Vijaya College, RV Road, Bengaluru-560004

Department of Electronics

NAAC criteria-1: CURRICULAR ASPECTS for the academic year 2023-2024

1. Academic Planner with unitisation of the Entire Syllabus (on hourly basis)
(NEP Syllabus for 1st and 3rd and 5th Semester)

Name of the Department	Electronics	Subject Title	Teacher
Semester	I	Electronics Devices and Circuits	
Week/Month & Date (Preferably)	Day	Portions Planned for 1 hour	
3rd week of Sept		Review of passive components – R, L & C	RMS
		Review of Number systems – types, Binary, Octal and Hexadecimal	MSB
		Bipolar Junction Transistor-Construction, principle & working of NPN transistor, Terminology	SMM
		Review of PN junction diode and diode approximations.	SMM
4th week of Sept		Ideal and practical voltage and current sources, Inter conversion from each other numerical problems.	MSB
		Inter conversion of the Binary number into Decimal and vice versa.	MSB
		RPS Block diagram , Rectifiers – HWR, FWR-(center tapped and bridge) . Circuit diagrams, working ,equations	SMM
		Configuration – CE, CB, CC (mention only). Current gains α, β and γ and their interrelations	RMS
1st week of Oct		Ohms law, Kirchhoff's laws,--statements, numerical problems	MSB
		Inter conversion of the Octal number system to Decimal and vice versa and numerical problems	MSB
		leakage currents(mention only), numerical problems.	RMS
		ripple factor & efficiency(no derivations), comparison and numerical problems.	SMM
2nd week of Oct		voltage divider and current divider theorems, numerical problems.	MSB
		Inter conversion of the Hex and decimal num into Decimal and vice versa - numerical problems	MSB
		Filters in power supply-- circuit diagram and explanation of shunt capacitor filter with wave forms.	RMS

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	Study of CE Characteristics - different regions. Experimental circuit and procedure.	**SMM**
3rd week of Oct	open and short circuits. Thevenin's theorem statement and steps, numerical problems.	**MSB**
	Arithmetic operations on Binary numbers –addition	**MSB**
	CB Characteristics in transistor - different regions, Base width modulation-Early effect. h parameters –definitions of h_{ie}, h_{oe}, h_{fe} and h_{re}	**RMS**
	Voltage regulator using Zener diode – circuit diagram and explanation for load and line regulation,	**SMM**
4th week of Oct	Norton's theorem statement and steps. Numerical problems .Viva questions	**MSB**
	Arithmetic operations on Binary numbers –addition	**MSB**
	numerical problems on load regulation	**RMS**
	Transistor biasing – need for biasing, DC load line, Q point, thermal runaway, stability and stability factor. Numerical problems and viva questions	**SMM**
1st week of Nov	superposition theorem–statements and steps involved, problems and viva questions.	**MSB**
	Hexadecimal numbers – arithmetic operations addition	**MSB**
	Types of biasing– Fixed bias(base bias) without and with R_E, collector to base bias Problems.	**RMS**
	Numerical problems and disadvantages of Zener diode regulator.	**SMM**
2nd week of Nov	reciprocity theorem– statement, and steps, numerical problems	**MSB**
	Arithmetic operations on Hexadecimal numbers continued	**MSB**
	Voltage regulator using transistor – circuit diagram and working	**RMS**
	voltage divider bias and emitter bias (+V_{CC} and –V_{EE} bias) –circuit diagrams and their working	**SMM**
3rd week of Nov	Problems on reciprocity theorem.	**MSB**
	Arithmetic operations on Binary numbers – subtraction	**MSB**
	Q point expressions for voltage divider biasing only with numerical problems	**RMS**
	Problems on voltage regulators	**SMM**
4th week of Nov	maximum power transfer theorem-Analysis, numerical problems.	**MSB**

