"Education for Knowledge, Science and Culture"
-Shikshanmaharshi Dr. Bapuji Salunkhe

Shri Swami Vivekanand Shikshan Sanstha's

VIVEKANAND COLLEGE, KOLHAPUR
(EMPOWERED AUTONOMOUS)

B.Sc.-II ELECTRONICS

Semester- III & IV

As per NEP2020 Guidelines (Phase - I)

Syllabus to be implemented from June 2024 onwards

VIVEKANAND COLLEGE KOLHAPUR (Empowered Autonomous) ESTD JUNE 1964

Departmental Teaching and Evaluation scheme

Second Year Semester-III & IV

Sr. No.	Course Abbr.	Course code	Course Name	Teaching Scheme Hours/week		Examination Scheme and Marks				Course Credits
				TH	PR	ESE	CIE	PR	Marks	
Semester-III										
1	DSC-V	DSC03ELE31	Electronic Communication System	2	-	40	10	-	50	2
2	DSC-VI	DSC03ELE32	Microprocessor 8085	2	-	40	10	-	50	2
3	MIN-V	MIN03ELE31	Principles of Electronic Communication	2	-	40	10	-	50	2
4	MIN-VI	MIN03ELE32	Architecture of 8051	2	-	40	10	-	50	2
5	VSC-PR-II	VSC03ELE39	PCB Designing Lab	-	4	-	-	25	25	2
6	DSC-PR-III	DSC03ELE39	DSC-Electronics Lab-3	-	8	-	-	50	50	4
7	MIN-PR-III	MIN03ELE39	MIN-Electronics Lab-3	-	4	-	-	25	25	2
Semester –III Total				**8**	**16**	**160**	**40**	**100**	**300**	**16**
Semester-IV										
1	DSC-VII	DSC03ELE41	Operational Amplifier and Applications	2	-	40	10	-	50	2
2	DSC-VIII	DSC03ELE42	Microcontroller 8051	2	-	40	10	-	50	2
3	MIN-VII	MIN03ELE41	Fundamentals of Operational Amplifier	2	-	40	10	-	50	2
4	MIN-VIII	MIN03ELE42	8051 Microcontroller Interfacing and Embedded C	2	-	40	10	-	50	2
5	VSC-PR-III	VSC03ELE49	Arduino Programming Lab	-	4	-	-	25	25	2
6	DSC-PR-IV	DSC03ELE49	DSC-Electronics Lab-4	-	8	-	-	50	50	4
7	MIN-PR-IV	MIN03ELE49	MIN-Electronics Lab-4	-	4	-	-	25	25	2
Semester –IV Total				**8**	**16**	**160**	**40**	**100**	**300**	**16**

B.Sc. II (Electronics), Semester: III

DSC-V: DSC03ELE31: Electronic Communication System

Theory: 30 Hours (Credits 2) (Marks-50)

Course Outcomes: After the completion of the course the student should be able to -

CO1: Identify the basic concepts of electronic communication

CO2: Identity different Modulation & Demodulation schemes for analog communications (AM, FM, PM)

CO3: Illustrate the various analog Pulse Modulation techniques

CO4: Identify the principals of Digital Modulation & Data Communication techniques

Unit	Contents	Hours
1	**Electronic communication:** Introduction to communication – means and modes, Block diagram of an electronic communication system, Electromagnetic communication spectrum, band designations and usage, Concepts of bandwidth, gain, attenuation, Channels and base-band signals, **Concept of Noise:** Definition, Types of noise (External noise, internal noise), signal-to-noise (S/N) ratio.	8
2	**Analog Modulation-Demodulation:** Introduction to modulation, Need for modulation, Amplitude Modulation (AM), Mathematical expression, modulation index, frequency spectrum and AM power, Classification of AM, Concept of DSB, SSB generation, Amplitude Demodulation (diode detector), Phase Modulation (PM)(concept only), Frequency Modulation (FM), modulation index and frequency spectrum, equivalence between FM and AM, Generation of FM using VCO, FM detector (Slope detector), Block diagram and working of FM Super heterodyne radio receiver	10
3	**Analog Pulse Modulation:** Channel capacity, Sampling theorem, Basic Principles- Pulse Amplitude Modulation (PAM), Pulse Width Modulation (PWM), Pulse Position Modulation (PPM), Modulation and detection technique for PAM	6
4	**Digital Pulse Modulation:** Need for digital transmission, Pulse Code Modulation, Digital Carrier Modulation Techniques, Sampling, Quantization and Encoding. Concept of Amplitude Shift Keying (ASK), Frequency Shift Keying (FSK), Phase Shift Keying (PSK), and Phase Shift Keying (BPSK and QPSK)	6

