2	2
V	2	2

NOTE : Please strictly follow the syllabus and set the question paper as per the BLUE PRINT given. **TWO Essay** type questions and **TWO Short** questions are compulsory in each unit.

B.SC. ELECTRONICS SYLLABUS UNDER CBCS

w.e.f. 2020-21 (revised in June 2020)

Semester –IV

COURSE IV : MICROPROCESSOR SYSTEMS

OBJECTIVES:

- To understand basic architecture of 16 bit and 32 bit microprocessors.
- To understand interfacing of 16 bit microprocessor with memory and peripheral chips involving system design.
- To understand techniques for faster execution of instructions and improve speed of operation and performance of microprocessors
- To understand RISC based microprocessors.
- To understand concept of multi core processors.

UNIT -I: **CPU ARCHITECTURE** **(12Hrs)**

Introduction to Microprocessor, INTEL -8085(P) Architecture, CPU, ALU unit, Register organization, Address, data and control Buses. Pin configuration of 8085. Addressing modes

UNITII: Instruction Set: **(12Hrs)**

Data transfer Instruction, Logical Instructions, Arithmetic Instructions, Branch Instructions, **Machine Control instructions.**

UNIT -III: **(12Hrs)**

Assembly Language Programming using 8085, Programmes for Addition, Subtraction, Multiplication, Division, largest and smallest number in an array.

UNIT -IV: **(12Hrs)**

8086 Microprocessor: Architecture, Pin description., Addressing modes, 8086 configurations: minimum mode and maximum mode.

UNIT -V: **(12Hrs)**

ARM PROCESSOR: Introduction to 16/32 bit processors, Arm architecture & organization, Arm based MCUs, Programming model. Instruction set.

TEXT BOOKS:

1. Microprocessor Architecture, Programming and Applications with the 8085 – Penram International Publishing, Mumbai.- Ramesh S. Gaonakar
2. Microcomputer Systems the 8086/8088 family – YU-Cheng Liu and Glenn SA Gibson
3. Microcontrollers Architecture Programming, Interfacing and System Design

   – **Raj Kamal** **Chapter: 15.1, 15.2, 15.3, 15.4.1**
4. 8086 and 8088 Microprocessor by Tribel and Avatar Singh

REFERENCES:

1. Microprocessors and Interfacing – Douglas V. Hall
2. Microprocessor and Digital Systems – Douglas V. Hall
3. Advanced Microprocessors & Microcontrollers - B.P.Singh & Renu Singh – New Age
4. The Intel Microprocessors – Architecture, Programming and Interfacing – Bary B. Brey.
5. Arm Architecture reference manual –Arm ltd.

OUTCOMES:

- The student can gain good knowledge on microprocessor and implement in practical applications
- Design system using memory chips and peripheral chips for 16 bit 8086 microprocessor.
- Understand and devise techniques for faster execution of instructions, improve speed of operations and enhance performance of microprocessors.
- Understand multi core processor and its advantages

ELECTRONICS LAB-IV

MICROPROCESSOR SYSTEMS

LAB LIST: (**any 6 experiments)**

Programs using Intel 8085 /8086

1. Addition and Subtraction (8 bit and 16-bit)
2. Multiplication and Division (8-bit)
3. Largest number in an array.
4. Smallest number in an array.
5. BCD to ASCII and ASCII to BCD .
6. Program To Convert Two Bcd Numbers In To Hex
7. Program To Convert Hex Number In To Bcd Number.
8. Program To Find The Square Root Of A Given Number.
9. Interfacing Experiments Using 8086 Microprocessor (Demo):
    1. Traffic Light Controller
    2. Elevator,
    3. 7-Segment Display

SECOND YEAR SEMESTER –IV
SUB: ELECTRONICS
PAPER-IV : MICROPROCESSOR SYSTEMS
MODEL PAPAER

Time : 3hours ***Max marks : 75***

PART – A

Answer any FIVE questions. Each question carries 5 Marks. 5 X 5 = 25M

1) Draw the pin out diagram of 8085 microprocessor.
2) What is a bus? Explain about address bus and data bus of 8085 microprocessor.
3) Explain about data transfer instructions of 8085 microprocessor .
4) Explain about machine control instructions of 8085 microprocessor.
5) Write an ALP to add two 8-bit numbers.
6) Write an ALP to multiply two 8-bit numbers.
7) Draw the pinout diagram of 8086 microprocessor.
8) Explain about register addressing mode in 8086.
9) Explain about 16 bit and 32 bit processors.
10) Explain about ARM based microprocessor unit.

PART-B

Answer any FIVE questions. Each question carries 10 Marks. 5 X 10 = 50 M

UNIT-I

11) Draw the architecture of 8085 processor and explain the function of each block.
12) Explain different addressing modes of 8085 microprocessor.

UNIT-II

13) Explain about branching instructions of 8085 microprocessor.
14) Explain about arithmetic instructions of 8085 microprocessor.

UNIT-III

15) Write an ALP to divide two 8-bit numbers.
16) Write an ALP to find the largest element form the given array of elements.

UNIT-IV

17) Draw the architecture of 8086 processor and explain the function of each block.
18) Explain about the instruction format of 8086 microprocessor.

UNIT-V

19) Draw and explain the architecture of ARM processor.
20) Explain about the programming model of ARM

BLUE PRINT

UNIT	ESSAY QUESTIONS (10 Marks)	SHORT QUESTIONS (5 Marks)
I	2	2
II	2	2
III	2	2
IV	2	2
V	2	2

NOTE : Please strictly follow the syllabus and set the question paper as per the BLUE PRINT given. **TWO Essay** type questions and **TWO Short** questions are compulsory in each unit.

