

6E3201

B.Tech (Sem.VI) (Main) Examination, May/June-2011

Computer Engineering

## 6CS1 COMPUTER NETWORKS

(Common to Computer Engineering and Information Technology)

Time: 3 Hr.

Maximum Marks: 80

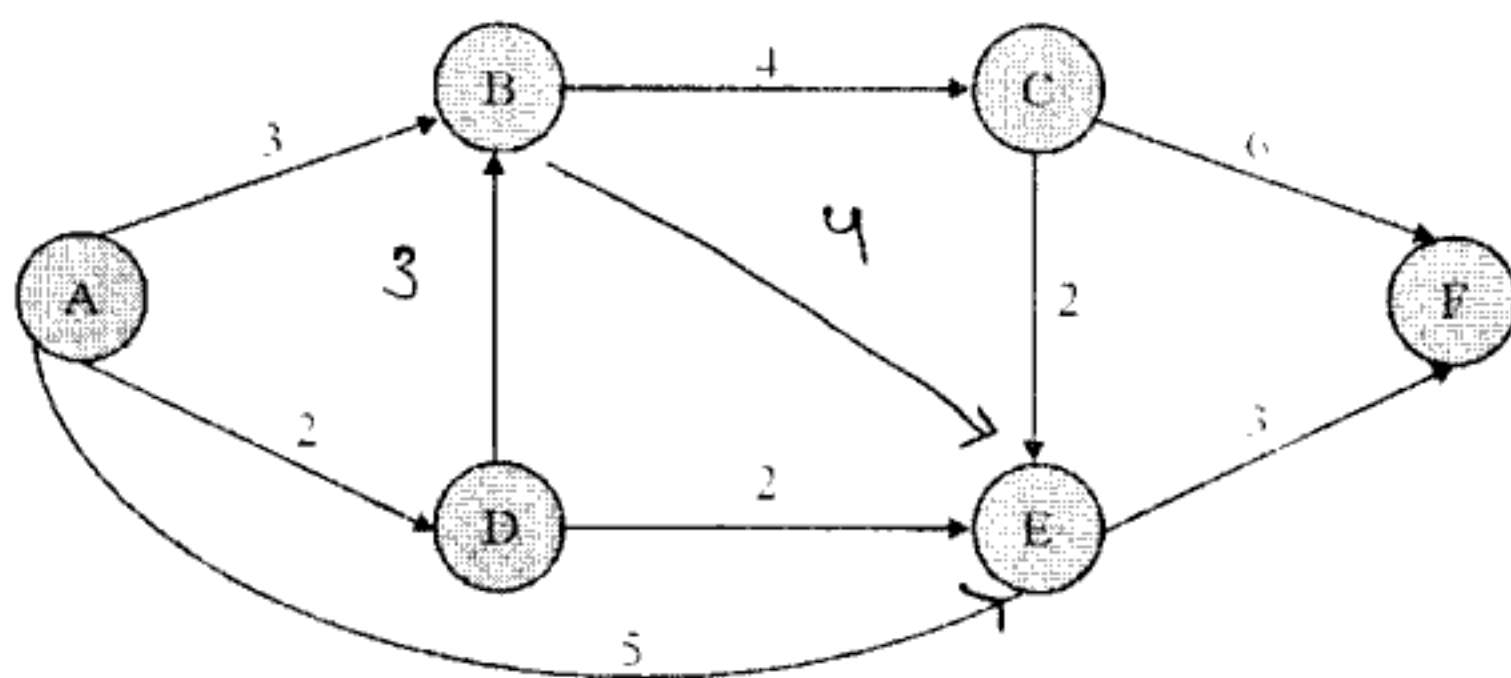
Min. Passing Marks: 24

### Instructions to Candidates:

Attempt any **five** questions selecting **one** question from **each** unit. All questions carry **equal marks**. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used calculated must be stated clearly.)

