# LESSON PLAN

**SUB:-ANALOG ELECTRONICS& OPAMP**
**BRANCH:- ELECTRICAL ENGG.**
**SEMESTER: 4TH**
**NAME OF FACULTY: - TAPAN KU DAS**



# GOVERNMENT POLYTECHNIC, BHADRAK
# SESSION:2024-25

HOD Electrical

Academic Co-ordinator

Principal
Govt. Polytechnic Bhadrak

HOD (ELECT.)
G.P.BHADRAK

Academic Co-ordinator

Principal
Govt.Polytechnic
Bhadrak

| DISCIPLINE **ELECTRICAL** | SEMESTER **4TH** | NAME OF THE TEACHING FACULTY TAPAN KUMAR DAS (Lect. in ETC) |
|---|---|---|
| SUBJECT **Analog Electronics & op - Amp** | NO. OF DAYS/WEEK CLASS ALLOTTED - 60 | SEMESTER FROM DATE 04.02.2025 – 17.05.2025 No. of weeks- 15 |
| WEEK | CLASS DAY | THEORY TOPICS |
| 1ST | 01 | Diode.<br>P-N Junction Diode. |
| | 02 | V-I characteristic of PN junction Diode. |
| | 03 | DC load line.<br>Important terms such as Ideal Diode, Knee voltage |
| | 04 | Junctions break down.<br>1. Zener breakdown<br>2. Avalanche breakdown |
| 2ND | 01 | P-N Diode clipping Circuit. |
| | 02 | P-N Diode clamping Circuit. |
| | 03 | Thermistors, Sensors & barretters. |
| | 04 | Zener Diode, Tunnel Diode, PIN Diode |
| 3RD | 01 | Classification of rectifiers. Analysis of half wave |
| | 02 | full wave centre tapped and Bridge rectifiers |
| | 03 | calculate:<br>DC output current and voltage |
| | 04 | RMS output current and voltage |
| 4TH | 01 | Rectifier efficiency, Ripple factor |
| | 02 | Regulation, |
| | 03 | Transformer utilization factorPeak inverse voltage |
| | 04 | Problem solving |
| 5TH | 01 | Filters:<br>Shunt capacitor filter, Choke input filter, $\pi$ filter |
| | 02 | Principle of Bipolar junction transistor |
| | 03 | Different modes of operation of transistor<br>Current components in a transistor |
| | 04 | Transistor as an amplifier. |
| 6TH | 01 | Transistor circuit configuration & its characteristics.<br>CB Configuration |
| | 02 | CE Configuration |
| | 03 | CC Configuration |
| | 04 | Transistor biasing.<br>Stabilization, Stability factor. |
| 7TH | 01 | Different method of Transistors Biasing.<br>Base resistor method. |
| | 02 | Collector to base bias. |
| | 03 | Self bias or voltage divider method. |
| | 04 | Practical circuit of transistor amplifier. |
| 8TH | 01 | DC load line and DC equivalent circuit |
| | 02 | AC load line and AC equivalent circuitCalculation of gain, Phase reversal |
| | 03 | H-parameters of transistors |

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| | 04 | Simplified H-parameters of transistors |
| 9TH | 01 | Analysis of CB, |
| | 02 | Analysis of CE, |
| | 03 | CC amplifier using generalised approximatemodel. |
| | 04 | Multi stage transistor amplifier |
| 10TH | 01 | R.C. coupled amplifier<br>Transformer coupled amplifier |
| | 02 | Feed back in amplifier |
| | 03 | Negative feedback circuit |
| | 04 | Advantage of negative feed back |
| 11TH | 01 | Power amplifier and its classification<br>Difference between voltage amplifier and power amplifier |
| | 02 | Transformer coupled class A power amplifier |
| | 03 | Class A push – pull amplifier |
| | 04 | Class B push – pull amplifier |
| 12TH | 01 | Oscillators<br>Types of oscillators, Essentials of transistor oscillator. |
| | 02 | Principle of operation of tuned collector, Hartley osc. |
| | 03 | Colpitt, phase shift, weinbridge oscillator. |
| | 04 | Classification of FET |
| 13TH | 01 | Advantages of FET over BJT |
| | 02 | Principle of operation of BJT |
| | 03 | FET parameters |
| | 04 | DC drain resistance, AC drain resistance<br>Trans-conductance |
| 14TH | 01 | Biasing of FET. |
| | 02 | General circuit simple of OP-AMP and IC – CA – 741 OP AMP |
| | 03 | Operational amplifier stages<br>Equivalent circuit of operational amplifier |
| | 04 | Open loop OP-AMP configuration |
| 15TH | 01 | OPAMP with fed back |
| | 02 | Inverting OP-AMP, Non inverting OP-AMP, Voltage follower &buffer |
| | 03 | Differential amplifier<br>Adder or summing amplifier, Sub tractor |
| | 04 | Integrator, Differentiator, Comparator |

01.02.2025

Signature of Faculty

Lecturer in Elect.Engg.
Govt.Poly.Bhadrak