B.SC. ELECTRONICS CBCS SYLLABUS

w.e.f. 2020-21 (revised in June 2020)
Semester –IV

COURSE V : MICRO CONTROLLER AND INTERFACING

OBJECTIVES:

- To understand the concepts of microcontroller based system.
- To enable design and programming of microcontroller based system.
- To know about the interfacing Circuits.

UNIT-I: (10Hrs) Introduction, comparison of Microprocessor and micro controller, Evolution of microcontrollers from 4-bit to 32 bit , Development tools for micro controllers, Assembler-Compiler-Simulator/Debugger.

UNIT -II: (10Hrs)

Microcontroller Architecture: Overview and block diagram of 8051, Architecture of 8051, program counter and memory organization, Data types and directives, PSW register, Register banks and stack, pin diagram of 8051.

UNIT-III: (10Hrs)

Addressing modes, instruction set of 8051: Addressing modes and accessing memory using various addressing modes, instruction set: Arithmetic, Logical, Simple bit, jump, loop and call instructions and their usage.

Unit -IV: (15Hrs)

Assemble language programming Examples: Addition, Multiplication, Subtraction, division, arranging a given set of numbers in largest/smallest order.

UNIT-V : (15Hrs)

Interfacing and Application of Microcontroller: Interfacing of – PPI 8255, DAC (0804), displaying information on a LCD, control of a stepper Motor (Uni-Polar),

TEXT BOOKS:

1. The 8051 microcontroller and embedded systems using assembly and c-kennet j. Ayalam, Dhananjay V. gadre, cengage publishers

2.The 8051 microcontrollers and Embedded systems - By Muhammad Ali Mazidi and Janice Gillispie Mazidi – Pearson Education Asia, 4th Reprint, 2002.

REFERENCE BOOKS:

1. Microcontrollers Architecture Programming, Interfacing and System Design – **Raj Kamal.**
2. The 8051 Microcontroller Architecture, Programming and Application- **Kenneth J. Ajala ,** west publishing company (ST PAUL, NEW YORK, LOS ANGELES, SAN FRANCISCO).
3. Microcontroller theory and application-Ajay V. Deshmukh

OUTCOMES:

- The student can gain good knowledge on microcontrollers and implement in practical applications
- learn Interfacing of Microcontroller
- get familiar with real time operating system

ELECTRONICS LAB-V
MICROCONTROLLER LAB

LAB LIST: (any 6 experiments)

1. Addition And Subtraction Of Two 8-Bit Numbers.
2. Multiplication And Division Of Two 8-Bit Numbers.
3. Largest number /smallest in an array.
4. Exchange Of Higher And Lower Nibbles In Accumulator.
5. Addition Of Two 8-Bit Numbers (Keil Software).
6. Addition Of Two 16-Bt Numbers (Keil Software)
7. Subtraction Of Two 8-Bit Numbers (Keil Software).
8. Subtraction Of Two 16-Bit Numbers (Keil Software).
9. Multiplication Of Two 8-Bit Numbers (Keil Software).
11. Program For Swapping And Compliment Of 8-Bit Numbers (Keil Software).
12. Program To Find The Largest Number In Given Array (Keil Software).
13. Program To Find The Smallest Number In Given Array (Keil Software).
14. Interfacing Led To 8051 Microcontroller (Keil Software).
15. Interfacing Buzzer To 8051 Microcontroller (Keil Software).
16. Interfacing Relay To 8051 Microcontroller (Keil Software).
17. Interfacing Seven Segments To 8051 Microcontroller (Keil Software).

THREE YEAR (CBCS) DEGREE EXAMINATION
SECOND YEAR SEMESTER –IV
SUB: ELECTRONICS
PAPER-V : MICROCONTROLLER AND INTERFACING
MODEL PAPAER

Time : 3hours ***Max marks : 75***

PART – A

Answer any FIVE questions. Each question carries 5 Marks. ***5 X 5 = 25M***

1) Distinguish between microprocessor and microcontroller.
2) Explain the function of assembler, debugger.
3) Explain about PSW register of 8051.
4) Explain about data types and assembler directives
5) Explain about simple bit instructions.
6) Explain about various CALL instructions.
7) Write an ALP to add two 8-bit numbers.
8) Write an ALP to multiply two 8-bit numbers.
9) Explain the interfacing of LCD with 8051 microcontroller.
10) Explain the interfacing of DAC with 8051 microcontroller.

PART - B

Answer any FIVE questions. Each question carries 10 Marks. 5 X 10 = 50M

UNIT-I

11. Explain evolution of microcontrollers from 4-bit to 32-bit.
12. What are the development tools for micro controllers.

UNIT-II

13. Draw and explain the architecture of 8051 microcontroller.
14 .Explain about memory organization.

UNIT-III

15. Explain the arithmetic and logical instructions of 8051.
16. What are the different addressing modes of 8051? Explain with 2 examples each.

UNIT-IV

17. Write an ALP to divide two 8-bit numbers.
18. Write an ALP to find the smallest element from the given array of elements.

UNIT-V

19. Explain the interfacing of 8255 PPI with 8051.
20. Explain the control of a stepper motor.

BLUE PRINT

UNIT	ESSAY QUESTIONS (10 Marks)	SHORT QUESTIONS (5 Marks)
I	2	2
II	2	2
III	2	2
IV	2	2
V	2	2

NOTE : Please strictly follow the syllabus and set the question paper as per the BLUE PRINT given. **TWO Essay** type questions and **TWO Short** questions are compulsory in each unit.