Bhoj Reddy Engineering College for Women: Hyderabad

Department of Electrical and Electronics Engineering

Lesson plan of faculty member for the academic year 2016–17

Class: IV B Tech Branch-Section: EEE Semester: I

Subject: Power System Operation and Control Lectures per week: 4+1 (Tutorial)

Lecture Number	Topics to be covered	Date (s)
UNIT – I: Economic Operation of Power Systems		
1	Introduction to Economic operation of Power Systems	13 June 2016
2	Optimal operation of Generators in Thermal Power Station	15 June 2016
3	Heat rate and Cost curves with problems	16 June 2016
4	Incremental fuel rate and production costs	18 June 2016
5	Tutorial (G3,G2,G1) - Problems on IFC and production costs	13, 15, 16 June 2016
6	Input-Output Characteristics	20 June 2016
7	Optimum generation allocation with Line-losses neglected	22 June 2016
8	Optimum generation allocation including the effect of transmission line losses	23 June 2016
9	Problems on above topic	25 June 2016
10	Tutorial (G3, G2, G1) - Problems on optimization	20, 22, 23 June 2016
11	Loss Coefficients	27 June 2016
12	General transmission Line loss formula	29 June 2016
13	Problems on loss coefficients	30 June 2016
UNIT-II: **Hydrothermal Scheduling**		
14	Optimal Scheduling of Hydrothermal system	2 July 2016
15	Tutorial (G3, G2, G1) – Problems on Line losses	27, 29,30 June 2016
16	Hydroelectric power plant models	4 July 2016
17	Scheduling problems	9 July 2016
18	Tutorial (G3) – Problems on scheduling	4 July 2016
19	Short-term Hydro-thermal Scheduling problems	11 July 2016
20	Short-term Hydro-thermal Scheduling problems	13 July 2016
UNIT III: Modelling, Modelling of Governor, Modelling of Excitation Systems		
21	Modelling of Turbine: First order Turbine model	14 July 2016
22	Block Diagram representation of Steam Turbines	16 July 2016
23	Tutorial (G3, G2, G1) - Problems on short term scheduling	11, 13, 14 July 2016
24	Approximate Linear Models	18 July 2016
25	Approximate Linear Models	20 July 2016
26	Mathematical modelling of speed governing system	21 July 22016
27	Problems	23 July 2016
28	Tutorial (G3, G2, G1) - Problems on Modelling of Generator	18, 20, 21 July 2016
29	Derivation of single transfer function(Controlled case)	25 July 2016
30	Derivation of single transfer function(Uncontrolled case)	27 July 2016
31	Fundamental characteristics of an Excitation systems	28 July 2016
32	Transfer function of the system	30 July 2016
33	Tutorial (G3, G2, G1) - Problems on Modelling of Governor	25, 27, 28 July 2016
34	Block Diagram Representation of IEEE Type-1 Model	3 August 2016
35	Block Diagram Representation of IEEE Type-1 Model	4 August 2016
36	Problems	6 August 2016
37	Tutorial (G2, G1) - Problems on Modelling of Excitation System	3,4 August 2016
UNIT IV : Single Area & Two Load Frequency Control		
38	Necessity of keeping frequency constant	17 August 2016
39	Definitions of Control Area-Single Area control	18 August 2016

40	Block diagram representation of an isolated power system	20 August 2016
41	Tutorial (G2, G1) - Problems on Steady state analysis	17,18 August 2016
42	Steady state analysis	22 August 2016
43	Dynamic response analysis	24 August 2016
44	Load Frequency control of 2-area system	27 August 2016
45	Tutorial (G3, G2) - Problems on Load frequency control	22,24 August 2016
46	Load frequency control-2 area(Controlled)	29 August 2016
47	Load frequency control-2 area-(Uncontrolled)	31 August 2016
48	Tie-line bias control	1 September 2016
49	Derivation of Tie-line bias control	3 September 2016
50	Tutorial (G3, G2, G1) –Problems on PI control of Single area	29,31 August,1 September 2016
51	Problems on Tie-line bias control	7 September 2016
52	Proportional Plus Integral control of Single area control	8 September 2016
53	Block diagram representation of Proportional Plus Integral controller	10 September 2016
54	Tutorial (G2, G1) - Problems on Load frequency control	7,8 September 2016
55	Block diagram representation of Proportional Plus Integral controller	14 September 2016
56	Block diagram representation with Steady state response	15 September 2016
57	Block diagram representation with Steady state response	17 September 2016
58	Tutorial (G2, G1) - Problems on proportional plus control	14,15 September 2016
59	Load frequency Control	19 September 2016
60	Economic dispatch control	21 September 2016
UNIT- V:Reactive Power Control		
61	Introduction: Reactive power control	22 September 2016
62	Reactive power compensation in transmission system	24 September 2016
63	Tutorial (G3, G2, G1) - Problems on economic dispatch	19,21,22 September 2016
64	Compensating Equipment's	26 September 2016
65	Compensating Equipment's	28 September 2016
66	Advantages and disadvantages of Compensating Equipment's	29 September 2016
67	Load compensation	1 October 2016
68	Tutorial (G3, G2, G1) - Problems on Reactive power control	26,28,29 September 2016
69	Uncompensated and compensated transmission lines	27 October 2016
70	Shunt compensation	29 October 2016
71	Tutorial (G2, G1) - Problems on Compensated transmission lines	26,27 October 2016
72	Series compensation	31 October 2016
73	Revision	2 November 2016
74	Previous Question paper discussions	3 November 2016
75	Tutorial (G3, G2, G1) - Problems on Shunt and series compensation	31 October,2,3 November 2016

Text books:

1. Dr.K.Uma Rao, "Power System Operation and Control", Wiley India Pvt.Ltd.
2. Abhijit Chakrabarti and Sunitha Halder, "Power System Analysis, operation and control", PHI.
3. PSR Murthy, "Operation and Control in Power Systems", BS Publications.
4. C.L.Wadhwa, "Power System Analysis", Newage International.

Name and signature of the faculty: Ms V Sri Lakshmi Vani ----

Name and signature of Head of the Department: Ms Y Masthanamma ----