Registration No:

Total Number of Pages : 02   **M.TECH**

AR-17
M.TECH 1ST SEMESTER EXAMINATIONS(BACK), NOV/DEC 2019
PE,MPEPC1020
ADVANCED POWER SYSTEMS

Time: 3 Hours   Max Marks : 70
The figures in the right hand margin indicate marks.

PART-A   (10 X 2=20 MARKS)

1. Answer the following questions.

   a. Define sparsity and near-optimal ordering.

   b. What is meant by pivotal equation?

   c. List any two advantages of fast decoupled power flow method
   d. What is unit commitment and load scheduling?

   e. Mention the types of sag

   f. What specify the IEEE standard for shunt power capacitors causing transient over voltages?

   g. Define impulsive transients. Give example for impulsive transient over voltages
   h. What is meant by bus incremental cost?

   i. State the role of independent system operator (ISO) in open access and pool type power markets.

   j. What is the role of independent generator in electricity market

PART-B   (5 X 10=50 MARKS)

Answer any five questions from the following.

Q2. a. What is spatial load forecasting? State its use and limitations.

   b. State and explain the trending and mixed load forecasting methods

Q3. a. What is Deregulation and what are the steps towards Deregulation

   b. For a typical distributions system, the source impedance is 10 ohm & impedance of Feeder is 40 ohm on occurrence of fault. What is % of sag?

Q4. a. Explain the dynamic analysis in frequency domain for single area system

   b. The cost characteristic of two units in a plant are:

$C_1 = 0.4\ P_1{}^2 + 160\ P_1 + K_1$ Rs./h

$C_2 = 0.45\ P_2{}^2 + 120\ P_2 + K_2$ Rs. / h

Where P_1 and P_2 are power output in MW. Find the optimum load allocation between the two units, when the total load is 162.5 MW. What will be the daily loss if the units are loaded equally**?**

Q5. a. what are transient over voltages? Explain the different types of transient over voltages

   b. What is Swell? Explain in detail about various methods to mitigate voltage swells

Q6. a. Find the bus admittance matrix for the system. Use the base values 22OkV and 100 MVA. Express all impedances and admittances in per unit
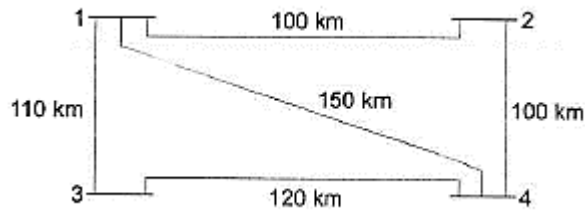
   b.Write short notes on Tap changing Transformers

Q7. a. Derive the algorithm for symmetrical short circuit analysis of a multi machine power system using Z bus matrix

   b. The speed changers of the governors are reset so that the load of 400 MW is shared among the generators at 50 Hz in the ratio of their ratings. What are the no load frequencies of the generators

Q8. a. A 15 MVA, 6.9 KV generator, star connected has positive, negative and zero sequence reactance's of 50%, 50% and 10% respectively. A line-to line fault occurs at the terminals of the generator operating on no-load. What is the positive sequence component of the fault current in p.u**?**

   b. Explain the sag performance evaluation methods

==0==