



Försättsblad Prov Original

Kurskod	Provkod	Tentamensdatum
D T 0 9 2 G	T 1 0 1	2 0 1 8 - 0 8 - 3 1
Kursnamn	Datateknik GR (C), TCP/IP-nät	
Provnamn	Tentamen	
Ort	Sundsvall	
Termin	H18	
Ämne	Datateknik	

Final Exam

DT092G TCP/IP Internetworking

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Instructions

Carefully read the questions before you start answering them. Note the time limit of the exam and plan your answers accordingly. Only answer the question, do not write about subjects remotely related to the question. The questions are *not* sorted by difficulty. Clearly show which answer you are giving your solution to, *Always motivate your answers and show your calculations.*

Time 5 hours.

Exam Aids Non-programmable calculator.

Maximum points 30

Questions 10

Preliminary grades

The following grading criteria applies: E $\geq 15p$, D $\geq 18p$, C $\geq 21p$, B $\geq 24p$, A $\geq 27p$.

Covered ILO

This exam covers the following Intended Learning Outcomes (ILO)

- ILO: 1 – Analyze and differentiate networking protocols used in TCP/IP protocol suite
- ILO: 2 – Implement the concepts of naming and addressing to Internet IPv4 and their extension to IPv6
- ILO: 3 – Explain and compare three routing protocols used in the Internet
- ILO: 4 – Explain and exemplify multicast routing
- ILO: 5 – Categorize problems such as reliable transport, data delay, congestion and flow control and describe at least three congestion control schemes used in TCP
- ILO: 6 – Calculate and measure performance metrics related to throughput, delay, and jitter
- ILO: 8 – Explain the Internet best-effort type of service and its improvements
- ILO: 9 – Explain the principles of queuing theory related to QoS and switching
- ILO: 10 – Explain the principles of multimedia networking and related protocols

Questions

The questions below are not given in any particular order.

- (3p) 1. (ILO: 1) Judge the efficiency of CSMA/CD and describe how the distance in a network can be crucial.
- (3p) 2. (ILO: 10) Elaborate on the abbreviation *RTP*. What does it stand for? What is it used for?
- (3p) 3. (ILO: 2) What is NAT? Name some advantages and disadvantages of this protocol.
- (3p) 4. (ILO: 3) Compare how OSPF and RIP exchange routing information, and how it affects convergence time in the network.
- (3p) 5. (ILO: 4) What is IGMP and for what purpose is it used?
- (3p) 6. (ILO: 5) Consider sending a 3600-byte datagram into a link that has an MTU of 700 bytes. Suppose the original datagram is stamped with the identification number 282. How many fragments are generated? What are the values in the various fields in the IP datagram(s) generated related to fragmentation?
- (3p) 7. (ILO: 6) Suppose a Client is downloading a 5MB file from a Server, through a single communication link, with bandwidth capacity of 100Mbps. If the distance between the Client and the Server is 8000 km and the propagation speed through the medium is 2×10^8 m/s, calculate the transmission delay
- (3p) 8. (ILO: 8) Elaborate on the terms *client-server architecture* and *peer-to-peer architecture*. Use a maximum of three sentences per term.
- (3p) 9. (ILO: 8) Compare Datagram and VC network
- (3p) 10. (ILO: 9) In a small store customers arrive at the rate 100 per hour and they stay in average 13 minutes. What are the average number of customers in the store? Show all calculations.

References

- [17] *TCP/IP Internetworking*. Course Version 6.0. 2017.
- [KR13] James F Kurose and Keith W Ross. *Computer networking: a top-down approach*. 6th. Addison-Wesley Reading, 2013.
- [KR17] James F Kurose and Keith W Ross. *Computer networking: a top-down approach*. Addison-Wesley Reading, 2017.



TENTAMENS INFORMATION

Datum:

18-08-31

Antal timmar:

5

Avdelning:

1ST

Kurskod:

DT092G

Kursnamn:

TCP/IP-nät

Hjälpmedel:

se tentamen

Namn på den som skrivit tentan:

Wif Jonnehag o Lemnat Franked



Telenr till den som skrivit tentan:

010-142 8745

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Tentan skickas åter till:

Studentexp. 1ST, Hus L Plan Y