C 3150

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2007.

Fifth Semester

(Regulation 2004)

Computer Science and Engineering

CS 1302 — COMPUTER NETWORKS

(Common to Information Technology)

(Common to B.E. (Part-Time) Fourth Semester – Regulation 2005)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1.   State the purpose of layering in networks?

2.   At which level of OSI model does repeaters, bridges, routers and gateways operate?

3.   State the difference between token ring and FDDI?

4.   Give the structure of encoder and decoder in error correction.

5.   What is meant by IP spoofing? How can a router be used to prevent IP spoofing?

6.   What kind of routing information do routers exchange among themselves while running distance vector algorithm? In particular, briefly describe the format of the routing information that is exchanged.

7.   Briefly describe two advantages of using packet switching for data transmission.

8.   Explain how TCP flow control works.

9.   Why is DNS necessary? State it significance.

10. What is Security Parameter Index?

11. (a) (i) List four properties by which transmission media can differ. (4)

(ii) Three packet — switching networks each contain n nodes. The networks has a star topology with a central switch, a ring respectively and a third is fully interconnected with a wire form every node to every other node. What are the best, average and worst case transmission paths in hops? (12)

Or

(b) (i) Describe the key elements of protocols and the standards. (8)

(ii) Explain in detail the data transmission in OSI reference model. (8)

12. (a) (i) How does the 802.11 media access control protocol ensure that the receiver has a greater chance to transmit the acknowledgment frame before any other wireless stations grab the media? Does it always guarantee that the acknowledgment frame sent by the receiver will not collide with another frame transmitted by another wireless station? (8)

(ii) Describe the collision avoidance mechanism used in 802.11 wireless LAN. In particular, how such a mechanism solves the hidden terminal problem. (8)

Or

(b) Describe two approaches by which packet loss is detected in a Go back – N ARQ protocol and Selective Repeat Protocol. (16)

13. (a) (i) How is the looping problem solved by switches and by routers. How do switches/routers handle link failure? (8)

(ii) Explain the IP addressing. (8)

Or

(b) (i) Compare and Contrast Link State and Distance Vector algorithms. (8)

(ii) In the virtual circuit network service model, before a virtual circuit is set up, the source router needs to specify a path (e.g., the shortest path) from the source to the destination. What additional information do we need to maintain in the routing table to support this function? Write down the resulting routing table. (8)

14. (a)

(b)

15. (a)

(b)

14. (a) If UDP does not provide any service guarantees or reliable transfer, why can't applications directly access IP and do without it? Explain UDP in detail. (16)

Or

(b) What is QoS in internetworking? State the techniques to improve QoS. (16)

15. (a) What are the following acronym SMTP, FTP, WWW and HTTP stand for? Explain their uses and state the strengths and weaknesses of each of them. (16)

Or

(b) (i) Explain the role of a DNS on a computer network, including its involvement in the process of a user accessing a web page. (8)

(ii) Describe about symmetric – key Cryptography. (8)

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