SARDAR PATEL UNIVERSITY
Programme: B.Sc (Electronics)
Semester: VI
Syllabus with effect from: June – 2020

Paper Code: US06CELE21	**Total Credit: 04**
Title of Paper: Discrete & Linear Circuits	

Unit	Description in detail
I	**Operational Amplifier** Block diagram of OP – AMP, Differential amplifier, virtual short concept, AC and DC parameters, Inverting amplifier and its applications – Scale changing amplifier, Summing amplifier, Phase shifting amplifier, Integrator, Differentiator, Summing integrator, Difference amplifier and Subtractor, comparison of active and passive filter, Introduction to – Low pass filter, High pass filter, Band pass filter, Band reject filter, All pass filter.
II	**Nonlinear Applications of OP – AMP** Feed back diode comparator, Precision rectifier – Half wave precision rectifier, Full wave precision rectifier, Peak detector, Sample and hold (S/H) circuit, Monostable multivibrator, astable multi vibrator, Voltage Controlled Oscillator (VCO).
III	**Miscellaneous applications of OP – AMP** Log amplifier: Basic equation, Basic logarithmic amplifier, Temperature compensated LOG amplifier, Antilog (Exponential) amplifier, Analog voltage multiplier, Analog voltage divider, Charge amplifier, Frequency to Voltage conversion, Clipper and Clamper circuits, Temperature to Voltage Converter.
IV	**IC 555 Timer and PLL** Salient features of 555 Timer IC, Pin diagram and Functional diagram, Astable multivibrator and its applications, Monostable multivibrator and its applications, Schmitt trigger, Bistable multivibrator, Basic operating principle of PLL.

Basic Text & Reference Books:

1. Linear Integrated Circuits and its applications — P. W. Wani and P. V. Bhat
2. OP – Amp and linear integrated circuits — R. A. Gaykwad

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Paper Code: US06CELE22	**Total Credit: 04**
Title of Paper: Digital System	

Unit	Description in detail
I	Types of ROMs, Semiconductor RAMs, Static RAMs, ECL RAMs, Dynamic RAMs, Address multiplexing, DRAM Refreshing, Tri-state switches.
II	Program Logic Devices, PAL, FPLA, PROM, Other PLD features, Magnetic memories, Magnetic core memory, Magnetic Disk memory.
III	Introduction, Digital to Analog (D/A) conversion, The R-2R Ladder types DAC, The weighted Resistor type DAC, Analog to Digital conversion, The Counter type A/D converter, The tracking type A/D converter, The Flash type A/D converter.
IV	Successive Approximation, The Counting Converter, A comparision of converter types, A converter using voltage to frequency converter, A converter using Voltage to Time conversion, A/D converter Specification, Introduction of ADC 0801.

Basic Text & Reference Books:

1. Fundamental of Digital circuits By : A.Anand Kumar
2. Digital Integrated Electronics By : Herbert Taub & Donald Schilling
3. Digital Fundamental By : Floyd

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Paper Code: US06CELE23	Total Credit: 04
Title of Paper: 8-Bit Microprocessor Programming & Applications	

Unit	Description in detail
I	Counter and time Delays, Hexadecimal counter, Modulo-10 counter, Pulse timing for flashing lights, Debugging counter and time delay programs, Stack Subroutines, Conditional and Non conditional CALL and Return instructions, Advance Subroutine concept and related examples.
II	Code conversion : BCD to Binary, Binary to BCD, BCD to Seven Segment, Binary to ASCII and ASCII to Binary.
III	BCD Addition, BCD Subtraction, Introduction to Advanced instructions and Applications, Multiplication and Subtraction with carry, the 8085 interrupts, Interrupts instructions and their utilization and their Examples.
IV	Introduction to microcontroller, 8255 Peripheral Interface, 8254 Interval Timer, 8259 Interrupt Controller, DAC & ADC.

