Discipline: **4TH SEM ELECTRONICS** and Telecommunication Engineering			Name of the Teaching Faculty: **Er. JYOTI PATRA & Er. KSHIRABDHEE TANAYA DORA**
Subject: - **TH - 4 Analog Electronics & Linear IC**	No. of days per week class allotted: **3/5**		Semester From Date: **14TH FEBRUARY 2023 to 23RD MAY 2023** No. of Weeks: **15**
Week	SN	Class Day	Theory Topics

UNIT-1: DIODE, TRANSISTORS AND CIRCUITS.   [10 PERIODS]

Week	SN	Class Day	Theory Topics
1st	1.	1st	1.1 Working principle, of Diode & its current equation, Specification & use of p-n junction diode.
	2.	2nd	1.2 Breakdown of diode (Avlance & Zener Breakdown) Construction, working, Characteristics
2nd	3.	1st	1.3 Classification of Rectifiers and working of different types of Rectifiers- Half-Wave Rectifier, Full-Wave Rectifier (CT & BRIDGE type)
	4.	2nd	
3rd	5.	1st	1.4 Working principle of p-n-p and n-p-n transistor, different types of transistor connection (CB, CE and CC) & input and output characteristics of transistor in different connections.
	6.	2nd	1.5 Define ALPHA, BETA and GAMMA of transistors in various modes. Establish the Mathematical relationship between them.
4th	7.	1st	1.6 Basic concept of Biasing, Types of Biasing, h-parameter model of BJT, load line (AC &DC) and determine the Q-point.
	8.	2nd	
5th	9.	1st	1.7 Types of Coupling, working principle & use of R-C Coupled Amplifier & Frequency Responses of R-C coupled Amplifier & draw the curve.
	10.	2nd	

UNIT - 2 : AUDIO POWER AMPLIFIERS.   [08 PERIODS]

Week	SN	Class Day	Theory Topics
6th	11.	1st	1.1 Classify Power Amplifier & Differentiate between Voltage and Power Amplifier.
	12.	2nd	
8th	13.	1st	1.2 Working principle of different types of Power Amplifier (Class-A, Class-AB, Class-B and Class-C & Class D amplifier).
	14.	2nd	
9th	15.	1st	
	16.	2nd	1.3 Construction and working principle and advantages of Push Pull (Class-B) Amplifiers
10th	17.	1st	
	18.	2nd	

UNIT - 3 : FIELD EFFECT TRANSISTOR (FET). [10 PERIODS]

Week	SN	Class Day	Theory Topics
11th	19.	1st	3.1 FET & its classifications & Differentiate between JFET & BJT.
	20.	2nd	3.2 Construction, working principle & characteristics of JEFT &Explain JEFT as an amplifier, parameters of JFET & Establish relation among JFET parameters.
12th	21.	1st	
	22.	2nd	
13th	23.	1st	3.3 Construction & working principle MOSFET & its classification & characteristics (Drain & Transfer)
	24.	2nd	
14th	25.	1st	3.4 Explain the operation of CMOS, VMOS & LDMOS.
	26.	2nd	
15th	27.	1st	3.1 FET & its classifications &Differentiate between JFET & BJT.
	28.	2nd	

