Lesson Plan

Discipline: Electrical Engineering Semester: 7th Subject: **Power System Operation and Control**

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| **Week** | **Lecture** | **Topic (Including Assignment / Test) : Planned** | **Actually covered on**  **(date)** | **Teacher’s**  **Sign** | **HOD’s Sign** | **DP’s**  **Sign** |
| 1st | 1 | AUTOMATIC GENERATION CONTROL: Introduction |  |  |  |  |
| 2 | Introduction to AVR |  |  |  |  |
| 3 | Introduction ALFC loops |  |  |  |  |
| 2nd | 4 | Modeling of turbine speed governing system |  |  |  |  |
| 5 | Generator Load model |  |  |  |  |
| 6 | load frequency control of an isolated area |  |  |  |  |
| 3rd | 7 | steady state performance for first order approximate system |  |  |  |  |
| 8 | dynamic performance for first order approximate system |  |  |  |  |
| 9 | Load frequency Vs economic control |  |  |  |  |
| 4th | 10 | dead band, digital load flow control |  |  |  |  |
| 11 | Decentralized control. |  |  |  |  |
| 12 | EXCITATION & VOLTAGE CONTROL Introduction |  |  |  |  |
| 5th | 13 | Role of Exciter and its control |  |  |  |  |
| 14 | Classification of Excitation System |  |  |  |  |
| 15 | Rotating self-excited type Voltage regulators |  |  |  |  |
| 6th | 16 | and pilot excited type Voltage regulators |  |  |  |  |
| 17 | static excitation system |  |  |  |  |
| 18 | brushless excitation system |  |  |  |  |
| **7th** |  | **1stSessionals** |  |  |  |  |
| 8th | 19 | boost buck excitation system |  |  |  |  |
| 20 | development of block diagram and transfer function |  |  |  |  |
| 21 | Role of PID Controller in Excitation system |  |  |  |  |
| 9th | 22 | Voltage control through shunt compensation |  |  |  |  |
| 23 | Series compensation |  |  |  |  |
| 24 | Tap changing transformer |  |  |  |  |
| 10th | 25 | Booster transformer; induction regulators, |  |  |  |  |
| 26 | Definitions: angular stability- steady state stability, dynamic stability, transient stability |  |  |  |  |
| 27 | Dynamics of synchronous machine and swing equation, |  |  |  |  |
| 11th | 28 | equal area criteria for various types of disturbances |  |  |  |  |
| 29 | critical clearing angle, solution of swing equation, |  |  |  |  |
| 30 | Technique of improving transient stability |  |  |  |  |
| 12th | 31 | voltage stability concept for pure inductive load |  |  |  |  |
| 32 | Voltage collapse, voltage collapse proximate indicator. |  |  |  |  |
| 33 | Generators operation cost, Long range and short range problem, |  |  |  |  |
| 13th | 34 | Economic dispatch problem |  |  |  |  |
| 35 | Economic Dispatch including transmission loss |  |  |  |  |
| 36 | derivation of transmission loss formula |  |  |  |  |
| **14th** |  | **2ndSessionals** |  |  |  |  |
| 15th | 37 | Classification of hydro plants |  |  |  |  |
| 38 | Short range fixed head hydrothermal scheduling. |  |  |  |  |
| 39 | Revision |  |  |  |  |