Roll No. .....

24228

B. Tech. 5th Semester (EE) Examination – December, 2014

POWER SYSTEMS-I

Paper : EE-315-F

Time : Three hours] *[Maximum Marks : 100*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt ***five*** questions in all, taking ***one*** question from each Section. Question No. **1** is ***compulsory.*** All questions carry equal marks.

1. (a) What are the advantages of pool operation ?

(b) Describe the single line diagram representation of power system.

(c) Let the actual current be 100 amps, determine p.u. current base current is chosen as 10 amps.

(d) What is the importance of base kVA in short circuit calculations ?

(e) Explain the significance of power flow studies.

(f) Explain the advantages of using the bus admittance matrix in load flow studies.

(g) What is optimal unit commitment ? Explain.

(h) State the two area load frequency control method.

$2\frac{1}{2} \times 8$

SECTION – A

2. What are the factors that need to be omitted for an impedance diagram to reduce it to a reactance diagram ? 20

3. Explain the following terms briefly :

(i) Power transformer 10

(ii) Representation of loads 10

SECTION – B

4. With a neat block diagram explain the load frequency control with economic dispatch control. 20

5. Explain the load frequency control problem in a multi-area power system. 20

SECTION – C

6. Explain the optimal operation of generation on a bus bar. 20

7. What is Unit Commitment (UC) ? How is it prepared ? How is the most economical station operating cost is calculated for complete range of station capacity ? 20

SECTION – D

8. Derive the power balance equation in a power system and explain the Newton-Raphson method of load flow analysis. Draw the flow chart giving the sequence of analysis. Show that the polar coordinate representation is advantageous over the rectangular coordinates. 20

9. Derive the static load flow equations and comment on it. 20