Week	SN	Class Day	Theory Topics
			Unit-4: FEEDBACK AMPLIFIER & OSCILLATOR (8P)
1st	1.	1st	4.1 Define & classify Feedback Amplifier, principle of negative feedback with the help of block diagram, Types of feedback – negative & positive feedback.
	2.	2nd	4.2 Types of negative feedback – voltage shunt, voltage series, (voltage gain, bandwidth , input Impedance output impedance) (contd…)
	3.	3rd	4.2 Current shunt & Current series and characteristics voltage gain, bandwidth, input Impedance output (contd…)
2nd	4.	1st	4.2 Stability, noise , distortion in amplifiers
	5.	2nd	4.3 Oscillator -block diagram of sine wave oscillator ,Types Requirement of oscillation Barkhausen criterion
	6.	3rd	4.4 RC oscillators – RC phase shift: Circuit operation, circuit diagram, equation for frequency of oscillation (contd…)
3rd	7.	1st	4.4 Wien Bridge Oscillators: Circuit operation, circuit diagram, equation for frequency (contd…)
	8.	2nd	4.4 Crystal, LC oscillators – Colpitts , Hartley :Circuit operation, circuit diagram, equation for frequency of oscillation & frequency stability
			UNIT-6:OPERATIONAL AMPLIFIER CIRCUITS & FEEDBACK CONFIGURATIONS (14P)
	9.	3rd	6.1 Differential amplifier & explain its configuration & significance.
4th	10.	1st	6.1 Differential amplifier & explain its configuration & significance.
	11.	2nd	6.2 Block diagram representation of a typical Op- Amp, its equivalent circuits and draw the schematic symbol
	12.	3rd	6.4 Define the following electrical characteristics input offset voltage, input offset current (contd..)
5th	13.	1st	6.4 Define CMMR, Large signal voltage gain, Slew rate
	14.	2nd	6.5 Draw & explain Open Loop configuration (inverting, non-inverting Amplifier)
	15.	3rd	6.6 Draw the circuit diagram of the voltage series feedback amplifier and derive the close loop Voltage gain (contd...)
6th	16.	1st	6.6 gain of feedback circuits input resistance, and output resistance (contd...)
	17.	2nd	6.6 bandwidth and total output offset voltage with feedback.
	18.	3rd	6.7 Draw the circuit diagram of the voltage shunt feedback amplifier and derive the close loop voltage gain
7th	19.	1st	6.7 Gain of feedback circuits input resistance, and output resistance (contd...)
	20.	2nd	6.7 bandwidth and total output offset voltage with feedback.
	21.	3rd	6.3 Discuss the types of integrated circuits manufacturer's designations of ICs, Package types, (contd...)
8th	22.	1st	6.3 Discuss pin identification and temperature and ordering information.
			UNIT-7 : APPLICATION OF OPERATIONAL AMPLIFIER, TIMER CIRCUITS& IC VOLTAGE REGULATOR (13P)

	23.	2nd	7.1 Discuss the summing scaling and averaging of inverting amplifiers
	24.	3rd	7.1 Discuss the summing scaling and averaging of non-inverting amplifiers
9th	25.	1st	7.2 DC & AC Amplifies using OP-AMP.
	26.	2nd	7.3 Integrator using op-amp
	27.	3rd	7.3 differentiator using op-amp
10th	28.	1st	7.4 Active filter & describe the filter design of fast order low Pass Butterworth
	29.	2nd	7.5 Concept of Zero-Crossing Detector using Op-Amp
	30.	3rd	7.6 Block diagram and operation of IC 555 timer &IC 565 PLL& its applications.
11th	31.	1st	7.7 Working of Current to voltage Convertor using Operational Amplifier
	32.	2nd	7.8 Working of Voltage to Frequency Convertor using Operational Amplifier.
	33.	3rd	7.9 Working of Frequency to Voltage Conversion using Operational Amplifier.
12th	34.	1st	7.10 Operation of power supply using 78XX and 79XX,LM 317 Series with their PIN configuration
	35.	2nd	7.11 Functional block diagram & Working of IC regulator LM 723 & LM 317
			UNIT-5: TUNED AMPLIFIER & WAVE SHAPING CIRCUIT (12P)
	36.	3rd	5.1 Defined and classify Tuned amplifier, Explain parallel Resonant circuit, Resonance Curve & sharpness of Resonance.
13th	37.	1st	5.2 Working principle of Single tuned Voltage Amplifier & its limitation (contd)
	38.	2nd	5.2 Working principle of Double tuned Amplifier & its limitation
	39.	3rd	5.3 Different type of Non-linear circuits - Clipper, diode series &shunt (contd)
14th	40.	1st	5.3 Positive& negative biased & unbiased clipper (contd…)
	41.	2nd	5.3 Combinational clipper clippers circuit & its application
	42.	3rd	5.4 Different type of Clamper circuit (positive & negative clampers) & its application.
15th	43.	1st	5.5 Working principle of Astable, Monostable and Bistable Multivibrator with circuit diagram.
	44.	2nd	
	45.	3rd	
16th	46.	1st	5.6 Working& use of Integrator and Differentiator circuit using R- C circuit (Linear), input /output waveforms & frequency response.
	47.	2nd	

