**GOVERNMENT POLYTECHNIC COLLEGE**

**PURASAWALKAM, CHENNAI - 12**

**DEPARTMENT OF COMPUTER ENGINEERING**

**II YEAR / III SEM / 1ST SHIFT**

**SUBJECT LOG : 35231- BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING**

|  |  |  |  |
| --- | --- | --- | --- |
| **Subject handled by: LAVANYA.V Designation :** Part Time / Guest Lecturer | | | |
| **HOURS** | **CHAPTER NO** | **PORTIONS COVERED** | **DATE** |
| **UNIT 4 : BOOLEAN ALGEBRA ,LOGIC GATES COMBINATIONAL SYSTEM (14 Hrs)** | | | |
|  | **4.1** | Number representation: Decimal, Binary, Octal and Hexa decimal number systems | **11.06.18** |
|  | Conversion of number from one number system to another (without decimal point) | **12.06.18** |
|  | BCD CODE – ASCII Codes | **12.06.18** |
|  | Parity bit Use of a parity bit Odd parity and Even parity | **12.06.18** |
|  | **4.2** | Logic gates: Positive and Negative logic System - Definition, Truth table, Symbol and Logical equations of AND – OR - NOT | **13.06.18** |
|  | Definition, Truth table, Symbol and Logical equations of EXOR - EXNOR (Only 2- inputs) gates | **14.06.18** |
|  | Universal gates - NAND - NOR – Symbol and truth table | **15.06.18** |
|  | Symbol and truth table | **15.06.18** |
|  | **4.3** | Boolean Algebra : Basic laws of Boolean algebra – Demorgan’s Theorem and proofs | **18.06.18** |
|  | Duality theorem - Simplification of logical equations using  Boolean laws - De-Morgan’s theorem | **19.06.18** |
|  | Two and three variable Karnaugh map | **19.06.18** |
|  | **4.4** | Arithmetic Circuits: Half Adder and full adder- Truth table, | **20.06.18** |
|  | Circuit diagram – Half subtractor and Full subtractor - Truth table, Circuit diagram. | **20.06.18** |
|  | **4.5** | Combinational logic circuits: Parity generator and checker | **21.06.18** |
|  | Multiplexer – De Multiplexer | **22.06.18** |
|  | Encoder - Decoder (Definition and Basic Circuits only) | **25.06.18** |
|  | Comparator Circuit for two bit words. | **27.06.18** |
|  |
| **UNIT V . SEQUENTIAL LOGIC SYSTEM 13 Hrs** | | | |
|  | **5.1**  **CHAPTER NO** | **Flip flops:** Basic principle of operation - S-R | **28.06.18** |
| **HOURS** | **PORTIONS COVERED** | **DATE** |
|  | D flip-flop – Operation and truth table | **29.06.18** |
|  | Race Condition – JK flip flop – T flip flop | **02.07.18** |
|  | Toggling - Edge Triggered Flip-flop – Level Triggered flip flop - Need for a Master-slave flip flop | **04.07.18** |
|  | J-K Master Slave flip flop | **05.07.18** |
|  | **5.2** | Counters:Need- Types of counters- 4 bit Asynchronous counter- | **06.07.18** |
|  | 4 bit Asynchronous counter | **09.07.18** |
|  | Mod N counter-Decade Counter | **12.07.18** |
|  | 4 bit Synchronous counter-Distinguish between Synchronous and Asynchronous counter- Application of counters | **13.07.18** |
|  | **5.3** | Registers**:** Shift register - Block diagram representation | **16.07.18** |
|  | serial –in Serial out, Serial – in Parallel – out, | **18.17.18** |
|  |
|  | Parallel in -parallel out  Applications of Shift Registers. | **19.07.18** |
|  | | | |
|  | **3.1** | Diodes:PN Junction diode – Barrier Voltage, Depletion Region | **20.07.2018** |
|  | Forward  biased and Reverse biased Junction – Working principle - forward /Reverse  characteristics | **23.07.2018** |
|  | P-N Junction diode Applications of diode | **24.07.2018** |
|  | Zener Diode:  Construction -Characteristics ( Forward and Reverse) | **27.07.2018** |
|  | Avalanche and Zenerbreak down - Applications of Zener diode. | **01.08.2018** |
|  |
|  | Light Emitting Diodes-operation,  construction and characteristics. | **02.08.2018** |
|  | LDR – Principle of operation and  Characteristics | **03.08.2018** |
|  | Photo Diode – Principle of operation(concept only) | **06.08.2018** |
|  | **3.2** | Rectifiers:Definition – Need of Rectification – Circuit diagram, Operation, i/p  and o/p Waveforms of Half wave | **09.08.2018** |
|  | Full wave- Bridge rectifiers (without filters) | **10.08.2018** |
|  | Uses of filters in rectifier circuit | **16.08.2018** |
|  | factor, Efficiency and PIV ( No  derivation) – Comparison | **20.08.2018** |
| **HOURS** | **CHAPTER NO** | **PORTIONS COVERED** | **DATE** |
|  | **3.3** | Bipolar Junction Transistor**:** Definition - Principle of NPN and PNP transistor - Symbol - Transistor terminals | **23.08.2018** |
|  |
|  | Operating principle (NPN transistor only) -  Configurations of transistor | **24.08.2018** |
|  | Comparison between CB, CE and CC - Input  and Output characteristics of CE configuration – Transistor application as switch. | **27.08.2018** |
| **UNIT I. AC FUNDAMENTALS ,BATTERIES AND UPS (12Hrs)** | | | |
|  | **1.1** | **AC Fundamentals**: Difference between AC and DC - Advantages of AC over  DC – Waveform of sinusoidal A.C. Cycle | **28.08.2018** |
|  | Generation of single phase A.C. by  elementary alternator - Definition of cycle, frequency, time period, amplitude,peak value, average value and rms value | **29.08.2018** |
|  |
|  | Define peak factor and form factor -  Concept of phase , phase difference and phase angle | **30.08.2018** |
|  | Single phase and 3 phase (Definition) - Meaning of lagging and leading sine wave - Advantages of three phase over single phase | **31.08.2018** |
|  | **1.2** | **Batteries**: Classification of cells - Construction of Lead acid cell – Methods of Charging | **03.09.2018** |
|  | Care and Maintenance of Lead acid battery | **04.09.2018** |
|  | Indications of a fully  charge battery – Maintenance free batteries. | **06.09.2018** |
|  | **1.3** | **UPS :** Need for UPS - Online and Offline UPS – Definition – Block Diagram | **10.09.2018** |
|  | Merits and demerits of on line and off line UPS –  Need of heat sink- Specification and ratings –Maintenance of UPS includingBatteries | **14.09.2018** |
| **UNIT II.TRANSFORMER AND SPECIAL MOTORS (12 Hrs)** | | | |
|  | **2.1** | Single Phase transformer**:** Working Principle and Construction of ransformer | **14.09.2018** |
|  | Function and materials used - emf equation of transformer (No derivation) – Voltage and current ratio of a transformer | **17.09.2018** |
|  |
|  | Efficiency - Losses in a transformer - Auto transformer -  Comparison with two winding transformer – Applications – Step up and Step down transformer ( Definition only) | **18.09.2018** |
|  |
|  | **2.2** | Special Motors: Stepper Motor: Definition - Working principle - Types and Applications Servo motors: Definition - Working principle | **18.09.2018** |
|  | Factors to be considered for selecting a motor for a particular  Application | **20.09.2018** |
|  | **2.3** | Electrical Safety**:** Electric shock-need for earthling-types of earthling, fuses need types of fuses | **20.09.2018** |