Total No. of Questions—12] [Total No. of Printed Pages—4+1

Seat No.	

S.E. (I.T.) (Second Semester)

EXAMINATION, 2014

DATA COMMUNICATION

(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 the OSI and TCP/IP reference models. [8]

(*b*) Explain PCM with the help of block diagram in detail. What are the distortions in PCM ? How is it eliminated ? [8]

P.T.O.

Or

2. (*a*) Explain various transmission impairments present in Data communication. [8]

(*b*) Explain the Data Communication System with its *five* components and discuss the fundamental characteristics of Data Communication System. Give the different forms in which data can be represented. [8]

3. (*a*) Explain FDM. Mention the advantages and disadvantages. [8]

(*b*) Draw a neat waveform for amplitude modulation :

(*i*) Modulating signal

(*ii*) Carrier signal

(*iii*) Amplitude modulated signal

(*iv*) Frequency spectrum of AM wave. [8]

Or

4. (*a*) State the principle of DS-Spread Spectrum modulation with diagram and mention advantages and disadvantages over FH-Spread Spectrum modulation. [8]

(*b*) Explain the following shift keying techniques with suitable diagram : [8]

(*i*) ASK

(*ii*) FSK

(*iii*) PSK

(*iv*) QAM

5. Write short notes on : [18]

(*a*) Guided Media

(*b*) Virtual Circuit Network

(*c*) ADSL & SDSL.

Or

6. Write short notes on : [18]

(*a*) Unguided Media

(*b*) Packet Switched Network

(*c*) Types of Switches

SECTION II

7. (*a*) What is ARQ ? Explain different techniques of ARQ. [8]

(*b*) What is Hamming distance ? Explain with example. Explain simple parity check code. [8]

Or

8. (*a*) Explain various Station types and configurations used in HDLC. [8]

(*b*) What is CRC ? Explain CRC generator and CRC checker with suitable example. [8]

9. (*a*) Discuss CSMA/CD Random Access techniques. How is collision avoidance achieved in the same ? [8]

(*b*) Explain FDMA, TDMA & CDMA and compare them. [8]

Or

10. (*a*) Discuss Gigabit Ethernet with reference to the following :

(*i*) MAC Sublayer

(*ii*) Gigabit Ethernet Frames [8]

(*b*) Explain in brief ALOHA, slotted ALOHA mentioning efficiency and advantages. [8]

11. Write short notes on : [18]

(*a*) Connecting Devices

(*b*) SONET Multiplexing

(*c*) SONET Layers

Or

12. Write short notes on : [18]

(*a*) SONET Devices

(*b*) Backbone Network

(*c*) Virtual LAN.