TH2-DCCN-SEM4

S.No	Topic	Contents To be covered:	Recourse	Class No in the week	Week
		Unit-1: Network& Protocol (8P)			
1	1.1 Data Communication	• Introduction • Components of Communication • Data Representation	1.Lecture Note 2.CCNA Module 1	1	
2	1.2 Networks	Network Criteria: • Performance • Reliability • Security	1.Lecture Note 2.CCNA Module 1	2	
3	1.2 Networks	Types of Networks: • LAN • MAN • WAN • PAN	1.Lecture Note 2.CCNA Module 1	3	**1ST**

4	1.3 OSI layer model(Application, Presentation Session layer)	• Define:
		  ○ Protocol
		  ○ Standards
		• Explain the necessity of Layered Tasks at sender and receiver
		• Inro to OSI model
		• Application and Session layer working
			1.Lecture Note 2.CCNA Module 1
			3. Animation: https://www.youtube.com/watch?v=-6Uoku-M6oY
				4	

5	1.3 OSI layer model(Transport, Network layer)	Functionality of: • Transport layer • Network layer	1.Lecture Note 2.CCNA Module 1	1	
6	1.3 OSI layer model(Datalink, Physical layer)	Functionality of: • Datalink layer • Physical layer	1.Lecture Note 2.CCNA Module 1	2	**2ND**
7	1.3 TCP/IP	• Intro to TCP/IP • Comparison between TCP/IP and OSI architecture	1.Lecture Note 2.CCNA Module 1	3	
8	1.3 Protocol & Architecture, Standards	• Protocol & Architecture, Standards • Recap of 1st chapter	1.Lecture Note 2.CCNA Module 1	4	
		Unit-7: TCP/IP (8P)			
9	7.1 TCP/IP Protocol Suite	In detail explanation of different layers of TCP/IP architecture	1.Lecture Note	1	
10	7.2 Basic Protocol functions	Explain the protocols of Application layer: HTTP,HTTPS,DNS,Telnet,SSH,FTP etc	1.Lecture Note	2	

11	7.2 Basic Protocol functions	Explain the protocols of Transport layer: • TCP • UDP • TCP vs UDP	1.Lecture Note 2.animation: https://www.youtube.com/watch?v=A3zId8jOfV4 3. CCNA Module 1	3	**3RD**
12	7.4 Internet Protocol operations	Explain the protocols of Internet layer: • IPv4: Classify and explain different classes of IPv4	1.Lecture Note 2. Nptel: https://www.youtube.com/watch?v=5vbPS-Knhvl 3. CCNA Module 1	4	
13	7.4 Internet Protocol operations	• Classes addressing • Subnet Mask	1.Lecture Note 3. CCNA Module 1	1	**4TH**
14	7.3 Internet Protocol operations	• IPv4 header	1.Lecture Note	2	
15	7.4 Internet Protocol	Explain the protocols of Internet layer: • IPv6 representation • Ipv6 header and applications • IPv4 vs Ipv6	1.Lecture Note 2. CCNA Module 1	3	
16	7.3 Principles of Internetworking	• Extranet • Intranet • Internet • Revision of entire chapter	1.Lecture Note 2. video link: https://www.youtube.com/watch?v=YMP5-Zynuw4 2. CCNA Module 1	4	
UNIT - 2. DATA TRANSMISSION & MEDIA (8P)				
17	2.1 Data transmission Concepts and Terminology	• Modes of transmission: Simplex, Half Duplex, Full Duplex • Types of Connection: Point-to-Point, Multipoint	1.Lecture Note 2. animation: https://www.youtube.com/watch?v=LMRSS7ZYM50	1	**5TH**
18	2.1 Data transmission Concepts and Terminology	Brief explanation on: • Channel (Analog/digital) • Data transfer rate • Throughput • Bandwidth	1.Lecture Note	2	