	Arithmetic operations on Binary and Hexa decimal numbers - addition	**MSB**
	Arithmetic operations on Binary and Hexa decimal numbers - subtraction	**MSB**
	Transistor h parameter equivalent circuit	**SMM**
1st week of Dec	numerical problems on maximum power transfer theorem,RC Transient analysis	**MSB**
	Complement Subtraction operations on Binary numbers - 2's complement	**MSB**
	Small Signal amplifier, CE amplifier –operation Analysis using re model	**RMS**
	Expressions for current, voltage gain and input/ output impedances	**RMS**
2nd week of Dec	Series RC circuit excited by DCsource-charging& discharging of a capacitor through resistor- circuit diagram and qualitative study,charge	**MSB**
	Numerical problems on transient RC circuit.	**SMM**
	Types of codes, Positional and non positional. BCD, 2421 codes etc.	**MSB**
	Common collector amplifier, advantages, GBW analysis, darlington pair	**RMS**
3rd week of Dec	Transient analysis of RL circuits , growth and decay of current-derivation.	**MSB**
	XS-3 and Gray codes, self complement property, ASCII, EBCDIC codes	**MSB**
	problems on transient response of RC and RL circuits.	**SMM**
	RC and RL series circuits excited by ac, Impedance, Phase and voltage relations- numerical problems	**MSB**
4th week of Dec	RLC series and parallel ac circuits, Impedance, Phase and voltage relations, frequency, bandwidth, q factor- numerical problems	**MSB**
	Boolean equations and logic operators	**SMM**
	Special semiconductor devices-LED	**RMS**
	LCD and solar cell	**SMM**
5th week of Dec	AND, OR, NOT Boolean law	**MSB**
	De Morgan's Theorems	**MSB**

	Boolean algebra and simplifications	**MSB**
	LED 7 Segment display construction and operation	**SMM**
1st week of Jan	Derived logic gates, Universal property, simplifications	**MSB**
	Revision on network theorems and transient response of passive components	**MSB**
	Previous year question papers discussion	**RMS**
	Solving new model papers	**SMM**
	Revision on network theorems and transient response of passive components and network theorems	**MSB**
	Open book theory paper test 1	**RMS**
2nd week of Jan	Revision on network theorems and transient response of passive components	**MSB**
	Previous year question papers solved along with model papers	**RMS**
	Previous year question papers solved along with model papers	**SMM**
	Open book theory paper test	**MSB**

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NAAC criteria-1: CURRICULAR ASPECTS for the academic year 2023-2024

2. Academic Planner with unitisation of the Entire Syllabus (on hourly basis)
(NEP Syllabus for 1st and 3rd and 5th Semester)

Name of the Department	Electronics	Subject Title	Teacher
Semester	III	DIGITAL DESIGN USING VERILOG AND 'C' PROGRAMMING	
Week/Month & Date (Preferably)	Day	Portions Planned for 1 hour	
1st week of Oct		**UNIT 1** **Introduction to C Programming Introduction to C Programming** **C Programming**: Introduction, Importance of C.	MSB
2nd week of Oct		Character set.	MSB
		Tokens, keywords, identifier, constants	MSB
		Basic data types, variables: declaration & assigning values. Structure of C program	SMM
		Unit test1	MSB
3rd week of Oct		Arithmetic operators, relational operators.	MSB
		Logical operators, assignment operators,	MSB
		Increment and decrement operators	MSB
		conditional operators,	SMM
4th week of Oct		bitwise operators, expressions and evaluation of expressions, type cast operator	MSB
		Implicit conversions, precedence of operators	MSB
		Input output statement – sprintf(), scanf() and getch(), and math library functions.	MSB

