B. Tech.
(SEM. VIII) EXAMINATION, 2006-07
DATA COMMUNICATION NETWORK

Time : 3 Hours]  [Total Marks : 100

Note : (i) Attempt all questions.

1 Attempt any four parts of the following : 5×4
   (a) Name the factors that affect the performance of a data communication network.
   (b) Group the OSI layers by function. What is a peer to peer process ?
   (c) Define bit and band rates. What is digital to digital encoding ?
   (d) Explain connectionless and connection oriented services, write their merits / demerits.
   (e) Explain stop and wait protocol.
   (f) Define link utilization U and derive;

\[ U = \frac{1}{1+2A} \quad \text{where} \]

\[ A = \frac{\text{Propagation time to reach destination}}{\text{frame line to transmit}} \]
2 Attempt any two parts of the following: 10×2
(a) Explain static and dynamic channel allocation.
(b) Explain CSMA/CD protocol.
(c) What do you mean by MAC sublayer.

3 Attempt any two parts of the following: 10×2
(a) Explain: Source routing bridge, spanning tree and remote bridge.
(b) Explain in detail the distributed Queue dual Bus protocol.
(c) Define Error detecting and correcting codes. What are its function in Data-link layer?

4 Answer any two parts of the following: 10×2
(a) A router using the distance vector routing has the following routing table.
   Net 2  6  A
   Net 3  4  C
   Net 4  3  A
   Net 6  2  C
   Net 7  3  B
   The router receives the following packet from router C.
   Net 2  4
   Net 3  5
   Net 4  4
   Net 6  3
   Net 7  2
   Show the updated routing table for the router.
(b) Consider the network shown in figure 3 (b)
   (i) Use the Dijkshtra algorithm to find the set of shortest paths from node 4 to other nodes.
   (ii) Find the set of associated routing table entries.
(c) Discuss:
   (i) Leaky bucket algorithm
   (ii) Token bucket algorithm.

5 Attempt any **two** parts of the following: 10x2
(a) Explain the intended applications of UDP. With the aid of sketch, identify the fields that make up a used datagram header and explain their role.
(b) Discuss the transport layer services provided to upper layers.
(c) Write short notes on any **two** of the following:
   (i) Network security
   (ii) Internet.