19	2.2 Analog and Digital Data transmission	• Analog Signal • Digital Signal • Analog Transmission	1.Lecture Note	3	
20	2.2 Analog and Digital Data transmission	• Digital Transmission • Comparison between Analog and Digital Transmission	1.Lecture Note 2. Video: https://www.youtube.com/watch?v=33kbebX5fkk	4	
21	2.3 Transmission impairments, Channel capacity	Explain: • Attenuation, • Distortion, • Types of noise (Thermal noise, intermodal noise, impulse noise) • crosstalk	1.Lecture Note 2.video: https://www.youtube.com/watch?v=Ey75NVQ6qYE 3. Video: https://www.youtube.com/watch?v=FCk_pDCc-x4	1	6TH
22	2.3 Transmission impairments, Channel capacity	• Channel Capacity • Shannon channel capacity formula	1.Lecture Note	2	
23	2.4 Transmission media, Guided Transmission, Wireless Transmission	• Classify media • Explain the guided media (twisted pair and coaxial cable)	1.Lecture Note 2.video: https://www.youtube.com/watch?v=fgOkvIHKgXQ 3.CCNA MODULE 1	3	
24	2.4 Transmission media, Guided Transmission, Wireless Transmission	• Explain the guided media-optical fiber cable • Explain the unguided media	1.Lecture Note 2.CCNA Module 1	4	
Unit-3. Data Encoding (8P)					

Unit-3. Data Encoding (8P)

25	3.1 Data encoding,	Define: • Encoding, • Data Encoding Types of Data Encoding	1.Lecture Note	1	
26	3.2 Digital data digital signals	• Different techniques used for Digital data digital signal encoding • Unipolar encoding • Polar: NRZ encoding	1.Lecture Note	2	7TH

27	3.2 Digital data digital signals	• RZ encoding • Manchester encoding • Biphase encoding	1.Lecture Note	3	
28	3.3 Digital data analog signals	• Digital Analog conversion • ASK	1.Lecture Note 2. video: https://www.youtube.com/watch?v=mHvV_Tv8HDQ	4	
29	3.3 Digital data analog signals	• FSK • PSK	1.Lecture Note 2. video: https://www.youtube.com/watch?v=mHvV_Tv8HDQ	1	**8TH**
30	3.4 Analog data digital signals	Pulse code modulation and its block diagram	1.Lecture Note 2. video: https://www.youtube.com/watch?v=mHvV_Tv8HDQ	2	
31	3.5 Analog data analog signals	• Analog data anlog signal • AM	1.Lecture Note 2. video: https://www.youtube.com/watch?v=mHvV_Tv8HDQ	3	
32	3.5 Analog data analog signals	• FM • PM	1.Lecture Note 2. video: https://www.youtube.com/watch?v=mHvV_Tv8HDQ	4	
Unit-4. Data Communication & Data link control (8P)				
33	4.1 Asynchronous and Synchronous Transmission	• Asynchronous Transmission • Synchronous Transmission	1.Lecture Note	1	**9TH**
34	4.2 Error Detection	• Parit check • Checksum • Cyclic redundancy check	1.Lecture Note	2	
35	4.3 Line configuration	• Point to point configuration • Multipoint configuration	1.Lecture Note	3	
36	4.4 Flow Control	• Stop and wait protocol	1.Lecture Note	4	

