# PNS SCHOOL OF ENGINEERING AND TECHNOLOGY

## DEPARTMENT OF ELECTRICAL ENGINEERING

| Branch: Electrical Engg. | Semester: 3rd | Name of the Lecturer: **Jayakant Mallick** |
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| Subject: EEM | Classes Alloted in a Week: 5 | Duration of Semester: 01.08.2023 - 30.11.2023 |
| Week | Class Day | Theory / Practical Topic |
| 1st | 1 | **Conducting Materials:** Introduction Resistivity, factors affecting resistivity |
| | 2 | Resistivity, factors affecting resistivity |
| | 3 | Classification of conducting materials into low-resistivity and high resistivity materials |
| | 4 | Low Resistivity Materials and their Applications (Copper) |
| | 5 | Low Resistivity Materials and their Applications (Silver) |
| 2nd | 1 | Low Resistivity Materials and their Applications (Gold, Aluminum) |
| | 2 | Low Resistivity Materials and their Applications (Steel) |
| | 3 | Stranded conductors |
| | 4 | Bundled conductors |
| | 5 | Low resistivity copper alloys |
| 3rd | 1 | High Resistivity Materials and their Applications(Tungsten) |
| | 2 | High Resistivity Materials and their Applications(Carbon) |
| | 3 | High Resistivity Materials and their Applications(Platinum, Mercury) |
| | 4 | Superconductivity |
| | 5 | Superconducting materials |
| 4th | 1 | Application of superconductor materials |
| | 2 | **Semiconducting Materials:** Introduction to Semiconductors |
| | 3 | Electron Energy and Energy Band Theory, Excitation of Atoms |
| | 4 | Insulators, Semiconductors and Conductors |
| | 5 | Semiconductor Materials, Covalent Bonds |
| 5th | 1 | Intrinsic Semiconductors & Extrinsic Semiconductors |
| | 2 | N-Type Materials & P-Type Materials, Minority and Majority Carriers |
| | 3 | Applications of Semiconductor materials:Rectifiers & Thermistors |
| | 4 | Applications of Semiconductor materials: Photoconductive cells & Photovoltaic cells |
| | 5 | Applications of Semiconductor materials: Varisters & Transistors |
| 6th | 1 | Applications of Semiconductor materials: Hall effect generators & Solar power |
| | 2 | **Insulating Materials:** Introduction |
| | 3 | General properties of Insulating Materials: Electrical properties |
| | 4 | General properties of Insulating Materials: Visual properties |
| | 5 | General properties of Insulating Materials: Mechanical properties & Thermal properties |
| 7th | 1 | General properties of Insulating Materials: Chemical properties & Ageing |
| | 2 | Classification of insulating materials on the basis physical structure |
| | 3 | Classification of insulating materials on the basis chemical structure |
| | 4 | Insulating Gases: Introduction |
| | 5 | Commonly used insulating gases |

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| 8th | 1 | **Dielectric Materials:** Introduction |
| | 2 | Dielectric Constant of Permittivity |
| | 3 | Polarization |
| | 4 | Dielectric Loss |
| | 5 | Electric Conductivity of Dielectrics and their Break Down |
| 9th | 1 | Properties of Dielectrics |
| | 2 | Properties of Dielectrics |
| | 3 | Applications of Dielectrics |
| | 4 | **Magnetic Materials:** Introduction |
| | 5 | Classification: Diamagnetism,Paramagnetism & Ferromagnetism |
| 10th | 1 | Classification: Diamagnetism,Paramagnetism & Ferromagnetism |
| | 2 | Magnetization Curve |
| | 3 | Hysteresis |
| | 4 | Eddy Currents & Curie Point |
| | 5 | Magneto-striction |
| 11th | 1 | Soft and Hard magnetic Materials |
| | 2 | **Materials for Special Purposes:** Introduction |
| | 3 | Structural Materials |
| | 4 | Protective Materials: Lead |
| | 5 | Protective Materials: Steel tapes, wires and strips |
| 12th | 1 | Thermocouple materials |
| | 2 | Bimetals |
| | 3 | Soldering Materials |
| | 4 | Fuse and Fuse materials |
| | 5 | Dehydrating materials |

Signature of the
Lecturer

Signature of the
H.O.D.