



GOVERNMENT POLYTECHNIC KORAPUT
DEPARTMENT OF ELECTRICAL ENGINEERING

TH.3 DIGITAL ELECTRONICS & MICROPROCESSOR

Name of the Course: Diploma in Electrical Engineering			
Faculty: S Bichiballi WEF: 14/09/2022			
Course code:	Th.3	Semester:	5 th
Total Period:	75 Periods	Examination:	3 Hrs
Theory periods:	5P / Week	Internal Assessment:	20
Tutorial:	-	End Semester Examination:	80
Maximum marks:	100		

VISION:

To create competent & industry ready Electrical Diploma Engineers with professional and social values to meet future challenges.

MISSION:

- To prepare diploma holders through “qualitative competency based education system” to compete with national requirement along with core values.
- To produce dynamic Electrical Engineers to serve the society and industry.
- To develop leadership qualities, communication skills, critical thinking and attitude for lifelong learning.

PROGRAM EDUCATIONAL OBJECTIVES:

PEO1	Apply technical knowledge and skills learned in the field of Electrical Engineering to excel in Professional and/or higher education.
PEO2	To provide students an excellent academic environment and make them aware the needs of Society and Industry to become a successful Professional/Entrepreneur.
PEO3	To engage in lifelong learning, career enhancement to adopt emerging technologies

COURSE OUTCOMES:

CO1	Outline Number system, Boolean algebra, codes, understand logic gates and verify truth tables.
CO2	Design various combinational and sequential circuits using logic gates.
CO3	Understand 8085 Microprocessor and write simple assembly language program.
CO4	Design control logic gates using 8085 Microprocessor and 8255 interface.



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TOPIC WISE DISTRIBUTION OF PERIODS

Sl. No.	Topics	Periods
1.	Basics Of Digital Electronics	15
2.	Combinational Logic Circuits	15
3.	Sequential Logic Circuits	15
4.	8085 Microprocessor	20
5.	Interfacing And Support Chips	10
Total		75

LESSON PLAN

Week	Day	Theory topic
1 st	1 st	Basics of Digital Electronics: Binary number systems and compare with Decimal system.
	2 nd	Octal, Hexadecimal number systems and compare with Decimal system.
	3 rd	Binary Addition, Subtraction, Multiplication and Division.
	4 th	1's complement and 2's complement numbers for a binary number
	5 th	Subtraction of binary numbers in 2's complement method.
2 nd	1 st	Use of weighted and Un-weighted codes & write Binary equivalent number for a number in 8421, Excess-3 and Gray Code and vice versa.
	2 nd	Use of weighted and Un-weighted codes & write Binary equivalent number for a number in 8421, Excess-3 and Gray Code and vice versa.
	3 rd	Importance of parity Bit.
	4 th	Logic Gates: AND, OR, NOT, NAND, NOR and EX-OR gates with truth table.
	5 th	Realize AND, OR, NOT operations using NAND, NOR gates.
3 rd	1 st	Different postulates and De-Morgan's theorems in Boolean algebra.
	2 nd	Use Of Boolean Algebra For Simplification Of Logic Expression
	3 rd	Karnaugh Map For 2,3,4 Variable, Simplification Of SOP And POS Logic Expression Using K-Map.
	4 th	Karnaugh Map For 2,3,4 Variable, Simplification Of SOP And POS Logic Expression Using K-Map.
	5 th	Karnaugh Map For 2,3,4 Variable, Simplification Of SOP And POS Logic Expression Using K-Map.
4 th	1 st	Combinational logic circuits: Give the concept of combinational logic circuits.
	2 nd	Half adder circuit and verify its functionality using truth table.
	3 rd	Realize a Half-adder using NAND gates only and NOR gates only.
	4 th	Full adder circuit and explain its operation with truth table.
	5 th	Realize full-adder using two Half-adders and an OR – gate and write truth table.
5 th	1 st	Full Subtractor circuit and explain its operation with truth table.
	2 nd	Operation of 4 X 1 Multiplexers and 1 X 4 Demultiplexer.


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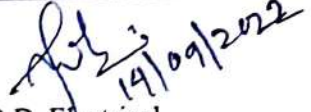
	3 rd	Operation of 4 X 1 Multiplexers and 1 X 4 Demultiplexer.
	4 th	Working of Binary-Decimal Encoder & 3 X 8 Decoder.
	5 th	Working of Binary-Decimal Encoder & 3 X 8 Decoder.
6 th	1 st	Working of Two bit magnitude comparator.
	2 nd	Working of Two bit magnitude comparator.
	3 rd	Previous year questions.
	4 th	Previous year questions.
	5 th	Previous year questions.
7 th	1 st	8085 Microprocessor: Introduction to Microprocessors, Microcomputers.
	2 nd	Architecture of Intel 8085A Microprocessor and description of each block.
	3 rd	Architecture of Intel 8085A Microprocessor and description of each block.
	4 th	Pin diagram and description.
	5 th	Stack, Stack pointer & stack top.
8 th	1 st	Interrupts.
	2 nd	Opcode & Operand.
	3 rd	Differentiate between one byte, two byte & three byte instruction with example.
	4 th	Instruction set of 8085 example.
	5 th	Instruction set of 8085 example.
9 th	1 st	Addressing modes.
	2 nd	Fetch Cycle, Machine Cycle, Instruction Cycle, T-State.
	3 rd	Timing Diagram for memory read, memory write, I/O read, I/O write.
	4 th	Timing Diagram for 8085 instruction.
	5 th	Counter and time delay.
10 th	1 st	Simple assembly language programming of 8085.
	2 nd	Simple assembly language programming of 8085.
	3 rd	Simple assembly language programming of 8085.
	4 th	Simple assembly language programming of 8085.
	5 th	Previous year question discussion.
11 th	1 st	Sequential logic circuits: Give the idea of Sequential logic circuits.
	2 nd	State the necessity of clock and give the concept of level clocking and edge triggering.
	3 rd	Clocked SR flip flop with preset and clear inputs.
	4 th	Construct level clocked JK flip flop using S-R flip-flop and explain with truth table
	5 th	Concept of race around condition and study of master slave JK flip flop.
12 th	1 st	Give the truth tables of edge triggered D and T flip flops and draw their symbols.
	2 nd	Applications of flip flops.
	3 rd	Define modulus of a counter
	4 th	4-bit asynchronous counter and its timing diagram.
	5 th	Asynchronous decade counter.
13 th	1 st	4-bit synchronous counter.
	2 nd	Distinguish between synchronous and asynchronous counters.
	3 rd	State the need for a Register and list the four types of registers.
	4 th	Working of SISO, SIPO, PISO, PIPO Register with truth table using flip flop.
	5 th	Working of SISO, SIPO, PISO, PIPO Register with truth table using flip flop.
14 th	1 st	Interfacing and Support chips:
	2 nd	Basic Interfacing Concepts.



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	3 rd	Memory mapping & I/O mapping.
	4 th	Functional block diagram and description of each block of Programmable peripheral interface Intel 8255.
	5 th	Functional block diagram and description of each block of Programmable peripheral interface Intel 8255.
15 th	1 st	Application using 8255: Seven segment LED display.
	2 nd	Square wave generator.
	3 rd	Traffic light Controller.
	4 th	Revision.
	5 th	Previous year question discussion.


14/09/2022
Signature of faculty concerned


14/09/2022
H.O.D. Electrical