

Department of Electrical and Electronics Engineering

Academic Year: 2019-2020

Semester: VI

Batch: 2017-2021

Sub. Code: EE16601

Sub. Name: Power System Operation and Control

1. YouTube video lecture:

- YouTube video lecture created and link shared to facilitate students to go through it whenever they face doubts in the steps involved in finding the solution for Unit Commitment problem using Forward Dynamic Programming approach.
- YouTube video lecture link: <https://www.youtube.com/watch?v=bZGJDnA2tlw>
- Screen saver of YouTube video lecture:

Unit Commitment solution method - Forward Dynamic Programming Approach

First, let us consider an example problem,

4 units ✓

Unit	Max (MW)	Min (MW)
1	80	25
2	250	60
3	300	75
4	60	20

Load Pattern

Hour	Load (MW)
1	450
2	530
3	600
4	540
5	400
6	280
7	290
8	500

The priority order ✓
for four units

- Unit 3, ✓
- Unit 2, ✓
- Unit 1, ✓
- Unit 4, ✓

With the Unit combinations from 0000

then, Capacity Ordering of units:

State	Unit combination	Max cap
15	1 1 1 1	690
14	1 1 1 0	630
13	0 1 1 1	610
12	0 1 1 0	550
11	1 0 1 1	440
10	1 1 0 1	390
9	1 0 1 0	380
8	0 0 1 1	360
7	1 1 0 0	330
6	0 1 0 1	310
5	0 0 1 0	300
4	0 1 0 0	250
3	1 0 0 1	140
2	1 0 0 0	80
1	0 0 0 1	60
0	0 0 0 0	0

Unit: 1 2 3 4

If we impose strict Priority 1, 2, 3, 4

5 0 0 1 0 300

12 0 1 1 0 550

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Scroll for details