# *ACADEMIC LESSON PLAN FOR WINTER -2023*

**Dept. of Electronics & Telecommunication, RKCATPolytechnic**

**Name of the Faculty: p r i y a r a n j a n s e n**

## Th.3 - DIGITAL ELECTRONICS

Theory :
Total Period s :
Examination :
Sem :

Internal Assessment : 20 Marks
End Semester Exam : 80marks
TOTAL MARKS : 100 Marks
Start of Class :

| PERIOD | TOPIC COVERED | DATE | REMARKS |
|---|---|---|---|
| UNIT-01<br>2PERIODS | Number System-Binary, Octal, Decimal, Hexadecimal - Conversion from one system toanother number system | | |
| 2PERIODS | Arithmetic Operation-Addition, Subtraction Multiplication,Division, 1's & 2's complementof Binary numbers& Subtraction using complements method | | |
| 2PERIODS | Digital Code & its application & distinguish between weighted & non-weight Code, Binarycodes, excess-3 and Gray codes. | | |
| 2PERIODS | Logic gates: AND,OR,NOT,NAND,NOR, Exclusive-OR, Exclusive-NOR--Symbol,Function, expression, truth table & timing diagram | | |
| 2PERIODS | Universal Gates& its Realisation Boolean algebra, Boolean expressions, Demorgan's Theorems | | |
| 2PERIODS<br>Total-l 2 | Represent Logic Expression: SOP & POS forms Karnaugh map (3 & 4 Variables)&Minimization of logical expressions ,don't careconditions | | |
| Unit-02<br>TOTAL-12<br>4PERIODS | Half adder, Full adder, Half Subtractor, Full Subtractor, Serial and Parallel Binary 4 bit adder. | | |

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| 4PERIODS | Multiplexer (4:1), De- multiplexer (1:4), Decoder, Encoder, Digital comparator (3 Bit) | | |
| 4PERIODS | Seven segment Decoder<br>(Definition, relevance, gate level of circuit Logic circuit, truth table, Applications of above | | |
| Unit-03<br>Total-12<br><br>4PERIODS | Principle of flip-flops operation, its tyes | | |
| 4PERIODS | SR Flip Flop using NAND,NOR Latch (un clocked)<br>Clocked SR,D,JK,T,JKMasterSlave flip-flops-Symbollogic | | |
| 4PERIODS | Circuit, truth tableand applications<br>Concept of Racing and how it can be avoided | | |
| UNIT04<br><br>TOTAL-08<br><br>2PERIODS | Shift Registers-Serial in Serial -out, Serial- in Parallel-out, Parallel in serial out andParallel in parallel out<br>Universal shift registers-Applications. | | |
| 2PERIODS | Types of Counter & applications<br>Binary counter, Asynchronous ripple counter (UP & DOWN), | | |
| 2PERIODS | Decade counter.Synchronous counter, Ring Counter. | | |
| 2PERIODS | Concept of memories-RAM, ROM, static RAM, dynamic RAM,PS RAM<br>Basic concept of PLD & applications | | |
| UNIT-05<br>TOTAL-07<br><br>2PERIODS | Necessity of A/D and D/A converters.<br>D/A conversion using weighted resistors methods. | | |

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| 2PERIODS | D/A conversion using R-2R ladder (Weighted resistors) network. | | |
| 2PERIODS | A/D conversion using counter method. | | |
| 1PERIOD | A/D conversion using Successive approximate method | | |
| UNIT-06<br><br>TOTAL-09<br>2PERIODS | Various logic families &categories according to the IC fabrication process | | |
| 2PERIODS | Characteristics of Digital ICs- Propagation Delay, fan-out, fan-in, Power Dissipation<br>, | | |
| 3PERIODS | NoiseMargin, Power Supply requirement &Speed with Reference to logic families. | | |
| 2PERIODS | Features, circuit operation &various applications of TTL(NAND), CMOS (NAND & NOR | | |