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**SUBJECT CODE NO:- H-1799**  
**FACULTY OF SCIENCE AND TECHNOLOGY**  
**M.E. (CSE/SE)**  
**Computer Network Protocol Design (EL-1 on SE)**

[Time: Three Hours]

[Max. Marks: 80]

- N.B Please check whether you have got the right question paper.
- 1) Attempt any two questions from each Section.
  - 2) Assume suitable data wherever necessary.
  - 3) Be specific to every answer.
- Section A**
- Q.1 a) What is Probability Density Function? Explain its use. 10  
b) What is random process? Explain deterministic and non-deterministic processes. 10
- Q.2 a) Derive Markov Chain Transition Matrix. Give its properties. 10  
b) Explain Discrete time Markov Chains. Write a note on Eigen value and Eigen vector. 10
- Q.3 a) What are Queue Performance parameters? Explain performance parameters of M/M/1 Queue. 10  
b) Model M/M/1/B Queue. 10
- Section B**
- Q.4 a) Explain stop and wait ARQ protocol. 10  
b) Give token bucket algorithm for single arrival single departure model. 10
- Q.5 a) What are flow traffic Models? Explain memory less Poisson Process. 10  
b) Describe on-off model. Write a note on autoregressive model. 10
- Q.6 a) Explain Weighted Round Robin Scheduler (WRR). 10  
b) What are various scheduler design issues? 10