

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]