13135

MCA (Revised)

Term-End Examination

June, 2009

MCS-042 : DATA COMMUNICATION AND COMPUTER NETWORKS

Time : 3 hours *Maximum Marks : 100*

Note : *Question number **1** is **compulsory**. Attempt **any three** questions from the rest.*

1. (a) What is the difference between a port address, a logical address and a physical address, which type of address changes from hop to hop. **3+2**

   (b) Assume we need to download a text document at the rate of 1000 pages of size 24 rows with 25 characters per row in a page per minute. What is the required bit rate of the channel ? **5**

   (c) Calculate channel capacity for a telephone line which normally has a bandwidth of 300 to 3300 Hz. The S/N is 3162. In case we have to transfer data with high rate, what is required to be done ? **5**

(d) What is exposed station problem in wireless LAN environment ? Explain. 5

(e) For what purpose is leaky bucket algorithm used? Explain the algorithm ? 5

(f) What are the three phases in TCP's congestion control mechanism? Explain with the help of a diagram. How does the size of a congestion window increase in the first phase ? 2+5+3

(g) What is the essential property of Fiestel Cipher network ? Explain. 5

2. (a) What are different variants of polar encodings. Discuss through examples. What are its advantages and disadvantages. 1+6+3

(b) Define piggybacking and pipelining. Why there is no pipelining in stop and wait ARQ ? 5

(c) What are the uses of flooding algorithm ? 5

3. (a) Why has Ethernet imposed restrictions on both the minimum and maximum length of a frame ? Explain. 5

(b) How is Silly window Syndrome created by the receiver ? What is the proposed solution? Discuss. 3+1+3

(c) How does encryption and decryption take place in RSA ? 8

4. (a) Discuss and show the process of correction establishment and termination in TCP. How does it handle delayed arrival of SYN and ACK packets ? 6

(b) Draw and explain the flow diagram of Bellman Ford algorithm. 7

(c) Show the vulnerable time for pure Aloha protocol and obtain an expression for throughput. 7

5. (a) Discuss the difficulties that one encounters when trying to build a bridge between the various Ethernet, Token Ring and Token Bus LANs. 5

(b) What is the main advantage of using BGP protocol ? Explain through an example. 5

(c) Discuss the purpose of using various flags and data offset in thet TCP header. 4

(d) Illustrate and compare circuit switching, message switching and packet switching. 6

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