

B.E.(FULL TIME) DEGREE EXAMINATIONS, APRIL / MAY 2011
ELECTRICAL AND ELECTRONICS ENGINEERING BRANCH
FOURTH SEMESTER
(REGULATIONS 2008)

EC 9261 COMMUNICATION ENGINEERING

Time: 3 Hours

Max.marks: 100

Answer ALL questions

PART-A (10 x 2 = 20 marks)

1. Define sampling theorem
2. Compare AM and FM with respect to broadcast band and intermediate frequency
3. A signal of 12 KHZ is FM modulated with frequency deviation of 75KHZ calculate the modulation index
4. Draw the block diagram of QPSK transmitter and receiver.
5. Write about the autocorrelation property of PRBS.
6. What is meant by BEC?
7. What are features of NRZ-I code?
8. Define Numerical Aperture of a fibre.
9. Briefly explain CDMA
10. Define antenna look up angles in satellite communication.

PART-B (5 x 16 = 80 marks)

- 11.(i) Explain spread spectrum technique used in band pass communication System. (8)
- (ii) A code generated using 5 bit shift register is used to spread the signal in spread spectrum communication system. Find the Processing gain and bit rate if the chip rate is 100Mbps. (4)
- (iii) Write about LPI and Anti jamming characteristics of spread spectrum technique. (4)

- 12 (a)(i) Define AM and draw its frequency spectrum. (4)
- (ii) Derive expression for the total transmitted power in AM. (4)
- (iii) Draw the block diagram of AM transmitter and explain. (8)

OR

- (b)(i) Define FM. Derive expression for FM signal and its bandwidth. (8)
- (ii) Explain FM receiver with block diagram. (8)

- 13(a)(i) Perform Huffman coding on the following source and find coding efficiency. (8)

	m_0	m_1	m_2	m_3	m_4	m_5	m_6	m_7
$P(m_x)$.064	.096	.096	.144	.096	.144	.144	.216

- (ii) Construct a convolution encoder for (2,1,3) convolution code. Determine the output sequence when input sequence is 11101. Given $g_1^{(1)} = 1011$ and $g_1^{(2)} = 1101$. (8)

OR

13.(b)(i) Given $P = \begin{matrix} 1 & 1 & 0 \\ 0 & 1 & 1 \\ 1 & 1 & 1 \\ 1 & 0 & 1 \end{matrix}$

Find all the code words of the code in the format, parity bits followed by message bits. Determine the syndrome if the received data is 0011101. Find the correct transmitted code. Implement the encoder and decoder using combination logic. **(12)**

(ii) Briefly explain HDB3 coding used in data link protocol. Draw the coded signal for 1110000000110000100001. **(4)**

14(a) (i) Explain BPSK communication system. **(8)**

(ii) Explain DPCM transmitter and receiver with block diagram. **(8)**

OR

14.(b) Explain with block diagram PCM communication system.

15(a) Briefly explain the following:

(i) Block diagram of fiber optical communication. **(2)**

(ii) Fiber structure and its types. **(6)**

(iii) Optical sources and detectors. **(8)**

OR

15.(b) (i) Explain with block diagram uplink model, transponder and downlink model of satellite communication. **(10)**

(ii) Write short notes on Geosynchronous satellites. **(6)**