Reference Books:

- Electronic Communications, D. Roddy and J. Coolen, 4th Edition Pearson Education India.
- Electronic Communication systems, G. Kennedy, 3rd Edition, 1999, Tata McGraw Hill.
- Principles of Electronic communication systems – Frenzel, 3rd edition, McGraw Hill
- Electronic Communication Systems: Fundamentals through Advanced, W. Tomasi, Pearson Education, 3rd Edition.

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B.Sc. II (Electronics), Semester: III

DSC-VI: DSC03ELE32: Microprocessor 8085

Theory: 30 Hours (Credits 2) (Marks-50)

Course Outcomes: After the completion of the course the student should be able to -

CO1: Identify various components of Microcomputer system.
CO2: Identify Architecture of 8085 microprocessor.
CO3: Familiar with instructions set and addressing modes of 8085 microprocessor.
CO4: Write assembly Language programs for 8085 microprocessor.

Unit	Contents	Hours
1	**Microcomputer Organization**: Basic components of microcomputer (CPU, Program memory, Data memory, input and output ports), idea of RAM (SDRAM, DRAM), Types of ROM, Memory Organization & addressing: Memory Interfacing, Memory Map.	4
2	**Architecture of 8085 Microprocessor:** Salient features of 8085, Block diagram and Pin description of 8085, Data and address bus, Registers, ALU, Stack pointer, Program counter, Flag register, Clock and reset circuits, Interrupts in 8085, Demultiplexing of AD0-AD7,T-states, Machine cycle, Instruction cycle, Timing diagram of MOV and MVI instructions	8
3	**Instruction Set of 8085 Microprocessor:** Instruction format, Addressing modes of Instructions, classification of Instruction Set: Data transfer (including stacks), Arithmetic, logical, branch and control instructions.	8
4	**Programming with 8085 Microprocessor:** Programs for Addition (8 and 16 bit), Subtraction, Multiplication, Division, Block Transfer and Exchange, Masking of a number, arrange the numbers in ascending and descending order, to find odd and even numbers, to find parity of given number, Time delay generation using single register and register pair.	10

Reference Books:

- Microprocessor Architecture Programming & applications with 8085 by R. S. Goankar, 4th edition Prentice Hall.
- Microprocessors and Interfacing by Douglas V Hall, 2nd edition, Tata McGraw-Hill (2005)
- Microprocessor 8085 by V.S. Kore, Mahalakshmi Publications
- Fundamental of Microprocessor and Microcomputers –by B. Ram, 5th edition, Danpat Rai Publications.

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B.Sc. II (Electronics), Semester: III

ELECTRONICS LAB:3 DSC-PR-III (DSC03ELE39)

Credits: 04 Marks: 50

(Note: Minimum 08 experiments has to perform from each group)

Group A

1. To study Amplitude Modulator and demodulator
2. To study FM modulator
3. To study Pulse Amplitude Modulation (PAM)
4. To study Pulse Width Modulation (PWM)
5. To study ASK Modulator
6. To study PSK Modulator
7. To study FSK Modulator
8. To study PCM
9. To study PPM
10. Study of Tuned Amplifier

Group B

1. Addition of Two 8 Bit Numbers using 8085
2. Subtraction of Two 8 Bit Numbers using 8085
3. Multiplication of Two 8 Bit Numbers using 8085
4. Division of Two 8 Bit Numbers using 8085
5. Program to transfer the memory block using 8085
6. Program to exchange the memory blocks using 8085
7. To arrange the given number in ascending and descending order using 8085
8. Programs to find even and odd numbers using 8085
9. To find total number of even and odd numbers in an array using 8085
10. Programs for masking and to find parity of given number using 8085

Marks Distribution of Practical (LAB):

