**GBN Govt. Polytechnic Nilokheri, Karnal**

**Electrical Engineering Department**

**Lesson plan**

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| **Lesson Plan** | | | | | |
| **Name of Faculty** | | | Sh. Mitesh Kumar | | |
| **Discipline** | | | ElectricalEngineering | | |
| **Semester** | | | 6th | | |
| **Subject** | | | ElectricalPower-II | | |
| **LessonPlanDuration** | | | 15 week (From March 2023 to June 2023) Theory:04, Practical:03 | | |
| **Week** | **Theory** | | | **Practical** | |
|  | **Lecture**  **Day** | **Topic (including Assignment / Test)** | | **Practical**  **Day** | **Topic** |
| 1st | Day1 | **Unit 1: Faults; Introduction** | | Day 1 | 1. Testing of the dielectricstrength of transformer oiland air |
| Day2 | Common type of faults in both overhead and  Underground systems | |
| Day3 | symmetrical/Unsymmetrical faults | |
| Day4 | Single line to ground fault | |
| 2nd | Day1 | Double line to groundfault,3-phase to Ground  Fault open circuit | | Day 2 | 1. Study of different types ofcircuitbreakersandisolators |
| Day2 | Simple problems relating to fault finding. | |
| Day3 | Revision of important topics | |
| Day4 | Assignment/Classtest | |
| 3rd | Day1 | **Unit 2: Switch Gears:** Purpose of protective gear. Difference between switch, isolator and circuit breakers | | Day 3 | Revision/file checking |
| Day2 | Function of isolator and circuit breaker. Making  Capacity and breaking Capacity. | |
| Day3 | Capacity of circuit breaker (only definition) | |
| Day4 | Circuit breakers. Types of circuit breakers,  Bulk and minimum oil circuit breakers. | |
| 4th | Day1 | Air, SF6 circuit breakers. | | Day 4 | 1. Plot the time currentcharacteristics of over currentrelay |
| Day2 | Principles of Arc extinction blast circuit  breaker s in OCB and ACB, Constructional | |
| Day3 | Features of OCB, ACB, and their working | |
| Day4 | Method of arc extinction | |
| 5th | Day1 | Miniature circuit breakers MCB, MCCB | | Day 5 | 1. Power measurement by using CTs and PTs |
| Day2 | ELCB, for distribution and transmission system  (Descriptive) | |
| Day3 | Revision of important topics | |
| Day4 | Assignment /Classtest | |
| 6th | Day1 | **Unit 3: Protection devices**: Fuses; function of fuse. | | Day 6 | Revision/filechecking |
| Day2 | Types of fuses HV and LV fuses, | |
| Day3 | Rewire-able, cartridge, HRC | |
| Day4 | **Earthing**: purpose of earthing, method of  earthing | |
| 7th | Day1 | Equipment earthing, Substation earthing. | | Day 7 | 1. Earthing of different equipment/ Main Distribution Board and Energy Meter Box |
| Day2 | System earthing as per Indian Electricity rules.  Methods of reducing earth resistance. | |
| Day3 | **Relays**: Introduction, types of relays | |
| Day4 | Electromagnetic and thermal relays | |
| 8th | Day1 | Relays construction and working | | Day 8 | 1. Perform the overload andshort circuit test of MCB as per IS specifications |
| Day2 | Induction type over-current, earth fault relays | |
| Day3 | Instantaneous, over current Relays | |
| Day4 | Directional over-current, differential relays,  And their functions | |
| 9th | Day1 | d)Distancerelays,theirfunctions | | Day 9 | Revision/filechecking |
| Day2 | e)Ideaofstaticrelaysandtheirapplications | |
| Day3 | Revisionofimportanttopics | |
| Day4 | Assignment/Classtest | |
| 10th | Day1 | **Unit 4: Protection Scheme:** introduction | | Day 10 | 1. Plot the time-current characteristics of Kit-Kat fuse wire |
| Day2 | Relays for generator protection | |
| Day3 | 4.2 Relays for transformer protection including  Buchholtz relay protection | |
| Day4 | 4.3Protectionoffeedersand busbars | |
| 11th | Day1 | Overcurrentandearthfaultprotection. | | Day 11 | 1. Taking reading of current onany LT line with clip onmeter |
| Day2 | 4.4Distanceprotectionfortransmissionsystem | |
| Day3 | 4.5Relaysfor motorprotection | |
| Day4 | Relaysforgeneratorprotection | |
| 12th | Day1 | Revisionofimportanttopics | |
| Day2 | Assignment/Classtest | | Day 12 | Revision/file checking |
| Day3 | **Unit 5: Over-voltage Protection:** Protection of  System against over voltages | |
| Day4 | causesofover voltages,utilityofgroundwire | |
| 13th | Day1 | 5.2Lightningarrestors,rodgap | | Day 13 | Revision/file checking |
| Day2 | Horngap,metal oxidetype. | |
| Day3 | 5.3TransmissionLineprotectionagainstover-  voltagesandlightning | |
| Day4 | substationprotectionagainstover-voltagesand  lightning | |
| 14th | Day1 | Revisionofimportanttopics | | Day 14 | Quiz /viva-voice related toelectrical machine |
| Day2 | Assignment/Classtest | |
| Day3 | **Unit 6:Concept of Tariffs** | |
| Day4 | 6.2 Block rate, flat rate tariff | |
| 15th | Day1 | Maximum demand and two part tariffs | | Day 15 | Quiz /viva-voice related toelectrical machine |
| Day2 | 6.3 Simple problems | |
| Day3 | Assignment/ Class test | |
| Day4 | Problem solution/ test check | |