

Roll No.

22158

**M. E. 3rd Semester (ECE)
Examination – January, 2012**

CDMA SYSTEM

Paper : MEEC-603

Time : Three hours] [Maximum Marks : 100

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt any five questions. All questions carry equal marks.

1. (a) Explain properties of Maximal Length Pseudorandom Sequence with suitable diagram.

10

(b) Estimate number of mobile users that can be supported by a CDMA 3 sector cell for the given data :

(i) RFBW = 1.23 MHz

- (ii) Chip rate 1.2288 Mcps
- (iii) T × Rate set-I,
- (iv) Info Rate 9.6 Kbps,
- (v) $(E_b/N_0)_{\text{Reqd}} = 8 \text{ dB}$,
- (vi) Interference factor $\beta = 0.6$
- (vii) Voice factor $v = 0.58$
- (viii) Power control factor $\alpha = 0.7$
- (ix) Gain for Antenna $\alpha = 2.555$ 10

2. Write short notes on wrt IS-95 CDMA :

- (a) CELP decoder
- (b) Channel coding. 10

3. What do you mean by combining method. Explain various combining techniques used in IS-95 using combiners. 20

4. (a) Explain working of Reverse link channels with suitable diagram. 10

- (b) Explain synch channel used in IS-95 CDMA. Enumerate various messages carried by synch channel. 10
5. What do you understand by Pilot channel ? How the pilots are identified and how the Pilot signal help in Hand off activities implemented in IS-95 CDMA. 20
6. Why Power control in CDMA is essential. How it has been implemented in forward and reverse link wrt IS-95 CDMA. Explain with suitable diagram. 20
7. (a) Explain capacity of CDMA system. How Reverse link capacity is calculated ? Derive the equation. 10
- (b) Calculate the transmission loss in dB for H_0 forward link of a CDMA system for the data : 10
- (i) Cell output power = 40 dBm
 - (ii) Allocated Power for Pilot channel = 15% of cell off
 - (iii) Mobile Noise figure = 8 dB
 - (iv) $(E_c/I_t)_{min} = -13$ dB
 - (v) $I_{oc}/I_o = 2.5$ dB
- 10

8. Write short notes on the following with respect to

CDMA 2000 :

- (a) Reverse link physical channel and their conversions and working. 12
- (b) Walsh Code administration. 8