Group	A	B	Journal	Seminar/ Project	Total
Marks	20	20	05	05	50

VIVEKANAND COLLEGE KOLHAPUR (Autonomous) ESTD JUNE 1964

B.Sc. II (Electronics), Semester: III

VSC-PR-II: VSC03ELE39: PCB Designing Lab

(Credits 2) (Marks-25)

PCB experiments using Proteus software:-

1. Introduction to PCB designing module of Proteus-I
2. Introduction to PCB designing module of Proteus-II
3. Create schematic and PCB layout for fixed 5/6/9/12 V power supply
4. Create schematic and PCB layout for Dual +5/9/12/15 V power supply
5. Create schematic and PCB layout for Variable 1.25 - 37 V power supply
6. Create schematic and PCB layout for Astable Multivibrator using IC 555
7. Create schematic and PCB layout for Monostable Multivibrator using IC 555
8. Create schematic and PCB layout for Bistable Multivibrator using IC 555
9. Create schematic and PCB layout for Inverting/Non-Inverting Amplifier using IC 741
10. Create schematic and PCB layout for Adder/Subtractor Amplifier using IC 741
11. Create schematic and PCB layout for Schmitt Trigger using IC 741
12. Create schematic and PCB layout for Function Generator using IC8038
13. Create schematic and PCB layout for BCD to 7-segment Decoder using IC 7447
14. Create schematic and PCB layout for Decade counter using IC 7490
15. Development of Printed Circuit Board-I (etching, Drilling)
16. Development of Printed Circuit Board-II (component mounting and soldering)

Marks Distribution of Practical (LAB):

Practical Work	Journal/Report	Total
20 Marks	05 Marks	25 Marks

B.Sc. II (Electronics), Semester: IV

DSC-VII: DSC03ELE41: Operational Amplifier and Applications

Theory: 30 Hours (Credits 2) (Marks-50)

Course Outcomes: After the completion of the course the student should be able to -
CO1: Discuss the op-amps basic construction, characteristics, parameters, various configurations
CO2: Design various linear and non-linear circuits using op-amp
CO3: Design various waveform generators
CO4: Design comparators and rectifiers using Op-amp.

Unit	Contents	Hours
1	**Introduction to Operational Amplifier:** Transistor dc amplifier, Emitter coupled Differential amplifier, configurations of differential amplifier. Introduction to op-amp: Op-amp symbol, terminals, packages and specifications, Block diagram of op-amp, Open loop & closed loop configurations, Electrical parameters of op-amp, offset balancing technique of op-amp, study of IC 741.	10
2	**Applications of Op-amp:** Virtual ground concept, **Linear Applications:** Op-amp as inverting and non- inverting amplifier, Voltage follower, Op-amp as adder and Subtractor, **Non-Linear Applications:** Differentiator and Integrator.	8
3	**Oscillators:** Oscillator principles, types of oscillators, Phase shift oscillator, Wien – bridge oscillator, Triangular wave generator, Square wave generator, Saw tooth wave generator	6
4	**Comparators and Rectifiers:** Basic comparator, Zero crossing detector, Regenerative comparator (Schmitt trigger),Peak detector, Clippers (positive and negative) and Clampers (positive and negative) Precision rectifiers: Op-amp as precision rectifiers(half wave and full wave)	6

Reference Books:

- Op-Amps and Linear Integrated Circuits – Ramakant Gaikwad, 3rd edition (PHI)(1994)
- Integrated Electronics – J. Millman and C.C. Halkias, 2nd edition (Tata McGraw-Hill)(2012)
- Op-Amps and Linear Integrated Circuits –Coughlin, Driscoll(PHI) 6th edition(2001)
- Linear Integrated circuit - D Roy Choudhari, Shail Jain, 5th edition,(New Age International Publication

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B.Sc. II (Electronics), Semester: IV

DSC-VIII: DSC03ELE42: Microcontroller 8051

Theory: 30 Hours (Credits 2) (Marks-50)

Course Outcomes: After the completion of the course the student should be able to –

