

**B.TECH. DEGREE EXAMINATION, DECEMBER 2012**

Fifth Semester

Branch : Information Technology

IT 010 503 DATA COMMUNICATION (IT)

(Regular - New Scheme)

Time : Three Hours

Maximum : 100 Marks

**Part A***Answer all questions briefly.**Each question carries 3 marks.*

1. What are the functions of transport layer in OSI reference model?
2. Why is statistical TDM more efficient than a synchronous TDM?
3. Give one practical example for communication systems of simplex, duplex and half-duplex types.
4. List any *three* advantages of optical fibre communication, compared to copper wire communication.
5. What are the differences between TDM and FDM?

(5 × 3 = 15 marks)

**Part B***Answer all questions.**Each question carries 5 marks.*

6. Explain the arrangement of a data communication network. Describe any one network topology?
7. State and explain Shannon's theorem on channel capacity of a Gaussian channel.
8. Explain the differences between datagram and virtual circuit operation?
9. With a neat block diagram, describe a digital subscriber exchange?
10. Explain the principle of CDMA? Compare it with TDMA and FDMA?

(5 × 5 = 25 marks)

Turn over

**Part C**

*Answer any one full question from each module.*

*Each full question carries 12 marks.*

**MODULE I**

11. Discuss LAN implementation using ETHERNET protocol. Explain MAC address?

*Or*

12. Describe any three different topologies in computer networks.

**MODULE II**

13. Explain the differences between a time division multiplexer and a statistical multiplexer. Produce a sketch showing the internal architecture of a time division multiplexer.

*Or*

14. With necessary diagrams explain DPSK transmitter and receiver and compare its performances with PSK?

**MODULE III**

15. (a) What types of delay are significant in assessing the performance of a packet switching network? Explain. (6 marks)  
 (b) What are the major trade - off in the design of a routing strategy for a circuit switching network? (6 marks)

*Or*

16. (a) Explain the different methods of frame synchronization with examples. (5 marks)  
 (b) Explain (i) Bit synchronization and (ii) Character synchronization with appropriate examples. (7 marks)

**MODULE IV**

17. With neat diagrams, explain how the following guided media can be used in computer communication? (i) fibre optic cable (ii) coaxial cable and (iii) twisted pair cable.

*Or*

18. With neat block diagram, describe the principle of a cable TV network? Explain the function of different units used in it?

**MODULE V**

19. With neat diagrams, explain how a call is established using a GSM channel.

*Or*

20. (a) Describe different kinds of hand-off mechanisms. (6 marks)  
 (b) How GPRS is utilised in computer communication? Explain. (6 marks)

[5 × 12 = 60 marks]