

**GUJARAT TECHNOLOGICAL UNIVERSITY****M. E. I<sup>ST</sup> Semester–Remedial Examination – July- 2011****Subject code:710707****Subject Name: Modern Power System Protection****Date:12/07/2011****Time: 10:30 am – 01:00 pm****Total Marks: 60****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. English version is Authentic

- Q.1** (a) What is LINKNET ? Draw flow chart for relay co-ordination and primary/backup relay pair. **06**  
(b) Explain Sampling Theorem with reference to digital relay. **06**
- Q.2** (a) Draw basic block dia. Of digital relay. Also explain any one subsystem in detail. **06**  
(b) Explain Anti Aliasing filter. **06**
- OR**
- (b) Explain algorithm to prepare LINKNET structure and also determine back up relay. **06**
- Q.3** (a) Explain basic working principle of relay based on Travelling wave. Also explain same for internal and external fault. **06**  
(b) Explain with diagram the concept of Fourier analysis based Half cycle window relay algorithm. **06**
- OR**
- Q.3** (a) Explain working principle of Least-Square based method. **06**  
(b) Explain in brief working of digital frequency relay. **06**
- Q.4** (a) Explain considerations for application of instantaneous reclosing. **06**  
(b) Explain Load shedding scheme for external fault. **06**
- OR**
- Q. 4** (a) Explain concept of Adaptive relay. **06**  
(b) Explain the criteria for deciding the number of load shedding steps for a Load shedding steps. **06**
- Q.5** (a) Explain the following problems that occurs during the protection of transmission line due to presence of series capacitor **06**  
(1)Phase impedance unbalance  
(2)Transient phenomenon  
(3) Sub synchronous resonance  
(b) Explain factors governing application of reclosing. **06**
- OR**
- Q.5** (a) What is the apparent impedance seen by a distance relay during current inversion problem when series compensation is given at **06**  
(i) the middle of the transmission line  
(ii) the end of the transmission line  
(b) Why does distance relay overreaches and underreaches in case of the protection of series compensated transmission lines? **06**