		• Sliding widnow protocol			
37	4.5 Error Control	• Single bit error vs burst error • Stop and wait arq • Go back n • Selective reject	1.Lecture Note Video: https://www.youtube.com/watch?v=kSgtZnffCog	1	**10TH**
38	4.6 Multiplexing	• Reasons for multiplexing • Typs of multiplexing • Advantages		2	
39	4.7 FDM synchronous TDM	• FDM • TDM(Synchronous)	1.Lecture Note 2.video: https://www.youtube.com/watch?v=f52bwNbuMDA 3.video: https://www.youtube.com/watch?v=aeJ55IySP_I	3	
40	4.8 Statistical TDM	Statistical TDM	1.Lecture Note	4	

Unit-6: LAN Technology (10P)

41	6.1. Topology	• Define topology • Explain different types of topology(Contd…)	1.Lecture Note 2. CCNA Module 1 3. video: https://www.youtube.com/watch?v=zbqrNg4C98U	1	**11TH**
42	6.1 Topology	Explain different types of topology	1.Lecture Note	2	
43	6.2 LAN protocol architecture	• Features of LAN • Logic link layer	1.Lecture Note	3	
44	6.3. Medium Access control	• Channel allocation and types • Pure Aloha • Slotted Aloha	1.Lecture Note 2. video: https://www.youtube.com/watch?v=j4-r0e7DjqY	4	
45	6.3. Medium Access control	• CSMA/CD • CSMA/CA	1.Lecture Note 2. Video: https://www.youtube.com/w	1	

			atch?v=KDHbP 81SAmA		**12TH**

46	6.4 Bridges, Hub, Switch	• Repeater • Hub	1.Lecture Note 2. animation: https://www.youtube.com/watch?v=1z0ULvg_pW8	2	
47	6.4 Bridges, Hub, Switch	• Switch • Router • Gateway	1.Lecture Note 2. animation: https://www.youtube.com/watch?v=1z0ULvg_pW8	3	
48	6.5 Ethernet (CSMA/CD)	Explain the concept of Ethernet	1.Lecture Note 2. video: https://www.youtube.com/watch?v=i2qiNAVfQRw	4	
49	6.5 Fiber Channel	Explain the fiber channel	1.Lecture Note	1	**13TH**
50	6.6 Wireless LAN Technology	Wireless LAN Technology	1.Lecture Note 2.video: https://www.youtube.com/watch?v=METB1o4UAT8	2	

Unit-5: Switching & Routing (10P)					
51	5.1 Circuit Switching networks	• Concept of Routing and switching • Circuit switching • Advantages and disadvantages	1.Lecture Note 2. Video: https://www.youtube.com/watch?v=-HlJ4psu5aU&t=77s	3	**13TH**
52	5.2 Packet Switching principles	• Packet switching • Advantages and disadvantages • Differences between circuit and packet switching	1.Lecture Note 2. https://www.youtube.com/watch?v=-HlJ4psu5aU&t=77s	4	

53	5.3 X.25	X.25	1.Lecture Note 2. nptel: https://www.youtube.com/watch?v=DU7IZMciHJE	1	**14TH**
54	5.4 Routing in Packet switching	• Centralized vs Distributed Routing • Static vs Dynamic Routing • Virtual Circuit Based Packet Switching • Datagram Circuit Based Packet Switching	1.Lecture Note	2	
55	5.5 Congestion	• Causes of Congestion • Congestion correction	1.Lecture Note 2.video: https://www.youtube.com/watch?v=txctUWFirt8	3	
56	5.6 Effects of congestion, congestion control	Congestion Control:Open loop Congestion control	1.Lecture Note 2. https://www.youtube.com/watch?v=txctUWFirt8	4	
57	5.6 Effects of congestion, congestion control	Congestion Control:Close loop Congestion control	1.Lecture Note 2. video: https://www.youtube.com/watch?v=ZYIdYIt7W_g	1	**15TH**
58	5.7 Traffic Management	• Types of network traffic • Traffic management techniques	1.Lecture Note	2	
59	5.8 Congestion Control in Packet Switching Network.	Congestion Control in Packet Switching Network.	1.Lecture Note	3	
60	5.8 Congestion Control in Packet Switching Network.	Revision of chapter 5	1.Lecture Note	4	

