KTUPredict practice paper, Set 1: built from the most repeated past questions. Not an official KTU paper.

PCCST501 Computer Networks

Practice paper · maximum marks 60

PART A Answer all questions. Each carries 3 marks. (24 marks)

1.	List any six uses of computer networks.	**3**
2.	Explain the persistence and non-persistence connection in HTTP. Consider a webpage has 1 HTML file and 11 images in it. How many TCP connections are required if it uses persistence and non-persistence connection.	**3**
3.	An organization is granted the block 130.56.0.0/16. The administrator wants to create 1024 subnets. a) Find the number of addresses in each subnet. b) Find the subnet prefix.	**3**
4.	Identify and describe the scheduling techniques to improve the quality of service (QoS).	**3**
5.	Explain the working of the address resolution protocol (ARP). Describe the ARP request-response cycle, ARP cache, and proxy ARP.	**3**
6.	Explain and compare different persistence methods used in CSMA with suitable diagrams.	**3**
7.	What is the transmission time of a packet sent by a station if the length of the packet is 1 million bytes and the bandwidth of the channel is 200 Kbps?	**3**
8.	Define simplex, half-duplex, full-duplex transmission modes. Give one example for each.	**3**

PART B Answer any one full question from each module. Each question carries 9 marks.

Module 1

9a.	Compare the layers in OSI and TCP/IP reference model with necessary diagrams. Write five differences between OSI and TCP/IP reference model.	**5**
9b.	Distinguish between iterative and recursive query resolution with suitable diagrams.	**4**

OR

10a.	How does FTP work? Explain the FTP commands and replies.	**5**
10b.	Compare the types of networks formed based on topology. Discuss the advantages and disadvantages of each type.	**4**

Module 2

11a.	Explain the three-way handshake in TCP connection establishment with a suitable diagram.	**5**
11b.	Illustrate link state routing with a proper example.	**4**

OR

12a.	Explain the count-to-infinity problem in the distance-vector routing protocol and provide its solutions.	**5**
12b.	In a Stop-and-Wait protocol, a communication link has a bandwidth of 1 Mbps, and the round-trip propagation delay is 20 milliseconds. Calculate the bandwidth-delay product. If each data packet is 1,000 bits long, calculate the link utilization percentage using the Stop-and-Wait protocol. Calculate the link utilization percentage if a sliding-window protocol allows the sender to transmit up to 15 packets before waiting for acknowledgements.	**4**

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Module 3

13a. Draw and explain Ethernet frame format. **5**

13b. A bit stream 1101011011 is to be transmitted using CRC with generator polynomial x4+x+1. Show the transmitted bit string. **4**

OR

14a. Explain the working of HDLC protocol. Draw HDLC frame format and the different types of HDLC control frames. **5**

14b. Draw and explain the frame format of IEEE 802.11. **4**

Module 4

15a. Explain the different unguided transmission media. **5**

15b. Explain SNMP basic components and their functions. **4**

OR

16a. Discuss the different signal encoding schemes used in the physical layer. Sketch waveforms for the binary sequence 10100111001 using Manchester and differential Manchester encoding schemes. **5**

16b. A communication channel with a frequency range from 800 MHz to 810 MHz is used to multiplex five input signals using Frequency Division Multiplexing (FDM). A guard band of 100 kHz is required between adjacent signals. Assume that the remaining bandwidth is divided equally among the five signals. Find the total bandwidth, the bandwidth occupied by the guard bands, the usable bandwidth, the bandwidth allocated to each input signal and the frequency range allocated to each input signal. **4**

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