<div align="center">**PROGRAMME AND COURSE OUTCOME**</div>

SUBJECTS – ELECTRONICS

PROGRAMME OUTCOME	The curriculum in the Subject of Electronics (Six semester course) prepares students for position as ❖ Opportunities in private sector such as :- ▪ Service Engineer ▪ Broadcast and Sound Technician ▪ Electronic sales manager ▪ Communication system operator ▪ Technical Head – Electronics ❖ M.Sc. Electronics specialize in sub disciplines within the field of Electronics ❖ One may go for Ph.D. Programme ❖ This will help enter domains such as Teaching (Lecturer) ❖ R & D (Scientist) ❖ Officer Jobs in Railway, SSC, Banking sector etc.
PROGRAMME SPECIFIC OUTCOME	❖ To have knowledge of various fundamentals of Electrical Ckts such as :- Transistor Vacuum Tubes Integrated Ckts Diodes Semiconductor ❖ To study Digital Electronics ❖ To study Analog Electronics. ❖ To have knowledge of Microprocessor and Microcontroller. ❖ To understand Communication system.
COURSE	OUTCOME
MICROPROCESSOR ARCHITECTURE & PROGRAMMING - 1	Simple Idea of three state switch & three state bus ,SAP-I Computer, Architecture, Instruction Set,SAP-II Architecture, Instruction set of SAP –II Computer Machine Cycle and Instruction Cycle, Addressing Modes, SAP-III programming Model, Architecture of 8085 Microprocessor, Pin Description of 8085, Instruction set of 8085, Fetching and Executing Instructions,
ELECTRONICS COMMUNICATION	Principle of modulation , amplitude modulation ,percent modulation mathematical analysis of a modulated carrier wave, power relations in an AM wave, Frequency modulation, FM Sidebands, modulation index, mathematical expression for FM wave, TV fundamentals: elements of TV system (625 lines), Aspect ratio, scanning, Kell factor, composite video signals Block diagram of monochrome TV transmitter and receiver, Compatibility, three color theory, luminance, Hue and saturation

MICROPROCESSOR ARCHITECTURE & PROGRAMMING - 2	Methods of Input/output operations, Data transfer Schemes, software Interrupts, Hardware interrupts, operational modes of 8255, control word format for 8255, Block diagram of 8253, control word format for 8253, Interfacing & programming of 8253, Block diagram, Programming of 8257, Applications to illustrate the use of Microprocessor
INTRODUCTION TO C & ITS PROGRAMMING	The character set, identifiers & keywords, data types, constants, variables & arrays declaration, expressions statements, symbolic constants. Operators and expressions The scanned function, The print function. Control statements, Defining a Function, Accessing a Function, an Array, Multidimensional arrays, arrays and strings, Fundamentals, pointer and one dimensional array, operations on pointers.
COMMUNICATION ELECTRONICS -1	Need for modulation. Block diagram of an electronic communication system. Electromagnetic communication spectrum, signal-to-noise (S/N) ratio. Amplitude Modulation, modulation index Concept of Single side band generation and detection. Frequency Modulation (FM) and Phase Modulation (PM), Sampling theorem, Basic Principles- PAM, PWM, PPM
MICROPROCESSOR	Input/Output Devices. Data storage (idea of RAM and ROM Memory Interfacing. Memory Map. Main features of 8085. Pin diagram of 8085. Instruction classification, Instructions set Subroutines, delay loops. Instruction cycle, Embedded systems and general purpose computer systems. Classifications, applications and purpose of embedded systems.
COMMUNICATION ELECTRONICS -2	Need for digital transmission, Pulse Code Modulation, Digital Carrier Modulation Techniques, Sampling, Quantization and Encoding. Introduction, need, Geosynchronous satellite orbits, , advantages of geostationary satellites. Uplink and downlink. GPS navigation system Basic concept of mobile communication, SIM number, IMEI number, Architecture of mobile communication network, idea of GSM, CDMA, TDMA and FDMA technologies, , 2G, 3G and 4G concepts
MICROCONTROLLER	Introduction and block diagram of 8051 microcontroller, architecture of 8051, overview of 8051 family, 8051 assembly language programming, register, pin out diagram of 8051 microcontroller, I/O port pins description & their functions Bit manipulation. 8051 addressing modes and accessing memory locations using various addressing modes, arithmetic and logic instructions ASCII and BCD conversions.
ANALOG ELECTRONICS	PN junction diode (Ideal and practical)-constructions, Diode Equation and I-V characteristics. Zener diode, Reverse saturation current. Half wave rectifier, Full wave rectifiers Filter-Shunt capacitor filter, h-parameter equivalent circuit. Two stage RC Coupled Amplifier Concept of feedback, Barkhausen criterion for sustained oscillations. Phase shift and Colpitt's oscillator.

NETWORK ANALYSIS & ELECTRONICS DEVICES	Concept of Voltage and Current Sources. Kirchhoff's Current Law, Kirchhoff's Voltage Law. Mesh Analysis. Node Analysis. Star and Delta networks, Star-Delta Conversion. Principal of Duality. Superposition Theorem. Thevenin Theorem. Norton's Theorem. Reciprocity Theorem. Maximum Power Transfer Theorem. h, y and z parameters and their conversion. JFET. Construction, UJT,
LINEAR & DIGITAL INTEGRATED CIRCUITS	Power supplies for ICs, Interpretation of data sheets, Characteristics of an Ideal and Practical Operational Amplifier (IC 741), CMRR. Slew Rate and concept of Virtual Ground. (1) Inverting and non-inverting amplifiers, (2) Summing and Difference Amplifier (3) Differentiator, (4) Integrator (5) Voltage to current converter (6) Active low pass and high pass Butterworth filter (7) Wein bridge oscillator R-2R D-A converters, circuit and working. A-D conversion characteristics,
DIGITAL ELCETRONICS	Decimal, Binary, Octal and Hexadecimal number systems, base conversions.Truth Tables of OR, AND, NOT, NOR, NAND,XOR, XNOR, Universal Gates, Karnaugh map Binary Addition. Adder. Subtractor, Multiplexers, De-multiplexers Block diagram of IC 555 SR, D, and JK Flip-Flops. Master-slave JK Flip-Flop, Shift Registers, Ring Counter. Asynchronous counters, Decade Counter. Synchronous Counter.