Discipline: **4TH SEM ELECTRONICS** and Telecommunication Engineering			Name of the Teaching Faculty: **Er. GOPAL CH. BEHERA & Er. POONAM PANDA**
Subject: - **TH - 3 Microprocessor & Microcontroller**	No. of days per week class allotted: **05**		Semester From Date: **14TH FEBRUARY 2023 to 23RD MAY 2023** No. of Weeks: **15**
Week	SN	Class Day	Syllabus To be Covered [SESSION: **2022-23**]

UNIT-1: MICROPROCESSOR (Architecture & Programming-8085-8-bit) 15P

Week	SN	Class Day	Syllabus To be Covered
1st	1.	1st	**1.1** Introduction to Microprocessor and Microcomputer & distinguish between them.
	2.	2nd	**1.2** Concept of Address bus, Data bus, Control Bus & System Bus
	3.	3rd	**1.3** General Bus structure Block Diagram.
	4.	4th	**1.3** General Bus structure Block Diagram.
	5.	5th	**1.4** Basic Architecture of 8085 (8 bit) Microprocessor
2nd	6.	1st	**1.4** Basic Architecture of 8085 (8 bit) Microprocessor
	7.	2nd	**1.4** Basic Architecture of 8085 (8 bit) Microprocessor
	8.	3rd	**1.5** Signal Description (Pin Diagram) of 8085 Microprocessor
	9.	4th	**1.5** Signal Description (Pin Diagram) of 8085 Microprocessor
	10.	5th	**1.5** Signal Description (Pin Diagram) of 8085 Microprocessor
3rd	11.	1st	**1.6** Register Organizations, Distinguish between SPR & GPR
	12.	2nd	**1.6** Timing & Control Module,
	13.	3rd	**1.7** Stack, Stack pointer & Stack top.
	14.	4th	**1.7** Stack, Stack pointer & Stack top.
	15.	5th	**1.8** Interrupts:-8085 Interrupts, Masking of Interrupt (SIM, RIM)

UNIT-2: Instruction Set & Assembly Language Programming 15P

Week	SN	Class Day	Syllabus To be Covered
4th	16.	1st	**2.1** Addressing data & Differentiate between one-byte, two-byte & three-byte instructions with examples.
	17.	2nd	**2.2** Addressing modes in instructions with suitable examples.
	18.	3rd	**2.3** Instruction Set of 8085 (Data Transfer)
	19.	4th	**2.3** Instruction Set of 8085 (Arithmetic, Logical)
	20.	5th	**2.3** Instruction Set of 8085 (Branching)
5th	21.	1st	**2.3** Instruction Set of 8085 (Stack & I/O , Machine Control)
	22.	2nd	**2.4** Simple ALP of 8085; **2.4.1** Simple Addition & Subtraction
	23.	3rd	**2.4.2** Logic Operations (AND, OR, Complement 1's & 2's) & Masking of bits
	24.	4th	**2.4.3** Counters & Time delay (Single Register, Register Pair, More than Two Register)
	25.	5th	**2.4.4** Looping, Counting & Indexing (Call/JMP etc).
6th	26.	1st	**2.4.5** Stack & Subroutine Programs.
	27.	2nd	**2.4.6** Code conversion, BCD Arithmetic & 16 Bit data Operation, Block Transfer.
	28.	3rd	**2.4.7** Compare between two numbers
	29.	4th	**2.4.8** Array Handling (Largest number & smallest number in the array
	30.	5th	**2.5** Memory & I/O Addressing

UNIT-3:   TIMING DIAGRAMS.   [08 Periods]

Week	SN	Class Day	Syllabus To be Covered
7th	31.	1st	**3.1** Define Opcode, operand, T-State, Fetch cycle, Machine Cycle,
	32.	2nd	**3.1** Instruction cycle & discuss the concept of timing diagram.
	33.	3rd	**3.2** Draw timing diagram for memory read, memory write machine cycle.
	34.	4th	**3.2** Draw timing diagram for I/O read, I/O write machine cycle.
	35.	5th	**3.3** Draw a neat sketch for timing diagram for 8085 (MOV Instruction).

