

# BALASORE SCHOOL OF ENGINEERING, BALASORE

LESSON PLAN FOR 3<sup>rd</sup> SEMESTER, SESSION:-2022-23(W-22)

| BRANCH:- ELECTRICAL                  |   | SECTION- A & B |         | SEMESTER:-3 <sup>RD</sup>   |   |                                     |
|--------------------------------------|---|----------------|---------|---|---|-------------------------------------|
| SUBJECT:- ELECTRICAL ENGG. MATERIALS |   |                |         | THEORY:-TH-4  |   |                                     |
| NAME OF TEACHER:- BAMADEV PATHI      |   |                |         |   |   |                                     |
| SL. No.                              | Month /No .of academic days available for the subject | Chapter        | DATE    | TOPICS TO BE COVERED  | No of periods available as per syllabus | No of periods available as per plan |
|                                      | <b>SEPT-2022<br/>(10)</b>                             | Unit-1         | 15/9/22 | Conducting Materials:<br>1 . 1 Introduction   | <b>16</b>                               | <b>10</b>                           |
|                                      |   |                | 19/9/22 | 1 . 2 Resistivity, factors affecting resistivity  |   |                                     |
|                                      |   |                | 20/9/22 | 1 . 3 Classification of conducting materials into low-resistivity and high resistivity materials                                    |   |                                     |
|                                      |   |                | 21/9/22 | 1 . 4 Low Resistivity Materials and their Applications. (Copper, Silver, Gold, Aluminum, Steel)                                     |   |                                     |
|                                      |   |                | 22/9/22 | 1 . 4 Low Resistivity Materials and their Applications. (Copper, Silver, Gold, Aluminum, Steel)                                     |   |                                     |
|                                      |   |                | 24/9/22 | 1 . 5 Stranded conductors   |   |                                     |
|                                      |   |                | 26/9/22 | 1 . 6 Bundled conductors  |   |                                     |
|                                      |   |                | 27/9/22 | 1 . 7 Low resistivity copper alloys<br>1 . 8 High Resistivity Materials and their Applications(Tungsten, Carbon, Platinum, Mercury) |   |                                     |
|                                      |   |                | 28/9/22 | 1 . 9 Superconductivity<br>1 . 10 Superconducting materials<br>1 . 11 Application of superconductor materials                       |   |                                     |
|                                      |   |                | 29/9/22 | 1 . 9 Superconductivity<br>1 . 10 Superconducting materials<br>1 . 11 Application of superconductor materials                       |   |                                     |

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|---------|---|---------|----------|--|---|-------------------------------------|
|         | <b>OCT-2022(16)</b>                                   | Unit-2  | 01/10/22 | 2. Semiconducting Materials:<br>2 . 1 Introduction<br>2 . 2 Semiconductors   | 10                                      | 11                                  |
|         |   |         | 10/10/22 | 2 . 3 Electron Energy and Energy Band Theory<br>2 . 4 Excitation of Atoms  |   |                                     |
|         |   |         | 11/10/22 | 2 . 5 Insulators, Semiconductors and Conductors  |   |                                     |
|         |   |         | 12/10/22 | 2 . 6 Semiconductor Materials  |   |                                     |
|         |   |         | 13/10/22 | 2 . 7 Covalent Bonds<br>2 . 8 Intrinsic Semiconductors<br>2 . 9 Extrinsic Semiconductors   |   |                                     |
|         |   |         | 15/10/22 | 2 . 10 N-Type Materials<br>2 . 11 P-Type Materials   |   |                                     |
|         |   |         | 17/10/22 | 2 . 12 Minority and Majority Carriers<br>2 . 13 Semi-Conductor Materials   |   |                                     |
|         |   |         | 18/10/22 | 2 . 14 Applications of Semiconductor materials<br>2.14.1 Rectifiers<br>2.14.2 Temperature-sensitive resistors or thermistors   |   |                                     |
|         |   |         | 19/10/22 | 2.14.3 Photoconductive cells<br>2.14.4 Photovoltaic cells  |   |                                     |
|         |   |         | 20/10/22 | 2.14.5 Varistors<br>2.14.6 Transistors   |   |                                     |
|         |   |         | 22/10/22 | 2.14.7 Hall effect generators<br>2.14.8 Solar power  |   |                                     |
|         |   | Unit-3  | 25/10/22 | 3. Insulating Materials:<br>3 . 1 Introduction<br>3 . 2 General properties of Insulating Materials   | 09                                      | 08                                  |
|         |   |         | 26/10/22 | 3.2.1 Electrical properties<br>3.2.2 Visual properties   |   |                                     |
|         |   |         | 27/10/22 | 3.2.3 Mechanical properties<br>3.2.4 Thermal properties  |   |                                     |
|         |   |         | 29/10/22 | 3.2.5 Chemical properties<br>3.2.6 Ageing  |   |                                     |
|         |   |         | 31/10/22 | 3.3 Insulating Materials – Classification, properties, applications<br>3.3.1 Introduction<br>3.3.2 Classification of insulating materials on the basis physical and chemical structure |   |                                     |

