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B.Tech.
(SEMESTER-VI) THEORY EXAMINATION, 2012-13
COMPUTER NETWORK

Time : 3 Hours]   *[Total Marks : 100*

SECTION – A

1.   Attempt **all** parts. $10 \times 2 = 20$

(a)   Which of the communication modes support two-way traffic but in only one direction ?

(b)   Explain the differences between 10 BaseT and 10 Base2 cabling.

(c)   Why and how is bit stuffing used in framing ?

(d)   In what situations contention based MAC protocols are suitable ?

(e)   What are the goals needed in achieving a good routing algorithm ?

(f)   What is a broadcast IP address ?

(g)   What is piggy backing ?

(h)   Briefly describe any two session related services.

(i)   List some of the major security problems that exist on the Internet.

(j)   What are the email gateways ?

SECTION – B

2.   Attempt any **three** parts. $10 \times 3 = 30$

(a)   What are the salient features of ISDN ? Discuss the functions of different layers in ISDN.

(b)   Explain performance issues for the following data link control protocols :

(i)   Go-back-n

(ii)   Sliding-window

(c) Explain briefly, the new features in IPv6 as compared to IPv4. What is the purpose of multiple headers ? Explain briefly, how IPv6 handles multiple headers.

(d) What is public key cryptography ? List its advantages and disadvantages. Explain how RSA works.

(e) Explain how does e-mail reach to destination. Explain in brief SMTP emphasizing the role and function of User Agent (UA) and Mail Transfer Agent (MTA).

SECTION – C

Attempt all parts. $10 \times 5 = 50$

3. Attempt any two parts.

   (a) Explain Guided transmission media. Mention the characteristics that distinguish optical from twisted pair or coaxial cable.

   (b) What are the key benefits of layered network ? What do you mean by Service Access Point ?

   (c) Explain degradation of signal quality due to attenuation and delay distortion.

4. Attempt any two parts.

   (a) Consider the use of 10 K-bit size frames on a 10 Mbps satellite channel with 270 ms delay. What is the link utilization for stop-and-wait ARQ technique assuming $P = 10^{-3}$?

   (b) Prove that for a slotted ALOHA system, the maximum throughput happens at $G = 1$ where G is the number of attempts per packet time.

   (c) How is line coding implemented in FDDI ?

5. Attempt any two parts.

   (a) How is subnet mask useful in IP addressing ? Explain with an example.

   (b) What are the reasons for congestion in a network ? Describe any one method for congestion control.

   (c) Discuss the problem of count to infinity associated with distance vector routing technique.

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6. Attempt any **two** parts.

(a) Explain how a session layer establishes, maintains and synchronizes the interaction between two communicating hosts.

(b) How does the transport layer ensure that the complete message arrives at the destination and in the proper order ?

(c) What is TCP ? Connection termination in TCP is symmetric, whereas connection establishment is not. Why ?

7. Attempt any **two** parts.

(a) What is multipurpose Internet Mail Extension (MIME) and for what it is used ?

(b) Differentiate between SMTP and HTTP.

(c) How does FTP work ? Differentiate between passive and active FTP.

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