



**SYNERGY SCHOOL OF ENGINEERING**  
**Banamali Prasad, Dhenkanal-759001**

**LESSON PLAN**

**Session (2023-2024)**

|                                                  |                                                   |                                                   |
|--------------------------------------------------|---------------------------------------------------|---------------------------------------------------|
| <b>Discipline:</b> Electrical Engineering        | <b>Semester:</b> 4 <sup>th</sup> ,<br>Summer/2024 | <b>Name of the Faculty:</b><br>ANANTA KUMAR SAHOO |
| <b>Subject:</b> ELECTRICAL<br>EQUIPMENT IN MINES | <b>No. of Days/week:</b> 04                       | <b>Start Date:</b> 12/02/2024                     |
|                                                  |                                                   | <b>End Date:</b> 19/05/2024                       |

| Week            | Class Day | Theory Topics                                                                                                     | Date of Delivery |
|-----------------|-----------|-------------------------------------------------------------------------------------------------------------------|------------------|
| 1st             | 1st       | <b>Electrical cables for Mining use</b><br>Classify cables for mining use.                                        |                  |
|                 | 2nd       | Constructional features of high tension and low-tension cables armored & trailing cables                          |                  |
|                 | 3rd       | State size of cables & their use. State procedures of cable laying at surface, underground roadway & inshafts.    |                  |
|                 | 4th       | Describe cable joint box mining type.                                                                             |                  |
| 2nd             | 1st       | <b>Protective Systems</b> Fuses, Fuse Materials                                                                   |                  |
|                 | 2nd       | Rewireable Fuse, HRC Fuse                                                                                         |                  |
|                 | 3rd       | Uses of Fuse                                                                                                      |                  |
|                 | 4th       | Quiz Test-1                                                                                                       |                  |
| 3rd             | 1st       | <b>Circuit Breakers.</b><br>Describe & Explain Air Circuit Breaker.                                               |                  |
|                 | 2nd       | Describe & Explain Minimum Oil Circuit Breaker (MOCB).                                                            |                  |
|                 | 3rd       | Describe & Explain Bulk Oil Circuit Breaker (BOCB)                                                                |                  |
|                 | 4th       | Describe & Explain Air Blast Circuit Breaker.                                                                     |                  |
|                 | 1st       | Describe SF6 Circuit Breaker                                                                                      |                  |
|                 | 2nd       | Explain essential qualities of a good protective system.                                                          |                  |
|                 | 3rd       | State & describe types of relays (plunger, induction & Earth leakage relay)                                       |                  |
|                 | 4th       | State & describe types of relays (direction over current, over loads no volt and latching relay, frequency relay) |                  |
| 5 <sup>th</sup> | 1st       | Describe protection of transformer by differential relay                                                          |                  |
|                 | 2nd       | Describe general principle of working-basis remote control circuit & various protective devices of Gate-End Box.  |                  |
|                 | 3rd       | Describe functions & operation of drill panel                                                                     |                  |
|                 | 4th       | Class Test                                                                                                        |                  |
| 6 <sup>th</sup> | 1st       | Fundamentals of Transformer                                                                                       |                  |
|                 | 2nd       | Fundamentals of Transformer                                                                                       |                  |
|                 | 3rd       | Fundamentals of Transformer                                                                                       |                  |
|                 | 4th       | <b>Industrial drives- Mining type</b><br>Explain starting & running characteristics of D.C. & A.C. Motors.        |                  |
| 7 <sup>th</sup> | 1st       | Explain starting & running characteristics of D.C. & A.C. Motors.                                                 |                  |
|                 | 2nd       | Explain starting & running characteristics of D.C. & A.C. Motors                                                  |                  |
|                 | 3rd       | State selection of motors for mining use.                                                                         |                  |
|                 | 4th       | State selection of motors for mining use                                                                          |                  |

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