

Dec.-22-0316

EC-701 (Computer Networks and Data Communication)

B.Tech. 7th (CBCS)

Time : 3 Hours

Max. Marks : 60

*The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.*

**Note :** Candidates are required to attempt five questions in all selecting one question from each of the sections A, B, C and D. Section E is compulsory.

### SECTION - A

1. Why do we need switching in data communication networks? With the help of an example discuss the packet and circuit switching networks. (10)
2. Discuss the role of various layers in the OSI model. Also discuss the advantages of layered architecture approach in networking. (10)

### SECTION - B

3. (a) Write a short note on the following:
  - i. Bandwidth of a channel
  - ii. Latency.
  - iii. Jitter.
  - iv. Attenuation.
  - v. Nyquist bit rate. (5×1=5)
- (b) What is block coding and how it is used for error detection? (5)
4. What are cyclic codes? Illustrate how cyclic codes can be used for error detection in data link layer. (10)

### SECTION - C

5. Why do we need digital network hierarchies? Discuss the architecture and various data rates of the plesiochronous digital hierarchy (PDH). How it is different from SDH networks? (10)
6. (a) Discuss the various standard ethernet implementations. Also compare the data rates for the standard ethernet, fast ethernet and gigabit ethernet. (5)
- (b) Discuss the role of a switch and a bridge used in computer networks and how they are related? (5)

### SECTION - D

7. What is the significance of IP addresses in computer networks? How IP addresses are addressed in IPv4 addressing? With the help of an examples discuss how various IP classes are assigned in classful IPv4 addressing. (10)
8. In detail explain the Bluetooth architecture. Also discuss the two types of links between a Bluetooth primary/master and Bluetooth secondary/slave. (10)

### SECTION - E

9. Briefly explain the following:
  - (i) SONET Architecture
  - (ii) Role of subnetting
  - (iii) Zigbee
  - (iv) Asynchronous transfer mode (ATM) protocol
  - (v) Classless IP addresses
  - (vi) Checksum
  - (vii) MAN
  - (viii) 802.11 WLAN
  - (ix) MAC address
  - (x) Mesh topology (10×2=20)