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|----------|--|----------------|----------|---|---|-------------------------------------|
|          | <b>NOV-2022(16)</b>  | Rest of Unit-3 | 01/11/22 | 3.3.2 Classification of insulating materials on the basis physical and chemical structure | 08                                      | 07                                  |
|          |  |                | 02/11/22 | 3.4 Insulating Gases<br>3.4.1 Introduction.<br>3.4.2 Commonly used insulating gases       |   |                                     |
|          |  |                | 03/11/22 | 3.4.2 Commonly used insulating gases  |   |                                     |
|          |  | Unit-4         | 05/11/22 | 4. Dielectric Materials:<br>4.1 Introduction<br>4.2 Dielectric Constant of Permittivity   |   |                                     |
|          |  |                | 07/11/22 | 4.3 Polarization  |   |                                     |
|          |  |                | 09/11/22 | 4.4 Dielectric Loss   |   |                                     |
|          |  |                | 10/11/22 | 4.5 Electric Conductivity of Dielectrics and their Break Down                             |   |                                     |
|          |  |                | 12/11/22 | 4.6 Properties of Dielectrics.  |   |                                     |
|          |  |                | 21/11/22 | 4.7 Applications of Dielectrics.  |   |                                     |
|          |  |                | 22/11/22 | 4.7 Applications of Dielectrics   |   |                                     |
|          |  | Unit-5         | 23/11/22 | 5. Magnetic Materials:<br>5.1 Introduction  |   |                                     |
|          |  |                | 24/11/22 | 5.2 Classification<br>5.2.1 Diamagnetism<br>5.2.2 Para magnetism<br>5.2.3 Ferromagnetism  |   |                                     |
|          |  |                | 26/11/22 | 5.3 Magnetization Curve   |   |                                     |
|          |  |                | 28/11/22 | 5.4 Hysteresis  |   |                                     |
|          |  |                | 29/11/22 | 5.5 Eddy Currents<br>5.6 Curie Point  |   |                                     |
| 30/11/22 | 5.7 Magneto-striction<br>5.8 Soft and Hard magnetic Material |                |          |   |   |                                     |
|          |  |                |          |   | 08                                      | 08                                  |

| No.          | available for the subject |          |   |  | available as per syllabus | available as per plan |    |
|--------------|---------------------------|----------|---|--|---------------------------|-----------------------|----|
| DEC-2022(16) | Rest of Unit-5            | 01/12/22 | 5.8.1 Soft magnetic materials   |  |                           |                       |    |
|              |                           | 03/12/22 | 5.8.2 Hard magnetic materials   |  |                           |                       |    |
|              | Unit-6                    | 05/12/22 | 6. Materials for Special Purposes<br>6.1 Introduction<br>6.2 Structural Materials |  |                           | 09                    | 08 |
|              |                           | 06/12/22 | 6.3 Protective Materials<br>6.3.1 Lead<br>6.3.2 Steel tapes, wires and strips     |  |                           |                       |    |
|              |                           | 07/12/22 | 6.3.2 Steel tapes, wires and strips   |  |                           |                       |    |
|              |                           | 08/12/22 | 6.4 Other Materials<br>6.4.1 Thermocouple materials                               |  |                           |                       |    |
|              |                           | 10/12/22 | 6.4.2 Bimetals  |  |                           |                       |    |
|              |                           | 12/12/22 | 6.4.3 Soldering Materials   |  |                           |                       |    |
|              |                           | 13/12/22 | 6.4.4 Fuse and Fuse materials   |  |                           |                       |    |
|              |                           | 14/12/22 | 6.4.5 Dehydrating material.   |  |                           |                       |    |
|              |                           | 15/12/22 | REVISION  |  |                           |                       |    |
|              | 17/12/22                  | REVISION |   |  |                           |                       |    |
|              | 19/12/22                  | REVISION |   |  |                           |                       |    |
|              | 20/12/22                  | REVISION |   |  |                           |                       |    |
|              | 21/12/22                  | REVISION |   |  |                           |                       |    |
|              | 22/12/22                  | REVISION |   |  |                           |                       |    |

**Brief Summary of the Plan**

| Sino | Month | Units/Chapter To be Covered | Percentage of Coverage |
|------|-------|-----------------------------|------------------------|
| 1    | SEPT  | Chapter- 1                  | 25 %                   |
| 2    | OCT   | Chapter- 2 , 3 up to 3.3.2  | 35%                    |
| 3    | NOV   | Chapter- 3 , 4 ,5 up to 5.7 | 40%                    |
| 4    | DEC   | Chapter- 5 , 6              | 20%                    |

Signature of the Faculty  
Date 19/09/22

Signature of the Principal  
Date

13/9/22