Code No:R1641023





IV B.Tech I Semester Supplementary Examinations, February – 2020 POWER SYSTEM OPERATION & CONTROL (Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 70

Question paper consists of Part-A and Part-B Answer ALL sub questions from Part-A Answer any FOUR questions from Part-B *****

PART-A(14 Marks)

1.	a)	Define the heat rate curve and cost curve.	[2]
	b)	What is the statement of optimization problem of hydro-thermal system?	[2]
	c)	Why is a unit commitment problem?	[2]
	d)	Why the system frequency should be maintained constant?	[2]
	e)	What are the merits of a pool operation of power system?	[3]
	f)	What are the objectives of load compensation?	[3]
		PART-B(4x14 = 56 Marks)	
2.	a)	Derive the condition for optimum generation allocation of 'n' generating units	
		including the effect of transmission line losses.	[7]
	b)	Incremental fuel costs in Rs/MWh for 2 units in a plant are given by	
	,	$\frac{dF_1}{dP}$ =0.15P ₁ +25, $\frac{dF_2}{dP}$ =0.12P ₂ +15.	
		The minimum and maximum loads on each unit are to be 50MW and 120 MW respectively. Find the incremental fuel cost and allocation of load between units for the minimum cost and load is 150MW. Assume both the units	
		are operating.	[7]
3.		Describe the short term hydro thermal economic load scheduling. Derive the necessary equations.	[14]
4.	a)	Explain the need for unit commitment	[7]
	a) b)	Describe the different constraints considered in solving a unit commitment problem.	[/]
			[7]
5.	a)	Obtain the modeling of Hydro turbine with neat diagram.	[7]
	b)	Derive the expression for change in frequency under steady state condition for single area LFC system with controlled case.	[7]
6.	a)	What is meant by tie line bias control?	[5]
	b)	Explain the combined operation of an LFC and an ELDC systems with neat	
		block diagram.	[9]
7.	a)	Explain the overview of Reactive Power control.	[9]
	b)	List out the specifications of load compensator.	[5]