### Unit-I

- Q.1
- Describe the working principles, advantage and disadvantages of the following routing algorithms:
    - Distance vector routing
    - Reverse path forwarding
  - Consider the following network in figure with the indicated link cost. Use Dijkstra's shortest path algorithm to compute the shortest paths from A to C and F



OR

- Q.1 (a) Answer the following questions associate with congestion algorithms:
- (i) Difference between token bucket and leaky bucket algorithms.
  - (ii) Describe all the parameters used in flow specification techniques.
  - (iii) Rate based congestion algorithm. [3×4=12]
- (b) What do you know about choke packets? Write processes in which we are using these packets. [4]

**Unit-II**

- Q.2 (a) What is virtual circuit? Explain
- (b) Describe the way to do reassembly of IP fragments at the destination in IP protocol.
- (c) Consider a point to point link 2 km in length. at what bandwidth would propagation delay (at speed  $2 \times 10^8$  m/sec. equal transmit delay for 100 bytes packets? [4+6+6]

**OR**

- Q.2 (a) What do you understand by layering and protocol? Elucidate your answer using the internet architecture.
- (b) State the importance of the TTL field in the IP 4 Header. Which entity has the responsibility of updating TTL?
- (c) Discuss the use of subnetting to break a class C. Network into 4 logical networks. If the original class C address was 194.17.68, what are the range of addresses in each of the logical networks? [6+6+4]

**Unit-III**

- Q.3 (a) Explain the congestion control mechanism employed by TCP, discussing in details the role of the JACOBSON's algorithm, dynamic window resizing and the slow start mechanism.
- (b) Draw the formal of the UDP header and explain in brief the various fields. [12+4]

**OR**

- Q.3 (a) What do you understand by differencial encoding?

- (b) Encode the following sequence of bits using NRZ and Manchester encoding and highlight the advantage and disadvantage of each method

1 1 0 1 0 0 0 0 1 1 1 1 0 1

- (c) What do you understand by classless addressing? [5+8+3]

#### Univ-IV

- Q.4 (a) Explain the three way handshake protocol and justify that it successfully handles all possible issues during connection establishment in TCP.

(b) Explain with the help of a diagram operation of the flow control Mechanism in TCP.

(c) Generate the CRC for the given message M using the given divisor P.

M = 1010001101

P = 110101

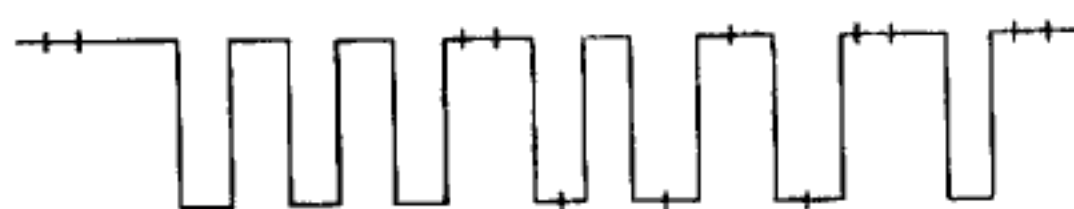
When would CRC fail to detect errors in a bit stream? [6+6+4]

#### OR

- Q.4 (a) Discuss the possible scenarios for a transport connection over a connection oriented network layer.

(b) Differentiate the transport bridge and source routing bridge.

(c) The waveform of the following figure belongs to Manchester coded binary data stream. Determine the beginning and end of bit periods (i.e. extract clock information) and given the data sequence. [4+6+6]



#### Unit-V

- Q.5 (a) Discuss the two principal types of queuing mechanism and compare their performances.

(b) Explain different types of services provided by application layer.

(c) Explain architecture of world wide web. [8+4+4]

#### OR

- Q.5
- (a) Explain principal DNS resource record types and their meanings.
  - (b) What is the Email privacy? Discuss the E-mail security package PGP; and PEM with their operations.
  - (c) Write short note on exploiting heterogeneity. [6+6+4]