Bhoj Reddy Engineering College for Women: Hyderabad

Department of Electrical and Electronics Engineering

Lesson plan of faculty member for the academic year 2020–21

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

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

Lecture Number	Topics to be covered	Date (s)
UNIT – I: Load –Frequency Control		
1	Tutorial: Introduction	1 September 2020
2	Introduction	2 September 2020
3	Basics of speed governing mechanism	3 September 2020
4	Modeling - speed-load characteristics	5 September 2020
5	Load sharing between two synchronous machines in parallel	7 September 2020
6	Tutorial: Numerical on load sharing	8 September 2020
7	Control area concept LFC control of a single-area system	9 September 2020
8	Static and dynamic analysis of controlled case	10 September 2020
9	Static and dynamic analysis of uncontrolled case	12 September 2020
10	Integration of economic dispatch control with LFC	14 September 2020
11	Tutorial: Numerical on Single area LFC	15 September 2020
12	Two-area system – modeling - static analysis of uncontrolled case	16 September 2020
13	Tie line with frequency bias control of two-area system	17 September 2020
14	State variable model.	19 September 2020
UNIT II: Reactive Power – Voltage Control		
15	Basics of reactive power control. Excitation systems –modeling	21 September 2020
16	Tutorial: Numerical on Tie line control	22 September 2020
17	Static and dynamic analysis	23 September 2020
18	Stability compensation	24 September 2020
19	generation and absorption of reactive power.	26 September 2020
20	Relation between voltage, power and reactive power at a node	28 September 2020
21	Tutorial: Numerical on reactive power	29 September 2020
22	method of voltage control - tap-changing transformer	30 September 2020
23	System level control using generator voltage magnitude setting	1 October 2020
24	tap setting of OLTC transformer	3 October 2020
25	MVAR injection of switched capacitors to maintain acceptable voltage profile	5 October 2020
26	Tutorial: Numerical on Reactive power	6 October 2020
27	MVAR injection to minimize transmission loss	7 October 2020
28	Revision	8 October 2020
29	Class test	10 October 2020
UNIT III: Economic Load Dispatch		
30	Statement of economic dispatch problem – cost of generation	12 October 2020
31	Tutorial: economic load dispatch	13 October 2020
32	incremental cost curve	14 October 2020
33	co-ordination equations without loss	15 October 2020
34	co-ordination equations with loss	26 October 2020
35	Tutorial: Numerical on economic load dispatch	27 October 2020
36	co-ordination equations with loss	28 October 2020
37	Revision	29 October 2020
38	Assignment test	31 October 2020
39	Solution by direct method	9 November 2020
40	Tutorial: Numerical on Co-ordination methods	10 November 2020
41	Solution by direct method	11 November 2020
42	Solution by λ-iteration method.	12 November 2020
43	Solution by λ-iteration method.	16 November 2020

44	Tutorial: Numerical on iteration methods	17 November 2020
UNIT IV: Unit Commitment		
45	Statement of Unit Commitment problem – constraints	18 November 2020
46	spinning reserve, thermal unit constraints, hydro constraints, fuel constraints and other constraints	19 November 2020
47	Solution methods - Priority-list methods	21 November 2020
48	Solution methods - Priority-list methods	23 November 2020
49	Tutorial: Numerical on priority list methods	24 November 2020
50	forward dynamic programming approach	25 November 2020
51	forward dynamic programming approach	26 November 2020
52	Numerical problems on priority-list method using full-load average production cost and Forward DP method.	28 November 2020
53	Tutorial: Numerical on priority list methods	29 November 2020
54	Numerical problems on priority-list method using full-load average production cost and Forward DP method.	2 December 2020
55	Numerical problems on priority-list method using full-load average production cost and Forward DP method.	3 December 2020
56	Numerical	5 December 2020
UNIT V: Computer Control of Power Systems		
57	Need of computer control of power systems	7 December 2020
58	Tutorial: Numerical on load dispatch	8 December 2020
59	Concept of energy control center (or) load dispatch center, and the functions	9 December 2020
60	Concept of energy control center (or) load dispatch center, and the functions	10 December 2020
61	System monitoring, data acquisition and control	12 December 2020
62	System hardware configuration	14 December 2020
63	Tutorial: System hardware configuration	15 December 2020
64	SCADA and EMS functions.	16 December 2020
65	Network topology	17 December 2020
66	Importance of Load Forecasting	19 December 2020
67	simple techniques of forecasting	21 December 2020
68	Tutorial: EMS functions	22 December 2020
69	Revision	23 December 2020
70	Previous papers objectives discussion	24 December 2020
71	Previous papers descriptive discussion	28 December 2020
72	Tutorial: Assignment test	29 December 2020
73	Previous papers problems discussion	30 December 2020
74	Previous papers discussion	31 December 2020
75	Previous papers discussion	2 January 2021

Text Books:

1. D. P. Kothari and I. J. Nagrath, 'Modern Power System Analysis', Third Edition, Tata McGraw Hill Publishing Company Limited, New Delhi, 2003.
2. C. L. Wadhwa, 'Power System Analysis', New Age International-6th Edition, 2010
3. Chakrabarti & Haldar, "Power System Analysis: Operation and Control", Prentice Hall of India, 2004 Edition
4. P. Kundur, Neal J. Balu, 'Power System Stability & Control', IEEE, 1998.
5. Olle. I. Elgerd, 'Electric Energy Systems Theory – An Introduction', Tata McGraw Hill Publishing Company Ltd, New Delhi, 30th reprint, 2007.

Name and signature of the faculty: Ms S Mayuri ----

Name and signature of Head of the Department: Ms R Manju Bhargavi ----