

S.E. (IT) (Second Semester) EXAMINATION, 2011**DATA COMMUNICATIONS****(2008 PATTERN)****Time : Three Hours****Maximum Marks : 100**

N.B. :— (i) Answer question No. 1 or 2, 3 or 4, 5 or 6 from Section I and question No. 7 or 8, 9 or 10, 11 or 12 from Section II.

(ii) Answers to the two Sections should be written in separate answer-books.

(iii) Neat diagrams must be drawn wherever necessary.

(iv) Figures to the right indicate full marks.

(v) Assume suitable data, if necessary.

SECTION I

1. (a) Draw ISO-OSI reference model. What are the responsibilities of : [8]

(i) Physical layer

(ii) Data Link layer

(iii) Network layer.

(b) Explain pulse code modulation. State the advantages of Delta modulation over Pulse code modulation [8]

P.T.O.

Or

2. (a) Explain various addresses in TCP/IP protocol suit. [8]

(b) Distinguish between : [8]

(i) Base band transmission and Broad band transmission

(ii) Time Domain and Frequency Domain.

3. (a) Define modulation and modulation index. Compare AM, FM and PM. [8]

(b) Explain BPSK and QAM. Draw constellation diagram of it. [8]

Or

4. (a) What do you mean by spread spectrum ? Explain FHSS. State the advantages and disadvantages. [8]

(b) Explain the concept of multiplexing. Explain TDM, FDM and WDM. [8]

5. (a) Explain Circuit Switched network with all three phases. State advantages and disadvantages. Discuss about the efficiency and delay in a circuit switched network. [10]

(b) Draw an electromagnetic spectrum for wireless communication. Explain Ground wave, Sky wave and Space wave propagation. [8]

Or

6. Write short notes on : [18]
- (a) Co-axial cable and Fiber optic cable
 - (b) Dial up Modem
 - (c) Virtual Circuit Network.

SECTION II

7. (a) Explain the reason for moving from the Stop-and-Wait ARQ protocol to the Go-Back-N ARQ protocol. [8]
- (b) Compare and contrast HDLC and PPP. [8]

Or

8. (a) Discuss the concept of redundancy in error detection and correction. [6]
- (b) What is hamming distance ? What is the minimum Hamming Distance ? [4]
- (c) Distinguish between forward error correction and error correction by retransmission. [6]
9. (a) Explain different controlled access methods with the help of diagrams. [10]
- (b) What are the advantages of dividing an Ethernet LAN with a bridge ? [6]

Or

10. (a) Explain *three* categories of multiple access protocols. [10]
- (b) Define the type of the following destination addresses. [6]
- (i) 4A : 30 : 10 : 21 : 10 : 1A
- (ii) 47 : 20 : 1B : 2E : 08 : EE
- (iii) FF : FF : FF : FF : FF : FF

11. (a) What do you mean when we say that a bridge can filter traffic ?
Why is filtering important ? [4]
- (b) What is SONET ? Explain SONET devices with the help of diagram. [10]
- (c) Discuss the working of VLAN. How does a VLAN reduce network traffic ? [4]

Or

12. (a) Discuss how an STS multiplexer is different from an add/drop multiplexer. [8]
- (b) Explain SONET layers with respect to device-layer relationship. [10]