CO1: Identify the building blocks of 8051 microcontroller

CO2: write assembly program for 8051 microcontroller

CO3: Demonstrate Timer & Counter programming with 8051 microcontroller

CO4: Demonstrate serial & Interrupt programming with 8051 microcontroller

Unit	Contents	Hours
1	**Introduction to 8051 Microcontroller:** Comparison between microprocessor and microcontroller, Salient features of 8051family, Block diagram of 8051, Pin description of 8051 microcontroller, RAM structure of 8051, SFR's and GPR's in 8051, PSW register ,Clock and Reset circuits, I/O Ports	8
2	**Instruction Set of 8051:** Classification of instruction sets, Addressing modes. Instruction set of 8051: Data transfer, Arithmetic, Logical, Jump, Call, Boolean instructions.	8
3	**8051Timer Programming :** Introduction to Timers, Timer Registers, Timer modes and Timer Programming using mode 1 and mode 2:- Square wave generation, rectangular wave generation Counter Programming: pulse counter	6
4	**8051 Serial and Interrupt Programming:** **Serial ports**: Serial port of 8051, modes, Serial port Registers, Serial port programming. **Interrupt**: Interrupt in 8051, Interrupt registers, Programming with interrupt	8

Reference Books:

- The 8051 Microcontroller and Embedded Systems Using Assembly and C, M.A. Mazidi, J.G. Mazidi, and R.D. McKinlay, 2nd edition., 2007, Pearson Education India.
- Microcontrollers (Theory and Applications), Ajay V. Deshmukh, Tata McGraw Hill..
- The 8051 Microconroller, Kenneth Ayala, 3rd edition, CENGAGE Learning.

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B.Sc. II (Electronics), Semester: IV

ELECTRONICS LAB:4 DSC-PR-IV (DSC03ELE49)

Credits: 04 Marks: 50

(Note: Minimum 08 experiments has to perform from each group)

Group A

1. To design Op-Amp as Inverting and Non-Inverting amplifier
2. To study Op-Amp as adder and Subtractor
3. To study Op-Amp as integrator and differentiator
4. To study Op-Amp as Schmitt trigger.
5. To study Op-Amp as comparator (Zero reference and non-zero reference)
6. To design phase shift oscillator using Op-Amp.
7. To design Wein bridge oscillator using Op-Amp
8. To study Op-Amp as triangular wave generator
9. To study Op-Amp as Square wave generator
10. To study Op-Amp as precision rectifier.
11. To study Op-Amp as peak detector

Group B

1. Arithmetic instruction programming using 8051
2. Logical instruction programming using 8051
3. Boolean/Bit manipulation instruction programming using 8051
4. Code conversion using 8051
5. Study of timers of 8051 in mode 1
6. Study of timers of 8051 in mode 2
7. Study of counters of 8051
8. Study of Serial programming of 8051
9. Study of Timer Interrupts programming of 8051
10. Study of Serial communication Interrupts programming of 8051
11. Study of External hardware Interrupts programming of 8051

Marks Distribution of Practical (LAB):

Group	A	B	Journal	Seminar/ Project	Total
Marks	20	20	05	05	50

VIVEKANAND COLLEGE KOLHAPUR (Autonomous) ESTD JUNE 1964

B.Sc. II (Electronics), Semester: IV

VSC-PR-III: VSC03ELE49: Arduino Programming Lab

(Credits 2) (Marks-25)

1. Introduction to Arduino Board and Arduino IDE
2. Interfacing of LED and switch with Arduino
3. Interfacing of switch and buzzer with Arduino
4. Interfacing of Relay with Arduino
5. Interfacing of LCD (16× 2) with Arduino
6. Interfacing of temperature sensor LM 35 with Arduino
7. Interfacing of humidity sensor with Arduino
8. Interfacing of Accelerometer with Arduino
9. Interfacing of stepper motor with Arduino
10. Interfacing of DC motor with Arduino
11. Interfacing of servomotor with Arduino
12. Interfacing of moisture sensor with Arduino
13. Interfacing of proximity sensor with Arduino
14. Interfacing of IR sensor with Arduino
15. Interfacing of Ultrasonic sensor with Arduino
16. Interfacing of gas sensor with Arduino
17. Automatic porch light control using Arduino
18. Case study: Home Automation

Marks Distribution of Practical (LAB):

