

**PARUL UNIVERSITY**  
**FACULTY OF ENGINEERING & TECHNOLOGY**  
**M.Tech. Winter 2017 - 18 Examination**

**Semester: 1**  
**Subject Code: 03203101**  
**Subject Name: Computer Methods in Power Systems**

**Date: 26/12/2017**  
**Time: 02.00 pm to 4.30 pm**  
**Total Marks: 60**

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**Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

- Q.1** A) What is HMI? Explain role of HMI. (05)  
B) Using gauss iterative method, calculate the value of x accurate up to 4 decimal places, equation is  $2x - \log x = 7$ . (05)  
C) Explain the maximum likelihood concept using a suitable example. (05)
- Q.2** Answer the following questions. (Attempt any three) (Each five mark) (15)  
A) List the SCADA functions and explain any one.  
B) List the factors which affect load forecasting and explain any one.  
C) Compare GS and NR Method.  
D) Explain power system states with equality and inequality constraints.
- Q.3** A) Use the Newton - Raphson method to solve  
 $f(x_1, x_2) = x_1^2 - x_2^2 - 4$   
 $g(x_1, x_2) = x_1^2 + x_2^2 - 1$  (07)  
assume  $x_{10} = 2$  and  $x_{20} = -1$   
update the values of  $x_1$  and  $x_2$  perform one iteration.  
B) Explain forward euler's method with example. (08)
- OR**
- B) Explain gauss seidel method. (08)
- Q.4** A) Explain bounding concept for power system security. (07)
- OR**
- A) Explain operating states of power system. (07)  
B) Explain concentric relaxation concept. (08)