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NEW SCHEME

Eighth Semester B.E. Degree Examination, May 2007
EC / TC
High Performance Communication Networks

Time: 3 hrs.]

[Max. Marks:100

Note : *Answer any FIVE full questions.*

1 a. Explain how network externalities and economies of scale contribute to the growth of the network. **(06 Marks)**
   b. A typical network transmits frequencies in the voice signal up to 4 kHz and achieves a signal to noise ratio of 48 dB. Estimate the number of bits per sample and data rate. **(04 Marks)**
   c. Briefly describe different fields in Ethernet frame format. Why does an Ethernet frame have maximum and minimum size? **(10 Marks)**

2 a. What is Switched Multimegabit Data Service (SMDS)? Briefly describe internetworking with SMDS? **(10 Marks)**
   b. Compare and contrast frame relay with X.25. Show that end-to-end error control is advantageous to link level error control with a diagram. **(08 Marks)**
   c. What does standard 1000BASE-SX refer to? **(02 Marks)**

3 a. What is an autonomous system? How does BGP perform routing? **(06 Marks)**
   b. Distinguish between FTP and TFTP. **(04 Marks)**
   c. What do you mean by multicast IP? Discuss about providing reliability in multicasting. **(05 Marks)**
   d. Explain: i) Label switching   ii) Queuing algorithms. **(05 Marks)**

4 a. Describe elaborately ADSL modem technology. **(09 Marks)**
   b. Enumerate SONET layers and briefly describe their functions with a neat diagram. **(06 Marks)**
   c. What is MPEG? Explain motion compensation in MPEG. **(05 Marks)**

5 a. Explain the following in the context of ATM:
      i) LAN emulation over ATM   ii) IP over ATM. **(10 Marks)**
   b. Which are the two sub layers of ATM Adaptation Layer (AAL)? Describe their responsibilities with the help of a diagram. **(05 Marks)**
   c. Explain the Quality of Service (QoS) parameters of ATM. **(05 Marks)**

6 a. Enumerate and explain different architectures for wireless networks. **(06 Marks)**
   b. Compare and contrast different random access protocols with respect to wireless networks. **(06 Marks)**
   c. Discuss the power fall-off with distance due to path loss, shadowing and flat fading in wireless channel. **(08 Marks)**

7 a. Describe about single-hop and multi-hop optical LANs. **(10 Marks)**
   b. With a neat diagram explain WDM systems. **(05 Marks)**
   c. Mention the functions of multiplexer, ADD/DROP multiplexer, switch and optical cross connect with reference to optical networking. **(05 Marks)**

8 a. Define the main attributes of a global network. Elucidate these attributes. **(10 Marks)**
   b. Write notes on any two:
      i) VOIP ii) RSVP iii) Mobile adhoc networks iv) Bluetooth. **(10 Marks)**

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Eighth Semester B.E. Degree Examination, May/June 08
High Performance Communication Networks

Time: 3 hrs.   Max. Marks:100

Note : *Answer any FIVE full questions.*

1 a. Compare the digital carrier systems (DS) hierarchy and synchronous transfer signal (STS) hierarchy with reference to medium, signal and data rates.   **(10 Marks)**
   b. What is meant by,
      i)   Economics of scale.
      ii) Network externalities.
      iii) Service integration.
      Explain.   **(10 Marks)**

2 a. With related diagram, explain 'Media Access Control' sub-layer. What do the MAC standards specify?   **(10 Marks)**
   b. Draw the block diagram of 'Ethernet LAN' using bridges, for a 'Spanning tree scheme' and explain spanning tree algorithm.   **(10 Marks)**

3 a. Specify the generic applications of IP protocols.   **(04 Marks)**
   b. What is URL? Explain the URL scheme with example.   **(06 Marks)**
   c. With related diagram, explain 'Bellman Ford Algorithm'. Mention its disadvantages.
                                                                          (10 Marks)

4 a. Draw a 'Sonet Frame'. If one frame duration is 125 µs, calculate STS – 1 rate.   **(08 Marks)**
   b. What are PONS? Explain their function and specify its uses.   **(06 Marks)**
   c. What is an intelligent network? Specify its elements and explain the function of each of them.   **(06 Marks)**

5 a. Specify the services provided by ATM. Further explain any three parameters used to control the arrival of cells.   **(10 Marks)**
   b. If the cell arrivals at the output Buffer switch is a 'Poissanian process' and given link speed of 155 Mbps (STS-3 signal), cell size of 424 bits and traffic load of 90%; calculate
      i)   Average number of cells in the buffer (N).
      ii) Average queing delay. (QP)
      iii) If 10 output buffers exist between S and D, find QD.   **(10 Marks)**

6 a. What are the technical challenges for a 'wireless network'? Elaborate.   **(08 Marks)**
   b. What is meant by;
      i)   Multi-path flat fading.
      ii) ISI
      Explain.   **(08 Marks)**
   c. Differentiate between ALOHA and PRMA.   04 Marks)

7 a. What is 'Sub-carrier multiplexing'? Explain with related diagram.   **(10 Marks)**
   b. Explain the concept of 'Space-division' switch, used in an 'optical cross-connect'. Specify the uses of an 'optical cross-connect' along with related diagram.   **(10 Marks)**

8 Write short notes on:
   a. Attributes of global network.
   b. PNNI routing.
   c. Hand-off's in PCS.
   d. Throughput of TCP.   **(20 Marks)**

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