

Roll No

CS - 501**B.E. V Semester**

Examination, June 2016

Data Communication*Time : Three Hours**Maximum Marks : 70*

Note: i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.

ii) All parts of each question are to be attempted at one place.

iii) All questions carry equal marks, out of which part A and B (Max.50 words) carry 2 marks, part C (Max.100 words) carry 3 marks, part D (Max.400 words) carry 7 marks.

iv) Except numericals, Derivation, Design and Drawing etc.

1. a) What are the basic components of data communication?
- b) Define Line and block codes.
- c) What is the difference between serial and parallel transmission?
- d) Explain the different types of digital signal encoding formats for signal 010011100011.

Or

Why the digital communication systems are more resistant to channel noise than analog systems.

2. a) What are the nonlinear effects in FDMA?
- b) Why is multiplexing needed in data communication systems?
- c) Explain difference between packet and circuit switching.
- d) Describe the basic concept of wavelength division multiplexing. List the advantages of WDM.

Or

Discuss X.25 in detail.

3. a) Differentiate between hub and bridge.
- b) Define gateways.
- c) For n devices in a network, what is the number of cable links necessary for mesh, ring, bus and star networks.
- d) Define physical layer wiring standard of following: 10 Base 2, 10 Base 5, 100 Base F and 1000 Base T.10.

Or

Explain network topologies with neat diagram.

4. a) Name the advantage of optical fiber over coaxial cable.
- b) Explain twisted-pair wire. Also explain its advantages.
- c) Explain skip distance.
- d) Define the following terms:
 - i) Transmission lines
 - ii) Guided transmission lines
 - iii) Transverse waves
 - iv) Longitudinal waves

Or

Explain the functioning of Digital Subscriber Line.

5. a) Mention the types of error correcting methods.
- b) What are the three types of redundancy checks used in data communications?
- c) An 8-bit byte with binary value 10101111 is to be encoded using an even-parity hamming code. What is the binary value after encoding?
- d) The message 101011000110 is protected by a CRC checksum that was generated with the polynomial x^6+x^4+x+1 . The checksum is in the tail (the right side) of the message.
 - i) How many bits is the checksum?
 - ii) If no transmission errors occurred, what would the original data be?
 - iii) Were there any transmission errors?

Or

Hamming codes are a family of (n, k) block error-correcting code. Compute the hamming code for the given data bits "00111001".
