VEER NARMAD SOUTH GUJARAT UNIVERSITY
M.Sc(Tech) - I
Instrumentation

PAPER -II

General Electronics and Microprocessor

Typical electronic systems, classification of electronic systems and devices. junction diode, zener diode, voltage regulator special purpose diode rectifiers, filters, JFET.MOSFET,BJT integrated devices and circuit manufacture, transistor and intergrated circuit biasing, basic design. AC gain, input output impedances, some special circuit. Darlington pair, feedback, single and multi stage amplifiers. cascade amplifier, frequency response, amplifier classes, complementary symmetry circuits. new power transistor type of feed back circuits effects of feedback on impedance, negative feedback circuits, stability in feedback amplifies. oscillation operation. UJT oscillator, PLL

Basic operational amplifier OPAMP circuits, applications of OPAMPS linear and non-linear applications of OPAMP system of numbers, binary. octal, hexadecimal, BCD, Gray code, ASCII code conversion pvm one system to another.

Positive and negative logic, different logic gates, their symbols and truth tables, introduction to different logic families, TTL.ECL.CMOS.I L. merits and demerits.

K-Map and its application, binary adders,full adders, full adder as a subs tractor, arithmetic functions. decoder demultiplexer. date selector multiplexer, encoder, ROM , applications of ROM, 1 bit memory, Jlip-flops, shift resistors, synchronous counter, asynchronous counter applications of counter. RAM tristate buffer and multiplexed display system, A to D, D to A converters.

RECOMMENDED BOOKS

1. **Nagraths Electronics, Analog and Digital**
2. **Millman and Halkias, Integrated Electronics, McGraw Hill**
3. **Millman and Grabel, Microelectronics, McGraw Hill**

MICROPROCESSOR

What is microprocessor, need for microprocessor in instrumentation advantage of microprocessor in instrumentation.

Microprocessor Architecture Introduction, Registers, concept of date, address and data buses, memory (RAM, ROM and EPROM) input output devices, Microcomputer systems.

Instructions Timing and Programming Methods Instruction set and classifications. timing diagrams, fetch and execute cycles, addressing modes, assembly language programs, single stepping and single cycle utility routines in microprocessors kits, simple programming techniques like looping, counting, mdexing, sub-routines, parameter passing and software time delays.

Data transfer Techniques Synchronous and asynchronous data transfer, polling, incrrupt driven data transfer, masking of interrupts, serial data transfer, direct memory access data transfer. timing cycles, op-code fetch cycle, memory and I/O read and write cycles.

Parallel input/output and interfacing applications, Basic interfacing concepts, Interfacing of memory chips, Interfacing with seven segment display and keyboard.

General purpose peripheral devices block diagram, pin configuration and operating modes of 8251, 8254,8255,8259, 8279 (or their currently available functionally equivalent/upgrade) and DMA controller asynchronous receiver / transmitter (UART) etc. interfacing these chips to 8085

DAC & ADC : DAC & ADC chips and their interfacing.
Higher bit chips, brief description of 6800/ 68000 series, 8086,8088,80286, 80386, 80486 Pentium and other higher bit chips.

RECOMMENDED BOOKS

1. **R.S. Gaonkar microprocessor, architecture, programming and Applications, Penran International 1997.**
2. **Mathur, Introduction to Microprocessors,**
3. **B.B.Bray, Microprocessors Architecture programming and PHL 1997.**
4. **B.Ram fundamentals of microprocessors 2000.**