**UTKAL GOURAV MADHUSUDAN INSTITUTE OF TECHNOLOGY, RAYAGADA**

**Academic Lesson Plan for summer semester- 2023**

**Name of the Teaching Faculty: Sri. Arabinda Pradhan Department: Electrical Engineering**

**Semester: 6th Subject: SGPD**

**No. of periods per week: 5 Total Periods: 75**

**End semester exam: 80 Class test: 20**

**Total Marks: 100**

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| Sl. No. | Week | Period | Unit | Topic Covered |
| **1.** | **1st** | **1st** | INTRODUCTION TO SWITCHGEAR | Essential features of a switchgear |
| **2.** | **2nd** |  | Switchgear equipment |
| **3.** | **3rd** |  | Bus-bar arrangement |
| **4.** | **4th** |  | Switchgear accommodation |
| **5.** | **5TH** | TUTORIAL CUM DOUBT CLEAR CLASS | Discussion of doubts related switchgear |
| **6** | **2nd** | **1st** |  | Short circuit |
| **7.** | **2nd** |  | Faults in a power system |
| **8.** | **3rd** | FAULT CALCULATION | Symmetrical fault on three phase system |
| **9.** | **4th** |  | Limitation of fault current |
| **10.** | **5TH** | TUTORIAL CUM DOUBT CLEAR CLASS |  |
| **11.** | **3rd** | **1st** |  | Percentage reactance |
| **12.** | **2nd** |  | Percentage reactance &Base KVA |
| **13.** | **3rd** |  | Short-Circuit KVA |
| **14.** | **4th** |  | Reactor control of short circuit currents |
| **15.** | **5TH** | TUTORIAL CUM DOUBT CLEAR CLASS | Solving problems of fault calculation |
| **16** | **4th** | **1st** |  | Location of Reactors |
| **17.** | **2nd** |  | Steps for symmetrical fault calculation |
| **18.** | **3rd** |  | Numerical problems related symmetrical fault |
| **19.** | 4TH |  | -Do- |
| **20.** | 5TH | TUTORIAL CUM DOUBT CLEAR CLASS | Objectives of fault calculation |
| **21.** | **5th** | **1st** | FUSES | Desirable characteristics of fuse element |
| **22.** | **2nd** |  | Fuse element materials |
| **23.** | **3rd** |  | Types of fuses , important terms used for fuses |
| **24.** | **4th** |  | Low & high voltage fuses |
| **25.** | **5th** | TUTORIAL CUM DOUBT CLEAR CLASS | Objectives of fuses |
| **26.** | **6th** | **1st** |  | Current carrying capacity of fuse element |
| **27.** | **2nd** |  | Difference between fuse & circuit breaker |
| **28.** | **3rd** | CIRCUIT BREAKERS | Definition & principle of circuit breaker |
| **29.** |  | **4th** |  | Arc phenomenon & principle of arc extinction& methods of arc extinction |
| **31.** | **7th** | **1st** |  | Definitions of all terms used in circuit breaker & classification of circuit breaker |
| **32.** | **2nd** |  | Oil circuit breaker& it’s classification & Plain brake oil circuit breaker |
| **33.** | **3rd** |  | Arc control oil circuit breaker & low oil circuit breaker |
| **34.** | **4th** |  | Maintenance of oil circuit breaker |
| **35.** | **5th** | TUTORIAL CUM DOUBT CLEAR CLASS | Objectives of Circuit breaker in protection of electrical device |
| **36.** | **8th** | **1st** |  | Air blast circuit breaker & it’s classification |
| **37.** | **2nd** |  | SF6 circuit breaker & vacuum circuit breakers |
| **38.** | **3rd** |  | Switchgear component & problems of circuit interruption |
| **39.** | **4th** |  | Resistance switching & circuit breaker rating |
| **40.** | **5th** | TUTORIAL CUM DOUBT CLEAR CLASS | Difference between C.B. & Relay |
| **41.** | **9th** | **1st** | PROTECTIVE RELAY | Definition of protective relay& fundamental requirement of protective relay |
| **42.** | **2nd** |  | Basic relay operation |
| **43.** | **3rd** |  | Definition of important terms related to relay |
| **44.** | **4th** |  | Classification of functional relay |
| **45.** | **5th** | TUTORIAL CUM DOUBT CLEAR CLASS | Objectives of relay |
| **46.** | **10th** | **1st** |  | Induction type over current relay(Non-directional) |
| **47.** | **2nd** |  | Induction type directional power relay |
| **48.** | **3rd** |  | Induction type directional over current relay& Differential Relay |
| **49** | **4th** |  | Types of protection |
| **50.** | **5th** | TUTORIAL CUM DOUBT CLEAR CLASS | Problems of fault calculation |
| **51.** | **11th** | **1st** | PROTECTION OF ELECTRICAL POWER EQUIPMENT & LINES | Protection of alternator & Differential protection of alternator |
| **52.** | **2nd** |  | Balanced earth fault protection |
| **53.** | **3rd** |  | Protection systems for transformer & Buchholz relay |
| **54.** | **4th** |  | Protection of Bus bar & transmission line |
| **55.** | **5th** | TUTORIAL CUM DOUBT CLEAR CLASS | Discussion of protection |
| **56.** | **12th** | **1st** |  | Different pilot wire protection |
| **57.** | **2nd** |  | Protection of feeder by over current & earth fault relay |
| **58.** | **3rd** | PROTECTION AGAINST OVERVOLTAGE & LIGHTENING | Voltage surge & causes of over voltage |
| **59.** | **4th** |  | Internal cause of over voltage |
| **60.** | **5th** | TUTORIAL CUM DOUBT CLEAR CLASS | Discussion of switchgear |
| **61.** | **13th** | **1st** |  | External cause of over voltage |
| **62.** | **2nd** |  | Mechanism of lighting discharge |
| **63.** | **3rd** |  | Types of lighting strokes |
| **64.** | **4th** |  | Harmful effect of lighting |
| **65.** | **5th** | TUTORIAL CUM DOUBT CLEAR CLASS | Lighting arrestor & types of lighting arrestors |
| **66.** | **14th** | **1st** |  | Surge absorber |
| **67.** | **2nd** | STATIC RELAY | Introduction of static relay |
| **68.** | **3rd** |  | Advantages of static relay |
| **69.** | **4th** |  | Instantaneous over current relay |
| **70.** | **5th** | TUTORIAL CUM DOUBT CLEAR CLASS | Discussion of relay |
| **71.** | **15th** | **1st** |  | Principles of IDMT relay |
| **72.** | **2nd** |  | Objective questions related to relay |
| **73.** | **3rd** |  | Important question discussion |
| **74.** | **4th** |  | Doubt discussion of all chapters |
| **75.** | **5th** | TUTORIAL CUM DOUBT CLEAR CLASS | \_-Do- |

**The lesson plan prepared by the concerned faculty Sri. Arabinda Pradhan**

**Sr. Lect.Of Elect. Engg. Deptt.**