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

[3762]-236

S.E. (Information Technology) (Semester—II)

EXAMINATION, 2010

DATA COMMUNICATIONS

(2008 COURSE)

Time : Three Hours **Maximum Marks : 100**

N.B. :— (*i*) Answer Question **1** or **2**, **3** or **4**, **5** or **6** from Section **I** and Question **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*) Explain ISO-OSI model in detail. [8]

(*b*) State and explain Shannon's channel capacity theorem. [4]

(*c*) List the Line coding schemes in Digital transmission. Explain Polar NRZ scheme. [4]

Or

2. (*a*) Explain TCP/IP protocol suite. [8]

(*b*) Explain various transmission impairments. [4]

(*c*) Explain Pulse code modulation. [4]

P.T.O.

3. (*a*) Explain the following shift keying techniques with suitable diagram. [8]

(*i*) ASK

(*ii*) FSK

(*iii*) PSK

(*iv*) QAM.

(*b*) Explain FHSS and DSSS. [8]

Or

4. (*a*) Explain with diagram Amplitude Modulation and Frequency Modulation and compare them. [8]

(*b*) Explain FDM and statistical TDM. [8]

5. Write short notes on :

(*i*) Guided Media [6]

(*ii*) Packet Switched Networks [6]

(*iii*) Structure of Circuit Switches. [6]

Or

6. Write short notes on :

(*i*) Modes of propagation of Radio Waves [6]

(*ii*) Datagram network [6]

(*iii*) ADSL modem. [6]

SECTION II

7. (*a*) What is hamming distance ? Explain with example. Explain simple parity check code. [8]

(*b*) Explain different ARQ techniques. [8]

Or

8. (*a*) Explain error detection and error correction in block coding. [8]

(*b*) What is CRC ? Generate the CRC code for message 1101010101. Given generator Polynomial :

$$g(x) = x^4 + x^2 + 1.$$ [8]

9. (*a*) Explain CSMA and CSMA/CD. Also comment on efficiency of each. [8]

(*b*) Explain the following physical layer implementations in standard Ethernet :

(*i*) 10Base5

(*ii*) 10Base2

(*iii*) 10BaseT

(*iv*) 10BaseF

with respect to media, maximum length and line encoding. [8]

Or

10. (*a*) Explain FDMA, TDMA and CDMA in detail. [8]

(*b*) Explain the following physical layer implementations in Fast Ethernet :

(*i*) 100BaseTX

(*ii*) 100BaseFX

(*iii*) 100BaseT4

with respect to media, maximum length and line encoding. [8]

11. Write short notes on :

(*i*) Connecting Devices [6]

(*ii*) Virtual LAN [6]

(*iii*) SONET Layers. [6]

Or

12. Write short notes on :

(*i*) Backbone Network [6]

(*ii*) SONET Devices [6]

(*iii*) SONET Multiplexing. [6]