S – 2015

PMM/KS/15/7097

Faculty of Engineering & Technology

Fifth Semester B.E.(Computer Science Engg.)(C.B.S.) Examination

DATA COMMUNICATION

Time : Three Hours] [Maximum Marks : 80

INSTRUCTIONS TO CANDIDATES

(1) All questions carry marks as indicated.

(2) Solve **SIX** questions as follows :

(i) Que. No.-1 **OR** Que. No.-2

(ii) Que. No.-3 **OR** Que. No.-4

(iii) Que. No.-5 **OR** Que. No.-6

(iv) Que. No.-7 **OR** Que. No.-8

(v) Que. No.-9 **OR** Que. No.-10

(vi) Que. No.-11 **OR** Que. No.-12

(3) Due credit will be given to neatness and adequate dimensions.

(4) Illustrate the answers with necessary figures/ drawings wherever necessary.

1. (a) Explain simplex, half duplex and full duplex communication with help of diagram. 7

(b) Explain the Communication Model with example. 6

OR

2. (a) Differentiate between :

(i) Serial vs Parallel transmission

(ii) Asynchronous Vs Synchronous communication. 7

(b) A periodic composite signal with a bandwidth of 3000 Hz is composed of two sine waves. The first one has a frequency of 100 Hz with maximum amplitude of 30V ; the second one has a maximum amplitude of 10V. Show the sketch for bandwidth. 6

3. Discuss the characteristics of line coding scheme. Digital data 1101101101011101 is to be transmitted. Draw the resulting waveforms for the following methods and give the explanation :

(i) 2 BIQ.

(ii) Polar NRZ-I

(iii) Pseudoternary

(iv) Manchester

(v) Polar RZ. 13

OR

4. (a) Explain PCM with block diagram and different sampling methods with neat sketches. 6

(b) Digital data 10011100 is to be transmitted. Draw the resulting waveforms for the following methods :

(i) Polar NRZ-I.

(ii) AMI

(iii) Manchester

(iv) Unipolar NRZ

(v) Pseudoternary. 7

5. (a) List and explain the advantages of optical fiber over twisted pair and co-axial cable. 7

(b) What is purpose of cladding in an optical fiber? 6

OR

6. (a) Write short notes on :

(i) Radio Wave 4

(ii) Satellite Communication. 3

(b) Explain the structure of twisted pair cables. Why is the need of twisting the cables ? 6

7. (a) Discuss the pulse stuffing and empty slot. Explain with diagram. 4

(b) Differentiate between : TDM and FDM. 5

(c) Two channels, one with a bit rate of 100 kbps, and another with a bit rate of 200 kbps, are to be multiplexed. How can this be achieved ? What is the frame rate ? What is the frame duration ? What is the bit rate of the link ? 5

OR

8. (a) Explain WDM with the help of diagram. 4

(b) Distinguish between Multilevel TDM, Multiple Slot TDM and Pulse-stuffed TD. 5

(c) Explain the application of Multiplexing. 5

9. (a) Describe the block diagram of JPEG encoder. 5

(b) Define digital video and compare all types of digital video. 4

(c) Explain video compression. 5

OR

10 (a) Explain following methods :

(i) Run length encoding.

(ii) Quantization

(iii) Relative encoding. 8

(Contd.)

(b) Explain comparison of various methods of compression. 6

11. Write short notes on :

(i) Huffman coding

(ii) RTP.

(iii) HTTP. 13

OR

12. (a) Explain MPEG Compression. Differentiate between MPEG-1 and MPEG-2. 6

(b) What is Lossless Compression and define a Lempel-Ziv Encoding, with example. 7