Practical Work	Journal/Report	Total
20 Marks	05 Marks	25 Marks

B.Sc. II (Electronics), Semester: III

MIN-V: MIN03ELE31: Principles of Electronic Communication

Theory: 30 Hours (Credits 2) (Marks-50)

Course Outcomes: After the completion of the course the student should be able to -

CO1: Comprehend the basic elements of electronic communication system

CO2: Understand the AM Modulation & Demodulation schemes for analog communications

CO3: Understand the FM Modulation & Demodulation schemes for analog communications

CO4: Identify the principals of Digital Modulation & Data Communication techniques

Unit	Contents	Hours
1	**Electronic communication:** Introduction to communication – means and modes, Block diagram of an electronic communication system, Electromagnetic communication spectrum, band designations and usage, Concepts of bandwidth, gain, attenuation, Channels and base-band signals, Concept of Noise: Definition, Types of noise (External noise, internal noise), signal-to-noise (S/N) ratio	8
2	**Amplitude Modulation (AM) and Demodulation** Introduction to modulation, Need for modulation, Amplitude Modulation (AM): Mathematical expression, modulation index, frequency spectrum and AM power, Classification of AM, Concept of DSB, SSB generation, Amplitude Demodulation (diode detector)	10
3	**Frequency Modulation (FM) and Demodulation:** Principles of Frequency modulations, modulation index, frequency spectrum, Generation of FM using VCO, FM Demodulation: (Slope detector), equivalence between FM and AM, phase modulators (Concept only).	6
4	**Digital Modulation Techniques:** Need for digital transmission, Pulse Code Modulation: Sampling, Quantization and Encoding. Digital Modulation Techniques: Amplitude Shift Keying (ASK), Frequency Shift Keying (FSK), Phase Shift Keying (PSK), and Phase Shift Keying (BPSK and QPSK).	6

Reference Books:

- Electronic Communications, D. Roddy and J. Coolen, 4th Edition Pearson Education India.
- Electronic Communication systems, G. Kennedy, 3rd Edition, 1999, Tata McGraw Hill.
- Principles of Electronic communication systems – Frenzel, 3rd edition, McGraw Hill
- Electronic Communication Systems: Fundamentals through Advanced, W. Tomasi, Pearson Education, 3rd Edition.

VIVEKANAND COLLEGE KOLHAPUR ESTD JUNE 1964

B.Sc. II (Electronics), Semester: III

MIN-VI: MIN03ELE32: Architecture of 8051 Microcontroller

Theory: 30 Hours (Credits 2) (Marks-50)

Course Outcomes: After the completion of the course the student should be able to –

CO1: Identify the building blocks of 8051 microcontroller

CO2: write assembly program for 8051 microcontroller

CO3: Demonstrate Timer & Counter programming with 8051 microcontroller

CO4: Demonstrate serial & Interrupt programming with 8051 microcontroller

Unit	Contents	Hours
1	**Fundamental of 8051 Microcontroller:** Organization of Microcomputer System, Comparison between microprocessor and microcontroller, Salient features of 8051family, Block diagram of 8051, Pin description of 8051 microcontroller, RAM and ROM structures of 8051, SFR's and GPR's in 8051, PSW register, Clock and Reset circuits, I/O Ports	8
2	**Instruction Set:** Classification of instruction sets, Addressing modes. Instruction set of 8051: Data transfer, Arithmetic, Logical, Jump, Call, Boolean instructions.	8
3	**Timers and Counters :** Introduction to Timers, Timer Registers, Timer modes and Timer Programming using mode 1 and mode 2:- Square wave generation, rectangular wave generation Counter Programming: pulse counter	6
4	**Serial and Interrupt Programming:** **Serial ports**: Serial port of 8051, modes, Serial port Registers, Serial Port programming. Interrupt: Interrupt in 8051, Interrupt registers, Programming with interrupt	8

Reference Books:

- The 8051 Microcontroller and Embedded Systems Using Assembly and C, M.A. Mazidi, J.G. Mazidi, and R.D. McKinlay, 2nd edition., 2007, Pearson Education India.
- Microcontrollers (Theory and Applications), Ajay V. Deshmukh, Tata McGraw Hill..
- The 8051 Microconroller, Kenneth Ayala, 3rd edition, CENGAGE Learning.

