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Seat No.	
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[4657]-84

S.E. (I.T.) (Second Semester) EXAMINATION, 2014

DATA COMMUNICATIONS

(2008 PATTERN)

Time : Three Hours

Maximum Marks : 100

N.B. :— (i) Answers to the two Sections should be written in separate answer-books.

(ii) Neat diagrams must be drawn wherever necessary.

(iii) Figures to the right indicate full marks.

(iv) Use of calculator is allowed.

(v) Assume suitable data, if necessary.

SECTION I

1. (a) Compare ISO-OSI model with TCP-IP model. Which model is prepared in internet ? Why ? [8]

(b) State and explain Nyquist theorem and Shannon's channel capacity theorem. Consider a channel with 1MHz bandwidth, The SNR for this channel is 63. What is appropriate bit rate and signal level ? [10]

P.T.O.

Or

2. (a) Explain serial and parallel transmission modes used in Data Communication. [8]
- (b) List and explain various line coding techniques with examples. [10]
3. (a) Derive an expression for AM wave in time domain and plot frequency spectrum of AM. [8]
- (b) Compare Direct sequence–SS and Frequency hopping–SS. [8]

Or

4. (a) What is FDM ? Draw and explain FDM multiplexing and De-multiplexing process. [8]
- (b) Explain the following shift keying techniques with suitable examples : [8]
- (i) ASK
- (ii) FSK
- (iii) PSK
- (iv) QAM.

5. (a) Explain various types of unguided media in detail. [8]
(b) Compare Circuit switching, Message switching, Packet switching. [8]

Or

6. (a) Explain types of fiber and compare them. [8]
(b) Explain the terms ADSL, ADSL lite, HDSL and SDSL. [8]

SECTION II

7. (a) Explain with suitable example, generation of Hamming codes. [8]
(b) What is CRC ? Explain CRC generator and CRC checker with suitable example. [10]

Or

8. (a) Discuss Point to Point (PPP) protocol stack with its appropriate frame formats. [8]
(b) Explain in detail Basic Stop and Wait, Go-Back-N, and Selective repeat ARQ system. [10]

9. (a) Explain the following physical layer implementation in fast Ethernet : [8]

(i) 100BaseTX

(ii) 100BaseFX

(iii) 100BaseT4

with respect to media, maximum length and line encoding.

(b) Compare and contrast FDMA, TDMA and CDMA. [8]

Or

10. (a) Write short notes on : [8]

(i) IEEE 802.4 (Token bus)

(ii) IEEE 802.5 (Token ring).

(b) Discuss fast Ethernet technology in brief. State its specification. [8]

11. (a) Compare Hub, Repeaters, Bridge, Routers in detail. [8]

(b) Draw and explain BUS and STAR backbone network. [8]

Or

12. (a) What is virtual LAN ? State the advantages of VLAN. [8]

(b) Write short notes on : [8]

(i) SONET layers

(ii) SONET Multiplexing.