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

Paper Code: US05CELE21	**Total Credit: 04**
Title of Paper: Instrumentation	

Unit	Description in detail
I	Wheastone Bridge, Kelvin Bridge, AC Bridge and their applications, Maxwell Bridge, Hay Bridge, Schering Bridge, Wein Bridge.
II	**Power Supply:** Block diagram of regulated power supply, Discrete voltage regulator circuits – shunt regulator, Series regulator, IC regulators , Three terminal Voltage regulators – 78** and 79** regulator, Parameters of voltage regulator, General purpose Voltage Regulator IC 723 regulator, applications of IC 723 regulator – low voltage regulator, High Voltage regulator, switching regulator
III	Classification of Transducers, Selection of Transducers, Capacitive Transducers, Inductive Transducer, Linear Variable Differential Transformer
IV	Photoelectric Transducer, Piezo electric Transducer, Strain Gauges, Displacement Transducer, Thermocouple, Thermistor characteristics and Applications.

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. Electronics circuit and devices G. K. Mithal

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Semester: V
Syllabus with effect from: June – 2020

Paper Code: US05CELE22	**Total Credit: 04**
Title of Paper: Digital System	

Unit	Description in detail
I	Shift Registers Introduction, Buffer Register, Controlled Buffer Register, Data Transmission in shift registers, Serial-in serial-out shift registers, serial-in parallel-out shift registers Parallel-in serial-out shift register, parallel-in parallel-out shift registers, Bidirectional shift registers.
II	Universal shift register, Dynamic shift registers, Application of shift registers, ANSI/IEEE standard symbols, Tristate switch, The look ahead carry adder, IC parallel Adders.
III	Two's complement Addition and Subtraction using parallel Adders, Serial Adders, BCD Adder, Binary Multipliers, Comparators, IC comparators ,Interfacing Digital & Analog system, Modems & Interfaces, The Schmitt Trigger as an Interfaces circuit.
IV	The role of memory in a computer system, Memory Types and Terminology, memory Organization & operation, Reading and writing, RAMs, ROMs, and PROMs, Constituent of Memories, Read Only Memory (ROM), ROM organization, ROM timing .

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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Semester: V
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Paper Code: US05CELE23	Total Credit: 04
Title of Paper: 8-Bit Microprocessor Programming & Applications	

Unit	Description in detail
I	The 8085 Microprocessor unit, Bus timing, Demultiplexing the bus, Generating control signal, A detailed look at the 8085 Microprocessor and its architecture, Examples of 8085 based microcomputer.
II	Instruction classification, Method of writing and executing a simple program, Addressing modes, Data transfer Instruction set, Arithmetic instruction set, Logical instruction set, program related to Arithmetic and logical instruction.
III	Branch operations and their related programs, writing assembly language programs, Debugging a program, programming techniques : Looping, Counting and Indexing and their related flow charts, Additional Data transfer and 16 bit Arithmetic instruction and related program.
IV	Arithmetic operations related to memory, Logical operations : Rotate and compare and related programs, Dynamic Debugging.

Basic Text & Reference Books:

1. Microprocessor , Architecture, Programming and Applications with the 8085/8080 By : Ramesh S. Gaonkar

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

Paper Code: US05CELE24	**Total Credit: 04**
Title of Paper: Analog Communication	

Unit	Description in detail
I	Classification of Radio Receivers, Salient Features of broadcast Receivers, Basic Function of AM Receiver, Principle & Block diagram of superhetrodyne Receiver.
II	RF Amplifier, Frequency Mixer & converters, IF Amplifier, Detector stage, Automatic gain control, Automatic Frequency control.
III	Introduction, Aspect Ratio, Rectangular Switching, Interlaced scanning, Composite video signals, TV camera Tubes, Image orthicon, Vidicon.
IV	Block diagram and Function of Broadcast TV Receiver, RF Tuners, Functions of RF Tuners, Block Diagram of RF Tuner, RF Tuner circuits, Video IF Amplifier, Interstage coupling methods, Transistor video IF Amplifier Circuit.

Basic Text & Reference Books:

1. Radio Engineering (Applied Electronics vol-II) By : G.K.Mithal
2. Basic Radio & Television By : S.P.Sharma

SARDAR PATEL UNIVERSITY
B.Sc (5th Semester)
Electronics
US05CELE25
Practical

(Six credit course — 6 Hours per week)
(Effective from June: 2020)

1. Feedback Amplifier
2. Phase shift Oscillator Using Transistor
3. Heartley and Colpits Oscillator Using Transistor
4. Push Pull Amplifier
5. Regulated Power Supply Using 78XX
6. Regulated Power Supply Using 79XX
7. Shift Registers
8. Wheaston Bridge
9. Maxwell Bridge
10. Regulated Power Supply Using 723
11. Hexadecimal addition using 8085
12. Hexadecimal subtraction using 8085
13. Hexadecimal subtraction using 8085
14. 2'S compliment of 8 bit data using 8085
15. LVDT
16. SCR Characteristics
17. Diac Characteristics
18. Relaxation Oscillator using UJT
19. Amplitude Modulation & Demodulation
20. Logical operations using 8085

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

Paper Code: US05DELE26	**Total Credit: 04**
Title of Paper: Industrial Electronics	

Unit	Description in detail
I	Thyristor, symbolic Representation, principle of operation and characteristics, Methods of turning ON, Turn OFF mechanism, Series and parallel operation of SCRs, String Efficiency.
II	Thyristor, Low Power devices, UJT, UJT Relaxation oscillator, Triac, Triggering Mode.
III	Phase control using Triac, Power control, Static circuit Breaker, Over voltage protection, Time Delay circuits, Logic circuits.
IV	**Power Amplifier:** Classification of power amplifiers, Class A large signal amplifier, Transformer coupled Audio power amplifier, Second harmonic distortion, Push pull amplifiers – Class A pushpull amplifier, Complimentary Symmetry Amplifier.

Basic Text & Reference Books:

1. An introduction to Thyristor and their Applications By : M. Ramamoorthy
2. Power electronics By: M.D.Singh and K.B.Khanchandani
3. Integrated Electronics By: J.Millman and C. Halkias

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Programme: B.Sc (Electronics)
Semester: V
Syllabus with effect from: June – 2020

Paper Code: US05DELE27	**Total Credit: 04**
Title of Paper: Discrete & Linear Circuits	

Unit	Description in detail
I	**Negative Feedback:** Non linear distortion, Classification of feedback amplifiers, Feedback concept, Transfer gain with feedback, General Characteristics of negative feedback, Input resistance, Output resistance.
II	Voltage series feedback amplifier (single stage), Current series feedback amplifier, Current Shunt feedback amplifier, Voltage Shunt feedback, Classification of oscillators, Phase shift oscillator, Wein bridge oscillator.
III	Resonant circuit oscillator, general form of an oscillator, Hartley oscillator, Colpitt's Oscillator, Clapp oscillator, Crystal oscillator- series resonant oscillator, parallel resonant oscillator
IV	AC, DC, Stepper Motor, Inverters, Types of Inverters, Series and Parallel inverters, Single phase half bridge inverter, Single phase full bridge inverter .

Basic Text & Reference Books:

1. Integrated Electronics — J.Millman and C. Halkias
2. Linear Integrated Circuits and its applications — P. W. Wani and P. V. Bhat
3. Electronics circuit and devices — G. K. Mital
4. Power Electronics — M.D.Singh and K.B.Khanchandani