Code No: **RT41023** **R13** **Set No. 1**

IV B.Tech I Semester Supplementary Examinations, February/March - 2018

POWER SYSTEM OPERATION AND 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 THREE questions from Part-B
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PART–A *(22 Marks)*

1. a) Draw heat curve and explain its significance. [3]
   b) Define methods for solving hydro thermal scheduling. [3]
   c) Write the constraints in the formulation of unit commitment problem. [4]
   d) Explain the principle of tie line bias control. [4]
   e) Discuss the merits of proportional plus integral load frequency control. [4]
   f) Write the advantages and disadvantages of compensation in transmission system. [4]

PART–B *(3x16 = 48 Marks)*

2. a) Explain the following terms with reference to power plants heat input – power output curve, heat rate input, incremental input, generation cost and production cost. [8]
   b) Draw the flow chart for obtaining optimal scheduling of generating units by neglecting the transmission losses. [8]

3. a) Explain problem formation and solution procedure of optimal scheduling for hydro thermal plants. [8]
   b) Explain about hydro – thermal co-ordination with necessary equations. [8]

4. a) Explain the need of an Optimal unit commitment problem. [8]
   b) With the help of a flow chart, explain the dynamic programming method in unit commitment. [8]

5. a) How is speed governor mechanism modeled and Explain its operations with the speed load characteristics. [8]
   b) Draw the block diagram of uncontrolled two area load frequency control system and explain the salient features under static condition [8]

6. a) Explain proportional plus integral load frequency control of a single area system with a neat block diagram. [8]
   b) Discuss the importance of combined load frequency control and economic dispatch control with a neat block diagram. [8]

7. a) What do mean by compensation of a line? Discuss briefly different methods of compensation. [8]
   b) Define fundamentals of FACTS devices and Write the need for FACTS controllers. [8]