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MCS-042

M. C. A. (Revised)

Term-End Examination

June, 2019

MCS-042 : DATA COMMUNICATION AND COMPUTER NETWORKS

Time : 3 Hours *Maximum Marks : 100*

Note : *Question No. 1 is compulsory. Answer any* ***three*** *questions from the rest.*

1. (a) How does 802.11 deal with the problem of a noisy channel ? Explain with an example. 10

   (b) Discuss the two advantages of QAM over FM and AM. 5

   (c) Describe Class A, Class B, Class C, Class D and Class E IP addresses. 5

   (d) What is count-to infinity problem ? Explain through an example. 5

   (e) Differentiate between stream ciphers and block ciphers with the help of examples. 5

(f) Consider a signal where the amplitude varies between + 3.2 V to – 3.2 V. If we want to quantize it into 64 levels, what would be the quantized value corresponding to signals of – 3.6 V and + 0.88 V ? 5

(g) Draw RZ and Differential Manchester encoding for the following bit stream : 5

01001100.

2. (a) How does TCP's congestion control algorithm work ? Explain with the help of an illustration. 10

(b) Explain Selective Repeat ARQ through an illustration. 5

(c) What is silly window syndrome ? What is Clark's solution for it ? 5

3. (a) List various types of cryptographic techniques. Explain RSA algorithm with the help of an example. 5

(b) Why CSMA/CD cannot be used in wireless LAN environment ? Discuss. 5

(c) How is MACAW differ from MACA ? 5

(d) Differentiate between the following : 5

(i) Circuit switching and Packet switching

(ii) 2-way handshake and 3-way handshake methods

4. (a) Discuss the following IPM header fields : 10

(i) Time to live

(ii) Type of service

(iii) Fragment offset

(iv) Header checksum

(b) How is BGP different from other distance vector routing protocols ? 5

(c) What is QoS ? Discuss QoS requirements for e-mail application. 5

5. (a) Why is bit stuffing advantageous over character stuffing ? 5

Write bit sequence after bit stuffing the data stream :

11000111111110000111100.

(b) What are the difficulties in building a bridge between various 802 LANs ? 5

(c) What is a digital signature ? What are the benefits of using digital signatures ? 5

(d) Explain persistent and non-persistent CSMA protocols using suitable diagrams. 5