Reg. No. : | | | | | | | | | | | |

K 4203

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2009.

Seventh Semester

Mechatronics Engineering

CS 1029 — NETWORKING OF COMPUTERS

(Regulation 2004)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Mention any four resources that can be shared in a data network.

2. Write short notes on Internet Architecture Board (IAB).

3. Calculate the frequencies of 100 MHz, 1000 MHz and 10000 MHz waves.

4. What is meant by Automatic Repeat Request?

5. What are the advantages of slotted ALOHA over pure ALOHA?

6. Datagram organization of the network is similar to that of the services offered by the postal department. Justify this statement.

7. What is the significance of the IP addresses of the format 127.x.y.z?

8. Is it a must to have the Internet connectivity to access e-mail? Justify this statement.

9. What does the term digital pipe refer to in ISDN?

10. State the relationship between the terms ATM and B-ISDN.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Describe the original design of ARPANET with a neat diagram. (8)

(ii) Describe the evolution of the Internet from the original ARPANET. (8)

Or

(b) (i) Distinguish between the networks based on broadcast links and point to point links. (8)

(ii) Explain the layered architecture of the network software with 5 layers. (8)

12. (a) (i) Explain the various components of an optical fiber transmission system. (8)

(ii) It is desired to send a sequence of computer screen images over an optical fiber. The screen is 640*480 pixels, each pixel being 24 bits. There are 60 screen images per second. How much bandwidth is needed and how many microns of wavelength are needed for this band at 1.30 microns? (8)

Or

(b) (i) Explain the principles, features and components of a microwave transmission system. (8)

(ii) Determine the transfer time of a 22 KB file with a mobile data network

(1) with a transmission rate of 10 Kbps and

(2) repeat the same for 802.11 WLAN operating at 2 Mbps

(3) what is the length of the file that WLAN can carry in time that mobile data unit service carried a 20 KB file

(4) what do you infer from the answers to the above questions? (8)

13. (a) (i) Discuss any four key assumptions in dynamic channel allocation. (8)

(ii) Compare the performance of non-persistent and various versions of persistent CSMA protocols. (8)

Or

(b) (i) Explain the disadvantages of static channel allocation in LANs and MANs. (8)

(ii) Explain the channel allocation protocol in Ethernet with the features to sense the carrier and detect collisions. (8)

14. (a) (i) Explain the class based IP addressing followed in IPv4. (8)

(ii) A large number of consecutive IP addresses are available starting at 198.16.0.0. Suppose that four organizations *A*, *B*, *C* and *D* request 4000, 2000, 4000 and 8000 addresses respectively, and in that order. For each of these, give the first IP address assigned, the last IP address assigned and the mask in w.x.y.z/s notation. (8)

Or

(b) (i) Discuss gateways, routers, switches and repeaters in computer networks. (8)

(ii) For a hierarchical routing with 4800 routers, what region and cluster sizes should be chosen to minimize the size of the routing table for a three-layer hierarchy? A good starting place is the hypothesis that a solution with k clusters of k regions of k routers is close to optimal, which means that k is the cube root of 4800 (around 16). Use trial and error to check out combinations where all these parameters are in the general vicinity of 16. (8)

15. (a) (i) Explain the architecture of ISDN with its components and interfaces. (10)

(ii) Discuss the limitations of N-ISDN in service integration. (6)

Or

(b) (i) Explain the format of an ATM cell in UNI and NNI. (8)

(ii) Discuss the various traffic descriptors of ATM networks. (8)