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Total Number of Pages : 02

B.Tech.
PCEL4401

7th Semester Regular / Back Examination 2017-18

Power System Operation and Control

BRANCH: ELECTRICAL

Time: 3 Hours

Max Marks: 70

Q.CODE: B248

Answer Question No.1 which is compulsory and any five from the rest.
The figures in the right hand margin indicate marks.

Q1 Answer the following questions : (2 x 10)

- What is Automatic load dispatching?
- Define "Load curve"?
- Define "Load Factor"?
- What is "AGC"?
- What is Incremental cost criterion?
- What are the various methods of voltage control in transmission systems?
- Write the equality and inequality constraints considered in economic dispatch problem?
- What are the spinning reserve constraints in unit commitment problem?
- Define "spinning reserve"?
- What is meant by Load frequency control?

Q2 a) Differentiate between Load frequency control and economic dispatch control? (5)
b) The incremental cost characteristic of the two units in a plant are (5)

$$IC_1 = 0.1P_1 + 8.0 \text{ Rs./MWh};$$

$$IC_2 = 0.15P_2 + 3.0 \text{ Rs./MWh}$$

When the total load is 100 mw ,what is the optimum sharing of load?

Q3 a) A generating station has the following daily load cycle. (5)

Time(hrs)	0-6	6-10	10-12	12-16	16-20	20-24
Load(MW)	40	50	60	50	70	40

Find the followings; 1)Max Demand 2)Units generated/day 3)Average load4)Load factor

b) Develop necessary equation and describe the load flow solution using gauss seidel method? (5)

Q4 a) Develop a typical excitation arrangement to control the voltage of an alternator and explain briefly? (5)

b) Distinguish between steady-state stability and transient stability of a power system? How to improve transient stability of a power system? (5)

Q5 a) Develop the state variable model of a two area system and state the advantages of the model? (5)

b) Explain the different methods of voltage control? (5)

Q6 a) Derive the solution of the economic load dispatch problem of a two generatorsystem considering the transmission losses? (5)

b) Explain the term "incremental operating cost" of power system related with economic dispatch? (5)

210 Q7 a) Derive The Power-Angle Equation? 210 210 210 (5) 210
b) Explain the load frequency control of a single area system? (5)

Q8 Write short answer on any TWO : (5 x 2)

- a) Role of Automatic voltage regulator in improving stability
- b) Newton-Raphson method for load flow problem
- c) Primary and secondary load frequency control
- d) the application of swing equation in the study of power system stability

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