1st week of Nov		
	Decision making, branching, and looping: if, if-else, else-if, switch statement, break	**MSB**
	For loop, while loop and do loop. string related library functions	**SMM**
	Lab programs corresponding to arrays (Matrix programs)	**MSB**
	Format, Integers, reals and strings.	**MSB**
	UNIT.2 Names used as pointers, pointers used as arrays, pointers and text strings, pointers as function parameters.	**MSB**
	Arrays: Basics of arrays, declaration, accessing elements, storing elements, two-dimensional and multi- dimensional arrays	**SMM**
2nd and 3rd week of Nov	**Functions**: Defining functions, function arguments and passing, returning values from functions, example programs.	**MSB**
	Pointers. pointer declaration, assigning values to pointer and arithmetic	**MSB**
	Structures: Structure type declarations, structure declarations, referencing structure members, referencing whole structures, initialization of structures, structure bit fields	**SMM**
4th week of Nov	**Unit 3** **Introduction to Verilog** A Brief History of HDL, Structure of HDL Module, Comparison of VHDL and Verilog Introduction to Simulation and Synthesis Tools, Test Benches. Language Elements- Keywords, Identifiers, Comments, format, Integers, reals and strings. Logic Values, Data Types-net types, undeclared nets, scalars and vector nets.	**MSB**
	Register type, Parameters. Verilog: Module, Delays, brief description -	**MSB**
1st week of Dec	Data flow style, behavioral style,	**MSB**

	structural style, mixed design style, simulating design	**MSB**
	Gate level modeling - Introduction, built in Primitive Gates, multiple input gates	**SMM**
2nd week of Dec	Data flow Modeling: Continuous assignment	**MSB**
	Class test on chaptor 1	**MSB**
	Class test on chaptor2	**SMM**
3rd week of Dec	Class test on chaptor3	**MSB**
	Unit 4 **Data flow Modeling and Behavioral ;Modeling,introduction**	**MSB**
	Data flow Modeling: Continuous assignment	**MSB**
	Net declaration assignments, delays, net delays and examples.	**SMM**
3rd week of Dec	Behavioral Modeling	**MSB**
	Conditional statement, loop statement, procedural continuous assignment, Illustrative Examples	**MSB**
		MSB
4thweek of Dec	Solving previous year question papers	**MSB**
	Comparing structure variables, array of structures, arrays within structures.	**MSB**
	Solving previous year question papers	**MSB**
	Structures within structures, structures and function.	**SMM**
1stweek of Jan	Solving previous year question papers	**MSB**
	Department level test	**MSB**
	Solving previous year question papers	**MSB**
		SMM
	Revision on C programming and lab programs	**SMM**

	Solving previous year question papers		**SMM**
1st week of Jan	Revision on C programming and lab programs		**MSB**
	Solving previous year question papers		**MSB**
	Solving previous year question papers		**SMM**
	Revision on C programming and lab programs		**MSB**
	Solving previous year question papers		**MSB**

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NAAC criteria-1: CURRICULAR ASPECTS for the academic year 2021-2022

3. Academic Planner with unitisation of the Entire Syllabus (on hourly basis)
(NEP Syllabus for 1st and 3rd and 5th Semester)

Name of the Department	Electronics	Subject Title	Teacher
Semester	**V**	Paper 5 COMMUNICATION-II	
Week/Month & Date (Preferably)	**Day**	**Portions Planned for 1 hour**	
1st week of Oct	1	**UNIT 1.Microwave Devices:** RF/Microwaves, EM spectrum, Wavelength and frequency.	**RMS**
	2	Rectangular waveguides, circular waveguides, microwave cavities	**RMS**
	3	Microwave hybrid circuits, directional couplers, circulators and isolators	**SMM**
2nd week of Oct	1	GUNN diode, READ diode	**RMS**
	2	IMPATT diode, BARITT diode	**RMS**
	3	PIN diodes, Schottky barrier diodes	**SMM**