Basic Text & Reference Books:

1. Microprocessor , Architecture, Programming and Applications with the 8085/8080 By : Ramesh S. Gaonkar
2. Microprocessor BY: V . J. Vibhute & P .B .Borole

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Paper Code: US06CELE24	**Total Credit: 04**
Title of Paper: Industrial Electronics	

Unit	Description in detail
I	Phase control Half wave and Full wave Phase control circuits, Half controlled Bridge circuits, Dual converter, Application to speed control of motors, Regulated DC power supplies.
II	Choppers, Principle of Chopper operations, control strategies, Step up chopper, Step Up/Down chopper.
III	Chopper configuration, First quadrant Type A chopper, Second quadrant Type B chopper, Two quadrant Type A chopper Type C chopper
IV	Thyristor Protection circuits, Gate control circuits, over voltage and over current protection, Design of snubber circuit, SCR Mounting, Programmable Logic controller, Basic configuration of PLC.

Basic Text & Reference Books:

1. An Introduction to Thyristors and their Applications. By : M Ramamoorthy
2. Thyristor Power Electronics By: M.D.Singh and K.B.Khanchandani
3. Power controller By : G.K.Dubey, S.R.Doralde and A.Joshi

SARDAR PATEL UNIVERSITY
B.Sc (6th Semester)
Electronics
US06CELE25
Practical

(Six credit course — 6 Hours per week)

(Effective from June: 2020)

1. OP-AMP Applications (Inv, Non-inv)
2. OP-AMP Applications (Wein Bridge, Square wave generator)
3. OP-AMP Comparator
4. Active FILTERS Using OP-AMP
5. Clipping & Clamping Circuits
6. Astable & its Applications Using 555
7. Monostable & its Applications Using 555
8. R-2R , weighted Registers DAC
9. 8-bit Analog to Digital Conversion using ADC 0800
10. BCD to Binary Conversion using 8085
11. Binary to BCD Conversion using 8085
12. BCD Addition and Subtraction
13. BCD to Seven segment LED code Conversion using 8085
14. Sum of 16-bit
15. Hexa-decimal division using 8085
16. ASCII to Binary Conversion using 8085
17. Binary to ASCII Conversion using 8085
18. Rotate Operation

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Semester: VI
Syllabus with effect from: June – 2020

Paper Code: US06DELE26	**Total Credit: 04**
Title of Paper: Analog Communication & Fiber Optics	

Unit	Description in detail
I	Optical Fiber : Comparision of Fiber with Metal cables, Fiber Construction, Principle of fiber optics, Advantage of fiber optics, Types of fibers, Step Index Fibers, Single mode and multimode Fibers, Graded Index Fiber & other type of Fiber.
II	Amplified DC meter, AC voltmeters using rectifier, True RMS responding voltmeters, Differential Voltmeter, Digital Voltmeters- Ramp type DVM, Successive approximations DVM.
III	Recorder- Introduction, Strip chart Recorder, Galvanometer type Recorder, Potentiometric Recorders, Circular chart Recorder, Digital X-Y plotters, Magnetic Recorders, Frequency modulation Recording.
IV	Computer controlled Test Systems, Testing and Audio amplifier, Testing an Radio Receiver, Instrument used in computer controlled instrumentation.

Basic Text & Reference Books:

1. Modern Electronics Instrumentation and Measurements Technique By : A.D.Helfrick and W.D.Cooper
2. Instrumentation Devices and Systems By : C.S.Ragan Sharma and V.S.V.Mani
3. Electronic Instrumentation By: H.S.Kalsi
4. Fiber Optics communication By:D C Agarwal
5. Optical FiberCommunication By: Gerd Keisar

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Paper Code: US06DELE27	**Total Credit: 04**
Title of Paper: Analog Communication & Fiber Optics	

Unit	Description in detail
I	Principle of colour TV, Colour TV Camera, Picture Tubes in TV system, Colour TV Transmission & Reception, PAL system.
II	Optical Fiber Sources & Detectors, LED, LASERS, Avalanche Photodiode, PIN photodiode , Block diagram of Fiber- optics Communication system, Repeators.
III	Data transmission & Telemetry characteristics of Telemetry system, Landline Telemetry, Radio Telemetry.
IV	Frequency Divison Multiplexing, Time Division Multiplexing, Pulse time modulation, Pulse code Modulation, PCM / FM Systems.

Basic Text & Reference Books:

1. Transducers and Instrumentation D.V.S Murthy
2. Radio Engineering (Applied Electronics Vol-II) By : G.K.Mithal
3. Basic Radio & Television By : S.P.Sharma
4. Fundamental of Digital circuits By : A.Anand Kumar