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Question Paper Code : 70517

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2023.

Fifth Semester

Electronics and Communication Engineering

EC 8551 – COMMUNICATION NETWORKS

(Common to: Electronics and Telecommunication Engineering)

(Regulations 2017)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Differentiate between circuit switching and packet switching?
2. Compare the flow and error control.
3. What is vulnerable period? How it affects the performance in MAC protocols?
4. Explain PicoNet in brief
5. What is flooding? Why flooding technique is not commonly used for routing?
6. List three protocols in the IPv4 network layer that are combined into a single protocol in IPv6.
7. What is the relationship between TCP/IP and Internet?
8. Why pseudo-header is added in a UDP datagram?
9. List some of the advantages and disadvantages of public key encryption?
10. What is NAT? How it improves network security?

PART B — (5 × 13 = 65 marks)

11. (a) (i) Briefly describe various transmission impairments in data communication networks. (8)
- (ii) How do you account for higher reliability and scalability of computer network? (5)

Or

(b) Discuss the following briefly :

- (i) Principles of Protocol layering. (6)
- (ii) Services Provided by Data Link Layer. (7)

12. (a) (i) List the functions performed by the physical layer of 802.3 standard. (6)
- (ii) What is the function of NAT and ICMP? (4)
- (iii) What is bridge? How it operates in the internetworking scenario? (3)

Or

- (b) (i) In what way synchronous and asynchronous serial modes of data transfer differ? (4)
- (ii) In what situation Stop-and-Wait protocol works efficiently? (4)
- (iii) Explain Briefly the device addressing in BlueTooth. (5)

13. (a) (i) Differentiate between Link State and Distance Vector routing algorithms. (7)
- (ii) Explain various types of OSPF message formats. (6)

Or

- (b) (i) Explain BGP path Selection procedure. (8)
- (ii) Explain the Count to Infinity problem. (5)

14. (a) (i) Distinguish between TCP and UDP. (6)
- (ii) What is the difference between leaky bucket algorithm and token bucket algorithm? (7)

Or

- (b) (i) What is choke packet? How is it used for congestion control? (8)
- (ii) Suppose TCP operates over a 1-Gbps link, utilizing the full bandwidth continuously. How long will it take for the sequence numbers to wrap around completely? Suppose an added 32-bit timestamp field increments 1000 times during this wrap around time, how long will it take for the timestamp field to wrap around. (5)

15. (a) (i) Discuss briefly various components of e-mail system? (8)
- (ii) Why is an application such as POP needed for electronic messaging? (5)

Or

- (b) (i) What are the advantages and disadvantages of public key encryption? (7)
- (ii) Briefly discuss the following :
- (1) Peer-to-Peer Network (3)
- (2) Importance of cryptography (3)

PART C — (1 × 15 = 15 marks)

16. (a) (i) Give an overview of the distance vector method of updating routing table information. In particular explain using an example how information about a node failure propagates using this algorithm. What problem is encountered in deciding whether a host has become unreachable? In what circumstances is it impossible to resolve this problem? (8)
- (ii) Describe various Timer used in RIP. (7)

Or

- (b) Describe the OSI seven layer model. Name each of the layers in the model. Write a paragraph describing the areas of function that each layer is responsible for. Contrast the OSI model you have just described with the TCP/IP reference model. Discuss the relative merits of each of these models in the context of modern computer networking. (15)