**LESSON PLAN**

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| **Discipline:**  Electrical Engg. | **Semester:**  Forth (4th) | **Name of the Faculty:**  Er Abadul Sajid Khan/  Er B.R.Nayak |
| **Subject:**  Analog Electronics & OP-AMP(TH-02) | **No. of days/week class allotted:**  Six (6) | **Semester from Date:16.01.24**  **to Date: 26.04.24**  **No. of Weeks:** 15 |
| **WEEK** | **CLASS DAY** | **THEORY TOPICS** |
| 1st | 1st | **Topic No.- 01(PN-JUNCTION DIODE)**  Introduction, P-N junction diode |
| 2nd | Working of diode |
| 3rd | V-I characteristics of PN-junction diode |
| 4th | DC load line.  Imp. Terms such as Ideal diode and knee voltage |
| 5th | Junction breakdown  Avalanche breakdown & Zener breakdown |
| 6th | P-N diode clipping circuit  P-N diode clamping circuit |
| 2nd | 1st | ***Possible Question Answer Discussion*** |
| 2nd | **Topic No.- 02 (SPECIAL EMICONDUCTOR DEVICES)**  Thermistors, Sensors& Barraters |
| 3rd | Zener Diode |
| 4th | Tunnel Diode |
| 5th | PIN Diode |
| 6th | ***Possible Question Answer Discussion*** |
| 3rd | 1st | **Topic No.- 03(RECTIFIER CIRCUITS AND FILTERS)**  Rectifiers and its Classification |
| 2nd | Analysis of Half wave and Full wave Rectifiers |
| 3rd | D.C output Current and Voltage.  R.M.S. output current and voltage |
| 4th | Rectifier efficiency.  Ripple factor |
| 5th | Regulation Transformer utilization factor  Peak inverse factor |
| 6th | Filters (introduction) Shunt capacitor filter |
| 4th | 1st | Choke input filter , PI filter |
| 2nd | ***Possible Question Answer Discussion*** |
| 3rd | **Topic No.- 04(TRANSISTORS)**  Principle of Bipolar junction Transistors |
| 4th | Modes of operations of Transistors, |
| 5th | Current components in a Transistors |
| 6th | **Monthly Test-01** |
| 5th | 1st | Transistors as an Amplifier |
| 2nd | Transistor circuit configuration and its characteristics  CB configuration |
| 3rd | CE configuration ,CC configuration |
| 4th | ***Possible Question Answer Discussion*** |
| 5th | **Topic No.- 05(TRANSISTOR CIRCUITS)**  Transistor biasing |
| 6th | Stabilization, Stability factor |
| 6th | 1st | Different methods of Transistor Biasing |
| 2nd | Base Resistor method |
| 3rd | Collector to Base bias |
| 4th | Self-bias or voltage divider bias |
| 5th | ***Possible Question Answer Discussion*** |
| 6th | **Topic No.- 06(TRANSISTOR AMPLIFIER AND OSCILLATOR)** Practical circuit of Transistor amplifier |
| 7th | 1st | D.C load line and D.C equivalent ckt  A.C load line and A.C equivalent circuit |
| 2nd | **Monthly Test-02** |
| 3rd | Calculation of gain, Phase reversal |
| 4th | H parameters of Transistors |
| 5th | Simplified h- parameters of Transistors |
| 6th | Generalize approximation model, Analysis of CB,CE,  CC amplifiers using generalized approximate model |
| 8th | 1st | Multi stage Transistor amplifier  RC-coupled amplifier |
| 2nd | Transformer coupled amplifier |
| 3rd | Feedback in amplifier, General Theory of feedback  Negative feedback circuit & Advantages of negative FB. |
| 4th | Power Amplifiers and its Classifications  Difference between Voltage amplifier and Power amplifier |
| 5th | Transformer coupled class-A amplifier |
| 6th | Class-A push-pull amplifier  Class-B push-pull amplifier |
| 9th | 1st | Oscillators , Types of Oscillators |
| 2nd | Essentials of Transistor Oscs. |
| 3rd | Principle of operations of Tuned collector, Colpitt, Hartley oscillators, Phase shift ,Wien Bridge oscillators |
| 4th | ***Possible Question Answer Discussion*** |
| 5th | **Monthly Test-03** |
| 6th | **Topic No.- 07(FIELD EFFECT TRANSISTORS)**  Classifications of FET, Advantages of FET over BJT |
| 10th | 1st | Principle of operation of FET |
| 2nd | FET parameters (No math derivation) d.c drain resistance |
| 3rd | a.c drain resistance |
| 4th | Trans conductance |
| 5th | Biasing of FET |
| 6th | ***Possible Question Answer Discussion*** |
| 11th | 1st | **Topic No.- 08(OPERATIONAL AMPLIFIERS)**  General circuit of OP-Amp and IC-741 |
| 2nd | Operational amplifier stages  Equivalent circuits of OP-AMP |
| 3rd | Open loop OP-AMP configurations  OP-AMP with feedback |
| 4th | Inverting OP-AMP |
| 5th | Non inverting OP-AMP  Voltage follower and buffer |
| 6th | **Monthly Test-04** |
| 12th | 1st | Differential amplifier |
| 2nd | Adder or Summing amplifier |
| 3rd | Subtractor |
| 4th | Integrator |
| 5th | Differentiator |
| 6th | Comparator |
| 13th | 1st | ***Possible Question Answer Discussion*** |
| 2nd | Review Class for Chapter No.- 01 |
| 3rd | Review Class for Chapter No.- 02 |
| 4th | Review Class for Chapter No.- 03 |
| 5th | Review Class for Chapter No.- 04 |
| 6th | Review Class for Chapter No.- 05 |
| 14th | 1st | Review Class for Chapter No.- 06 |
| 2nd | Review Class for Chapter No.- 07 |
| 3rd | Review Class for Chapter No.- 07 |
| 4th | Previous Year (S- 22) Question Answer Discussion |
| 5th | Previous Year (S- 22) Question Answer Discussion |
| 6th | Previous Year (S- 22) Question Answer Discussion |
| 15th | 1st | Previous Year (S- 21) Question Answer Discussion |
| 2nd | Previous Year (S- 21) Question Answer Discussion |
| 3rd | Previous Year (S- 20) Question Answer Discussion |
| 4th | Previous Year (S- 20) Question Answer Discussion |
| 5th | Previous Year (S- 19) Question Answer Discussion |
| 6th | Previous Year (S- 19) Question Answer Discussion |

*Chapters covered up to IA****: 1, 2,3,4 & 5.***