

**M.Tech. 3rd Semester Electrical Power System****Examination, December-2017****DIGITAL CONTROL SYSTEM****Paper-MTEPS-301(i)****Elective-III**Time allowed : 3 hours][Maximum marks : 100*Note : Attempt five questions in all.*

1. (a) What are the basic elements of digital control system, explain them briefly ?  
(b) Explain ideal low pass filter.  
(c) Why we need Laplace transform, explain it briefly ?  
(d) How we can do mapping between s-plane and z-plane ? 20
2. Explain the various properties of Laplace transform. 20
3. Explain Liapunov stability analysis of discrete time system. 20
4. What are the different analytical design method for transient response ? 20
5. Write short note on : 20
  - (a) Principle of duality
  - (b) Dead beat response

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6. Write short note on : 20
- (a) Minimum order state observer
  - (b) Ackerman's formula
7. Explain the single board controller with custom-designed Chi MTEPS. 20
8. Explain the effect of finite word length and quantization on controllability and closed loop pole placement. 20