	36.	1st	**3.3** Draw a neat sketch for timing diagram for 8085 (MOV Instruction).
	37.	2nd	**3.3** Draw a neat sketch for timing diagram for 8085 (MVI Instruction).
8th	38.	3rd	**3.3** Draw a neat sketch for timing diagram for 8085 (LDA Instruction).

	UNIT-4		**Microprocessor Based System Development AIDS ⬜10P**
	39.	4th	**4.1** Concept of interfacing
	40.	5th	**4.2** Define Mapping & Data transfer mechanisms - Memory mapping & I/O Mapping
9th	41.	1st	**4.3** Concept of Memory Interfacing:- Interfacing EPROM & RAM Memories. **4.4** Concept of Address decoding for I/O devices
	42.	2nd	**4.5** Programmable Peripheral Interface: 8255
	43.	3rd	**4.6** ADC & DAC with Interfacing.
	44.	4th	**4.7** Interfacing Seven Segment Displays
	45.	5th	**4.8** Generate square waves on all lines of 8255
10th	46.	1st	**4.9** Design Interface a traffic light control system using 8255.
	47.	2nd	**4.10** Design interface for stepper motor control using 8255.
	48.	3rd	**4.11** Basic concept of other Interfacing DMA controller, USART

UNIT-5 Microprocessor (Architecture & Programming-8086-16 bit) ⬜ 12P

	49.	4th	**5.1** Register Organization of 8086
	50.	5th	**5.2** Internal architecture of 8086
11th	51.	1st	**5.2** Internal architecture of 8086
	52.	2nd	**5.3** Signal Description of 8086
	53.	3rd	**5.3** Signal Description of 8086
	54.	4th	**5.4** General Bus Operation& Physical Memory Organization
	55.	5th	**5.5** Minimum Mode & Timings, **5.6** Maximum Mode &Timings,
12th	56.	1st	**5.7** Interrupts and Interrupt Service Routines, Interrupt Cycle, Non-Maskable Interrupt, Maskable Interrupt
	57.	2nd	**5.8** 8086 Instruction Set & Programming: Addressing Modes, Instruction Set
	58.	3rd	**5.8** 8086 Instruction Set & Programming: Assembler Directives and Operators
	59.	4th	**5.9** Simple Assembly language programming using 8086 instructions.
	60.	5th	**5.9** Simple Assembly language programming using 8086 instructions.

UNIT-6 Microcontroller (Architecture and Programming-8 bit)⬜15

13th	61.	1st	**6.1** Distinguish between Microprocessor & Microcontroller
	62.	2nd	**6.2** 8 bit & 16 bit microcontroller. **6.3** CISC & RISC processor
	63.	3rd	**6.4** Architecture of 8051 Microcontroller
	64.	4th	**6.4** Architecture of 8051 Microcontroller
14th	65.	5th	**6.5** Signal Description of 8051 Microcontrollers
	66.	1st	**6.6** Memory Organization-RAM structure, SFR
	67.	2nd	**6.7** Registers, timers, interrupts of 8051 Microcontrollers
	68.	3rd	**6.7** Registers, timers, interrupts of 8051 Microcontrollers
	69.	4th	**6.8** Addressing Modes of 8051
	70.	5th	**6.9** Simple 8051 ALP: - Arithmetic & Logic Instructions Programming
15th	71.	1st	**6.9** Simple 8051 ALP: - JUMP, LOOP Instructions Programming
	72.	2nd	**6.9** Simple 8051 ALP: - I/O Port Programming
	73.	3rd	**6.10** Interrupts, Timer & Counters
	74.	4th	**6.11** Serial Communication
	75.	5th	**6.12** Microcontroller Interrupts and Interfacing to 8255