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

Seat No.	

[4757]-197

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

EXAMINATION, 2015

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

(*i*) Physical layer

(*ii*) Data link layer

(*iii*) Network layer.

(*b*) Explain PCM with the help of block diagram in detail. What are the Distortions in PCM ? How is it eliminated ? [10]

P.T.O.

Or

2. (*a*) Explain Nyquist bit rate and Shannon capacity theorem. [8]

(*b*) Explain various transmission impairments present in Data communication. [10]

3. (*a*) Explain TDM and Statistical TDM with the help of diagram. [8]

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

Or

4. (*a*) Explain the following shift keying techniques with suitable examples : [8]

(*i*) ASK

(*ii*) FSK

(*iii*) PSK

(*iv*) QAM.

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

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

(*b*) Explain the terms ADSL, ADSL lite, HDSL, and SDSL. [8]

Or

6. (*a*) Draw frequency spectrum for wireless communication and explain various types of unguided media. [8]

(*b*) What is switching network ? Explain different methods of switching. [8]

SECTION II

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

(*b*) What is HDLC ? Explain with the help of its frame format. [8]

Or

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

(*b*) What is CRC ? Generate the CRC code for message 1001101010. Given generator polynomial $g(x) = x^4 + x^2 + 1$. [8]

9. (*a*) Discuss CSMA/CA random access technique. How collision avoidance is achieved in this technique ? [8]

(*b*) Explain pure and slotted aloha. [8]

Or

10. (*a*) Discuss Gigabit Ethernet with reference to the following : [8]

(*i*) MAC Sub Layer

(*ii*) 1000 BaseX specification.

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

11. Write short notes on : [18]

(*a*) Connecting Devices

(*b*) SONET Layers

(*c*) Backbone Networks.

Or

12. Write short notes on : [18]

(*a*) Virtual LAN

(*b*) Working of Switch and Router

(*c*) Two-layer and Three-layer switches.