3rd week of Oct	1	Multi cavity Klystron,	RMS
	2	Magnetron,	SMM
	3	Block diagram of Microwave communication and working, Applications.	RMS
4th week of Oct	1	**Unit 2.** **Digital Communication:** Block diagram of digital transmission and reception, Bit Rate and Baud. , ,	SMM
	2	Amplitude Shift Keying (ASK), Frequency Shift Keying (FSK),	RMS
	3	Phase Shift Keying (PSK), Binary Phase Shift Keying (BPSK)	RMS
1st week of Nov	1	Quadrature Phase Shift Keying (QPSK),	SMM
	2	8PSK, 16PSK, 64PSK - definition and waveforms for each.	RMS
	3	Quadrature amplitude modulation (QAM): 16 QAM	RMS
2nd week of Nov	1	64 QAM - definition and waveforms for each.	SMM
	2	Advantage and disadvantages of digital transmission,	RMS
	3	Characteristics of data transmission circuits – Shannon limit for information capacity	RMS
3rd week of Nov	1	Bandwidth requirements, data transmission speed,	RMS
	2	noise, cross talk, echo suppressors	SMM
	3	distortion and equalizer, MODEM– modes and classification	RMS
4th week of Nov	1	**UNIT3.** **Cellular Communication:** Concept of cellular mobile communication	SMM
	2	Cell and cell splitting, frequency bands used in cellular communication	RMS
	3	Absolute RF channel numbers (ARFCN), frequency reuse	SMM
	1	Roaming and hand off,	RMS

5th week of Nov	2	Authentication of the SIM card of the subscribers, IMEI number, concept of data encryption.	**SMM**
	3	Multiplexing, FDMA, WCDMA, TDMA, OFDMA, GSM- Qualitative analysis.	**RMS**
1st week of Dec	1	Bluetooth, Zigbee, Wi-Fi, MIMO	**SMM**
	2	LTE, 5G technology and CV2X- qualitative analysis.	**RMS**
	3	Simplified block diagram of cellular phone handset. Wireless channel characteristics.	**SMM**
2nd week of Dec	1	**Unit 4** **Computer Networks:** Introduction to Networks, Categories of Networks, Layered tasks, OSI Model, Layers in OSI model, networks.	**SMM**
	2	TCP/IP Suite, Addressing, Switching, Telephone and cable networks for data transmission, Telephone networks	**RMS**
	3	Dial up modem, DSL, Cable TV for data transmission. Wired LAN	**SMM**
3rd week of Dec	1	Ethernet, IEEE standards, Standard Ethernet. Changes in the standards	**RMS**
	2	Fast Ethernet, Gigabit Ethernet, Wireless LAN IEEE 802.11a/b/g/n, Connecting LANs.	**SMM**
	3	Department level test	**RMS**
4th week of Dec	1	Open book exam.	**SMM**
	2	Text book questions solutions	**SMM**
	3	Numerical problems on data transmission speed	**SMM**
1st week of Jan	1	Revision of chaptor1	**RMS**
	2	Revision of chaptor2.	**SMM**
	3	Revision and model paper2 solving.	**RMS**
1st week of Jan	1	Revision and model paper2 solving.	**RMS**

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4.   Academic Planner with unitisation of the Entire Syllabus (on hourly basis) (NEP Syllabus for 1st and 3rd and 5th Semester)

Name of the Department	Electronics	Subject Title --Embedded Controllers	Teacher
Semester	**V**	Paper 6	
Week/Month & Date (Preferably)	**Day**	**Portions Planned for 1 hour**	
1st week of Oct	1	**UNIT1.** **Introduction to Microprocessors and Microcontrollers**.	**MSB**
	2	Microprocessor Architecture- Harvard and Van-Neumann Architecture	**MSB**
	3	CISC and RISC processors and their architectures.	**MSB**
2nd week of Oct	1	Difference between microprocessor and microcontroller	**MSB**
	2	Introduction to Embedded Systems, Examples of Embedded Systems,	**MSB**
	3	Design Parameters of Embedded Systems, Embedded	**MSB**
3rd week of Oct	1	Software Development Tools: Integrated Development Environment(IDE).	**MSB**
	2	Editor, Assemblers, Compilers, linker, loader.	**MSB**
	3	Instruction Set Simulator(ISS)	**MSB**
4th week of Oct	1	Debugging Tools and Techniques, Emulators.	**MSB**
	2	8051 Microcontroller: Architecture, Registers	**MSB**
	3	Pin diagram, I/O ports functions,	**MSB**
1st week of Nov	1	Internal Memory organization	**MSB**
	2	External Memory (ROM & RAM) interfacing	**MSB**
	3		**MSB**

