DEPARTMENTOFELECTRICALENGINEERING,

BIT POLYTEHNIC,BALASORE

LESSON PLAN

**SUBJECT:** Switchgear&protectivedevices **Periods:**4 perweek **SEMESTER:** 6TH

**NAME OF FACULTY: Er. SANJANA JENA No.ofweeks:**15

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| **Week** | **Period** | **Theory/PracticalTopics** |
| 1st | 1st | **INTRODUCTIONTOSWITCHGEAR-**EssentialFeaturesofswitchgear |
|  | 2nd | SwitchgearEquipment. |
|  | 3rd | Bus-BarArrangement |
|  | 4th | SwitchgearAccommodation. |
| 2nd | 1st | ShortCircuit. |
|  | 2nd | Faultsinapower system |
|  | 3rd | **FAULTCALCULATION-**Symmetricalfaultson3-phasesystem |
|  | 4th | Limitationoffault current. |
| 3rd | 1st | PercentageReactanceandBaseKVA |
|  | 2nd | Short–circuitKVA.,Reactorcontrolofshortcircuitcurrents. |
|  | 3rd | Locationofreactors |
|  | 4th | StepsforsymmetricalFaultcalculations. |
| 4th | 1st | Solvenumericalproblemsonsymmetricalfault. |
|  | 2nd | Solvenumericalproblemsonsymmetricalfault. |
|  | 3rd | Solvenumericalproblemsonsymmetricalfault. |
|  | 4th | **FUSES-**Desirablecharacteristicsoffuseelement |
| 5th | 1st | FuseElementmaterials. |
|  | 2nd | TypesofFusesandimportant termsusedforfuses |
|  | 3rd | LowandHighvoltage fuses |
|  | 4th | Currentcarryingcapacityoffuse element |
| 6th | 1st | DifferenceBetweenaFuseandCircuitBreaker |
|  | 2nd | **CIRCUITBREAKERS-**DefinitionandprincipleofCircuitBreaker |
|  | 3rd | ArcphenomenonandprincipleofArcExtinction |
|  | 4th | MethodsofArc Extinction. |
| 7th | 1st | DefinitionsofArcvoltage,Re-strikingvoltageandRecoveryvoltage. |
|  | 2nd | Oil circuitBreakeranditsclassification. |
|  | 3rd | Plainbrakeoilcircuitbreaker.,Arccontroloilcircuitbreaker |
|  | 4th | Lowoilcircuitbreaker,Maintenanceofoilcircuit breaker |
| 8th | 1st | Air-Blastcircuitbreakeranditsclassification |
|  | 2nd | SulphurHexa-fluoride(SF6)circuitbreaker |
|  | 3rd | Vacuumcircuitbreakers |
|  | 4th | Switchgearcomponent |
| 9th | 1st | Problemsofcircuitinterruption |

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|  | 2nd | Resistanceswitching. |
|  | 3rd | CircuitBreaker Rating |
|  | 4th | **PROTECTIVERELAYS-**DefinitionofProtectiveRelay |
| 10th | 1st | Fundamentalrequirementofprotectiverelay. |
|  | 2nd | basicRelayoperation,ElectromagneticAttractiontype,Induction type |
|  | 3rd | Pick-upcurrent,Currentsetting,PlugsettingMultiplier,TimesettingMultiplier |
|  | 4th | Classificationoffunctionalrelays |
| 11th | 1st | Inductiontypeovercurrentrelay(Non-directional) |
|  | 2nd | Inductiontypedirectionalpowerrelay |
|  | 3rd | Inductiontypedirectionalovercurrentrelay |
|  | 4th | Currentdifferentialrelay,Voltagebalancedifferentialrelay |
| 12th | 1st | Typesof protection |
|  | 2nd | **PROTECTIONOFELECTRICALPOWEREQUIPMENTANDLINES-**Protectionofalternator. |
|  | 3rd | Differentialprotectionofalternators,Balancedearthfault protection. |
|  | 4th | Protectionsystemsfortransformer,Buchholzrelay |
| 13th | 1st | Protectionof Busbar.ProtectionofTransmission line. |
|  | 2nd | Differentpilotwireprotection(Merz-pricevoltageBalancesystem) |
|  | 3rd | Explainprotectionoffeederbyovercurrentandearthfaultrelay |
|  | 4th | **PROTECTIONAGAINSTOVERVOLTAGEANDLIGHTING-**Voltagesurge andcausesofovervoltage |
| 14th | 1st | Internalcauseofovervoltage,Externalcauseofovervoltage(lighting) |
|  | 2nd | Mechanismoflightningdischarge. |
|  | 3rd | Typesoflightningstrokes,Harmfuleffectof lightning |
|  | 4th | Lightningarresters,Rod-gaplightningarrester. |
| 15th | 1st | Horn-gaparrester,Valvetype arrester |
|  | 2nd | Surge Absorber |
|  | 3rd | **STATICRELAY-**Advantageofstaticrelay,Instantaneousovercurrentrelay |
|  | 4th | PrincipleofIDMTrelay |

 Lecture in Electrical Department HOD in Electrical Department

 Principal in

 BIT POLYPHONIC, Balasore