VIVEKANAND COLLEGE KOLHAPUR ESTD JUNE

B.Sc. II (Electronics), Semester: IV

MIN-VII: MIN03ELE41: Fundamentals of Operational Amplifier

Theory: 30 Hours (Credits 2) (Marks-50)

Course Outcomes: After the completion of the course the student should be able to -

CO1: understand the op-amps basic construction, characteristics, parameters, various configurations

CO2: Design various linear circuits using operational amplifiers

CO3: Design various non-linear circuits using operational amplifiers

CO4: Design and study various Oscillator circuits using operational amplifiers

Unit	Contents	Hours
1	**Basics of Operational Amplifier:** Transistor dc amplifier, Emitter coupled Differential amplifier, configurations of differential amplifier. Introduction to op-amp: Op-amp symbol, terminals, packages and specifications, Block diagram of op-amp, Open loop & closed loop configurations, Electrical parameters of op-amp, offset balancing technique of op-amp, study of IC 741.	10
2	**Linear Applications** Virtual ground concept. Op-amp as inverting and non- inverting amplifier, Voltage follower, Op-amp as adder and Subtractor, Voltage to current & current to voltage converters.	8
3	**Non-linear Applications** Differentiator and Integrator, Basic Comparators, Applications of comparator as zero crossing detectors, level detector, Schmitt triggers, Half wave Precision rectifiers, Peak detectors.	6
4	**Oscillators:** Oscillator principles, types of oscillators-Phase shift oscillator, Wien – bridge oscillator, Triangular wave generator, Square wave generator, Saw tooth wave generator.	6

Reference Books:

- Op-Amps and Linear Integrated Circuits – Ramakant Gaikwad, 3rd edition (PHI)(1994)
- Integrated Electronics – J. Millman and C.C. Halkias, 2nd edition (Tata McGraw-Hill)(2012)
- Op-Amps and Linear Integrated Circuits –Coughlin, Driscoll(PHI) 6th edition(2001)
- Linear Integrated circuit - D Roy Choudhari, Shail Jain, 5th edition,(New Age International Publication

VIVEKANAND COLLEGE KOLHAPUR ESTD JUNE

B.Sc. II (Electronics), Semester: IV

MIN-VIII: MIN03ELE42: 8051 Microcontroller Interfacing and Embedded C

Theory: 30 Hours (Credits 2) (Marks-50)

Course Outcomes:

At the end of the course, a student will be able to:

CO1: program 8051microcontroller using Embedded C

CO2: interface and control various input and output devices using microcontrollers

CO3: understand and implement ADC and DAC interfacing techniques effectively

CO4: interface various sensors to 8051microcontroller

Unit	Contents	Hours
1	**Introduction to Embedded C** Advantages and disadvantages of programming in 8051-C, Data types, Time delay – using for loop and using 8051 Timers, I/O programming, Logical operations, Data conversion programs	8
2	**Interfacing of Input Output Devices** Output devices: LED, Relay, Opto-coupler, LCD, Seven Segment Display, Seven Segment Display (multiplexing mode), DC Motor, Stepper Motor; Input devices: Switch, thumb wheel switch,	8
3	**ADC, DAC Interfacing** Interface ADC 0804, ADC 0808/0809, ADC MAX1112, DAC 0808 (Triangular wave, Ramp, Staircase)	6
4	**Sensor Interfacing** Reed sensor, smoke sensor, PIR sensor, Temperature sensor (LM 35, PT-100), Humidity sensor (SY HS 230), Light sensor (LDR), Moisture/rain sensor, Gas sensor (MQ series), Ultrasonic module	8

Reference Books:

- The 8051 Microcontroller and Embedded Systems Using Assembly and C, M.A. Mazidi, J.G. Mazidi, and R.D. McKinlay, 2nd edition., 2007, Pearson Education India.
- Microcontrollers (Theory and Applications), Ajay V. Deshmukh, Tata McGraw Hill.
- The 8051 Microconroller, Kenneth Ayala, 3rd edition, CENGAGE Learning.