2nd week of Nov	1	**UNIT2.** **Instruction set and Interfacing of 8051.**	**MSB**
	2	Instruction set.	**MSB**
	3	Addressing Modes	**MSB**
3rd week of Nov	1	Simple Assembly language program examples to use the instructions of 8051	**MSB**
	2	Stack and Subroutine instructions.	**MSB**
	3	Assembly language Illustrative programs	**MSB**
4th week of Nov	1	Timer/counter	**MSB**
	2	Serial communication	**MSB**
	3	Interrupts and interfacing of 8051.	**MSB**
5th week of Nov	1	**UNIT3** **PIC18 Microcontrollers:** Overview of the PIC microcontroller family.	**MSB**
	2	Architecture and features of 18F458,	**MSB**
	3	Memory organization, Data memory organization,	**MSB**
1st week of Dec	1	EEPROM, flash memory, Special Function Registers	**MSB**
	2	Program Counter, Configuration registers, Stack memory	**MSB**
	3	Interrupts, I/O ports, Timers, USART, Capture/Compare/PWM (CCP)	**MSB**
2nd week of Dec	1	Modules, MSSP Serial Port, CAN module	**MSB**
	2	ADC, Special features of the CPU, Oscillator sources.	**MSB**
	3	Clock source switching, Instruction set. Watchdog Timer.	**MSB**
3rd week of Dec	1	**UNIT4.** **Hardware interfacing and Microcontroller Programming in C:** Data types and time delays, Data Serialization in C.	**MSB**

2nd week of Nov	1	**UNIT2.** **Instruction set and Interfacing of 8051.**	**MSB**
	2	Instruction set.	**MSB**
	3	Addressing Modes	**MSB**
3rd week of Nov	1	Simple Assembly language program examples to use the instructions of 8051	**MSB**
	2	Stack and Subroutine instructions.	**MSB**
	3	Assembly language Illustrative programs	**MSB**
4th week of Nov	1	Timer/counter	**MSB**
	2	Serial communication	**MSB**
	3	Interrupts and interfacing of 8051.	**MSB**
5th week of Nov	1	**UNIT3** **PIC18 Microcontrollers:** Overview of the PIC microcontroller family.	**MSB**
	2	Architecture and features of 18F458,	**MSB**
	3	Memory organization, Data memory organization,	**MSB**
1st week of Dec	1	EEPROM, flash memory, Special Function Registers	**MSB**
	2	Program Counter, Configuration registers, Stack memory	**MSB**
	3	Interrupts, I/O ports, Timers, USART, Capture/Compare/PWM (CCP)	**MSB**
2nd week of Dec	1	Modules, MSSP Serial Port, CAN module	**MSB**
	2	ADC, Special features of the CPU, Oscillator sources.	**MSB**
	3	Clock source switching, Instruction set. Watchdog Timer.	**MSB**
3rd week of Dec	1	**UNIT4.** **Hardware interfacing and Microcontroller Programming in C:** Data types and time delays, Data Serialization in C.	**MSB**

	2	Program ROM allocation, Data RAM allocation, I/O Programming	**MSB**
	3	Timer programming, Automatic Stack operations,	**MSB**
4th week of Dec	1	Programmer access to the Stack, serial port programming,	**MSB**
	2	Interrupt programming, generation of Introduction to Communication Protocols – RS 232, I2C, USB, USART, SPI, CAN, and IrDA	**MSB**
	3	PWM signal PWM Motor Control with CCP. Interfacing to 8051 and PIC: Switch, LED, seven segment LED, Keyboard, LCD	**MSB**
1st week of Jan	1	External ADC, DAC interfacing, Stepper motor, DC motor interfacing, Real time clock (RTC) and serial ADC.	**MSB**
	2	Erasing and Writing Flash & EEPROM Memories For Data Storage. Sensor Interfacing and Signal Conditioning Standard.	**MSB**
	3	Department level test	**MSB**
2nd week of Jan	1	Revision of unit 1 and2	**MSB**
	2	Revision of unit3 and 4	**MSB**
	3	Model question papers discussion	**MSB**