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Paper Code:TCS-403

(B.Tech) Mid Semester Examination 2017

IV Semester

Computer Network-1

Time:1:30 Hours

MM:50

Note :

(i) This question paper contains two sections.

(ii) Both sections are compulsory.

Section A

Q1. Fill in the blanks (1 x 5 = 5 Marks)

a) _____ is a company that provide access to the Internet.

b) _____ is the largest network of all Computer networks.

c) TCP can be easily enhanced at the application layer with_____ to provide security services.

d) In the Internet, the host is identified by its _____;

e) Tier 1 ISP are also known as _____ networks.

Q2. Attempt any five. (3 x 5 = 15 Marks)

a) What is the purpose of cladding in an optical fiber?

b) What does "negotiation" mean when discussing network protocol? Give an example.

c) Is an oil pipeline a simplex system, a half duplex system, a full duplex system or none of the above? Justify your answer?

d) List five tasks that a layer can perform. Is it possible that one (or more) of these tasks could be performed by two (or more) layers?

e) Which layers in the Internet protocol stack does a router process? Which layers does a link-layer switch process? Which layers does a host process?

f) Describe the most popular wireless Internet access technologies today. Compare and contrast them.

Section B

Each question contains three parts a, b & c. Attempt any two parts of choice from each question.

Q3. (5*2=10 Marks)

a. Consider sending real-time voice from Host Ato Host B over a packet-switched network (VoIP). Host A converts analog voice to a digital 64 kbps bit stream on the fly. Host A then groups the bits into 56-byte packets. There is one link between Hosts Aand B; its transmission rate is 2 Mbps and its propagation delay is 10 msec. As soon as Host A gathers a packet, it sends it to Host B. As soon as Host B receives an entire packet, it

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converts the packet's bits to an analog signal. How much time elapses from the time a bit is created (from the original analog signal at Host A) until the bit is decoded (as part of the analog signal at Host B)?

b. Consider two hosts, A and B, connected by a single link of rate R bps. Suppose that the two hosts are separated by m meters, and suppose the propagation speed along the link is s meters/sec. Host A is to send a packet of size L bits to Host B.

a. Express the propagation delay, d_{prop}, in terms of m and s.

b. Determine the transmission time of the packet, d_{trans}, in terms of L and R.

c. Ignoring processing and queuing delays, obtain an expression for the end-to-end delay.

d. Suppose Host Abegins to transmit the packet at time t = 0. At time t = d_{trans}, where is the last bit of the packet?

c. With a neat diagram discuss the various layers of Internet Model.

Q4. **(5*2=10 Marks)**

a. Suppose Host A wants to send a large file to Host B. The path from Host A to Host B has three links, of rates R1 = 500 kbps, R2 = 2 Mbps, and R3 = 1 Mbps.

a. Assuming no other traffic in the network, what is the throughput for the file transfer?

b. Suppose the file is 4 million bytes. Dividing the file size by the throughput, roughly how long will it take to transfer the file to Host B?

b. Describe access networks along with its various types.

c. Differentiate between Circuit switching and packet switching.

Q5. **(5*2=10 Marks)**

a. The president of the Specialty Paint Corp. gets the idea to work with an IT company to produce software product. The president tells her legal department to look into it, and they in turn ask engineering for help. As a result, the chief engineer calls his counterpart at the other company to discuss the technical aspects of the project. The engineers then report back to their respective legal departments, which then confer by telephone to arrange the legal aspects. Finally, the two corporate presidents discuss the financial side of the deal. Is this an example of a multilayer protocol in the sense of the OSI model? What are two reasons for using layered protocols?

b. List five nonproprietary Internet applications and the application-layer protocols that they use. What is the difference between network architecture and application architecture?

c. Differentiate between Connection oriented and connectionless service.

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