IIITS/S-2023/Term Exam-1/CCN

Date: 3rd Feb 2023

Indian Institute of Information Technology, Sri City, Chittoor

Name of the Exam: Computer and Communication Networks (CCN)

Duration: 90 mins

Max. Marks: 20 Marks

Instructions:

1. Closed book exam
2. Assumptions made should be clearly stated
3. All sub-parts of the question should be written together
4. Calculators are allowed. sharing in exam hall is not allowed

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1. The end-to-end delay of sending a packet consisting of L bits from source to destination over a path consisting of N links each of rate R is (NL/R). Generalize this formula for sending P such packets back-to-back over the N links (Ignore processing delay and queueing delay). **[3M]**
2. What are the three layers from top in the Internet protocol stack? What are the principal responsibilities of each of these layers? **[3M]**
3. Define traffic intensity and what would be the traffic intensity if average queueing delay is small. **[2M]**
4. It is known that HTTP is a stateless protocol. Is there any mechanism to make HTTP stateful? Justify your answer with a suitable example. **[3M]**
5. Assume Alice wants to send 5 files to Bob using FTP protocol. In order to transfer files, how many control connections and data connections should be established ? **[1M]**
6. Suppose you want to fetch an HTML page (index.html) from https://iiits.ac.in such that it also has references to 6 very small objects on the same server. Let RTT0 denote the RTT between your computer and the IIIT's web server. Neglecting transmission times of HTTP requests and responses, how much time elapses in *the below mentioned scenarios.* ***Please note that there is no step marking for this question.*** **[8M]**
   a. Persistent HTTP without pipelining? [2M]
   b. Persistent HTTP with pipelining? [2M]
   c. Non-persistent HTTP with no parallel TCP connections? [2M]
   d. Non-persistent HTTP with the browser configured for 2 parallel connections? [2M]