VIVEKANAND COLLEGE KOLHAPUR (Empowered Autonomous) ESTD JUNE 1964

B.Sc. II (Electronics), Semester: III

ELECTRONICS LAB:3 MIN-PR-III (MIN03ELE39)

Credits: 02 Marks: 25

(Note: Minimum 05 experiments has to perform from each group)

Group A

1. Study of Amplitude Modulator and demodulator
2. Study of FM modulator using VCO/ IC 8038
3. Study of Frequency Demodulator.
4. Study of ASK Modulator
5. Study of PSK Modulator
6. Study of FSK Modulator
7. Study of PCM.

Group B

1. Arithmetic and Logical instruction programming using 8051
2. Boolean/Bit manipulation instruction programming using 8051
3. Code conversion using 8051
4. Study of timers of 8051 in mode 1 and mode 2
5. Study of Serial programming of 8051
6. Study of Timer Interrupts programming of 8051
7. Study of Interrupts programming of 8051

Marks Distribution of Practical (LAB):

Group	A	B	Journal	Total
Marks	10	10	05	25

B.Sc. II (Electronics), Semester: IV

ELECTRONICS LAB:4 MIN-PR-IV (MIN03ELE49)

Credits: 02 Marks: 25

(Note: Minimum 05 experiments has to perform from each group)

Group A

1. Study of Op-Amp as Inverting and Non-Inverting amplifier
2. Study of Op-Amp as adder and Subtractor
3. Study of Op-Amp as Schmitt trigger.
4. Study of Op-Amp as comparator (Zero reference and non-zero reference)
5. Study of phase shift oscillator using Op-Amp.
6. Study of Wein bridge oscillator using Op-Amp
7. Study of Op-Amp as triangular wave generator
8. Study of Op-Amp as Square wave generator
9. Study of Op-Amp as precision rectifier.

Group B

1. Study of Timers in 8051 Microcontroller.
2. LED, Switch and Relay interfacing to 8051 microcontroller.
3. LCD Interfacing with8051 Microcontroller.
4. DC motor interfacing to 8051microcontroller.
5. Stepper Motor interfacing to 8051 microcontroller.
6. DAC0808 interfacing to 8051microcontroller.
7. ADC0804 interfacing to 8051microcontroller.
8. Serial communication with PC using 8051microcontroller

Marks Distribution of Practical (LAB):

Group	A	B	Journal	Total
Marks	10	10	05	25

VIVEKANAND COLLEGE KOLHAPUR ESTD JUNE

Nature of Question Paper:

Seat No.		Ques. paper code	

VIVEKANAND COLLEGE, KOLHAPUR
(EMPOWERED AUTONOMOUS)

B.Sc. Part- II (Electronics) (Semester-III) Examination……..

Course Code and Name: DSC03ELE31: Electronic Communication

Day: Time: 2 hours

Date: --/--/---- Marks : 40

Instructions:

1) All the questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat labeled diagrams wherever necessary.
4) Use of log table/calculator is allowed.

Q. 1. Select correct alternative (One mark each): **[8]**

i) Xyzabcdefghijklmnop ----------

a) -------- b) -------- c) -------- d) --------

ii) Xyzabcdefghijklmnop ----------

a) -------- b) -------- c) -------- d) --------

iii) Xyzabcdefghijklmnop ----------

a) -------- b) -------- c) -------- d) --------

iv) Xyzabcdefghijklmnop ----------

a) -------- b) -------- c) -------- d) --------

v) Xyzabcdefghijklmnop ----------

a) -------- b) -------- c) -------- d) --------

vi) Xyzabcdefghijklmnop ----------

a) -------- b) -------- c) -------- d) --------

vii) Xyzabcdefghijklmnop ----------

a) -------- b) -------- c) -------- d) --------

viii) Xyzabcdefghijklmnop ----------

a) -------- b) -------- c) -------- d) --------

Q.2. Attempt any TWO (Eight marks each): **[16]**

i) Xyzabcdefghijklmnop.

ii) Xyzabcdefghijklmnop.

iii) Xyzabcdefghijklmnop.

Q.3. Attempt any THREE (Four marks each): [12]

i) Xyzabcdefghijklmnop.

ii) Xyzabcdefghijklmnop.

iii) Xyzabcdefghijklmnop.

iv) Xyzabcdefghijklmnop.

v) Xyzabcdefghijklmnop.

CHAIRMAN
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