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Reg. No. : .....

Name : .....

Seventh Semester B.Tech. Degree Examination, October 2014
(2008 Scheme)
08.755 : CDMA SYSTEMS (T)

Time : 3 Hours Max. Marks : 100

***Instruction** : Answer **all** questions from Part **A** and **two** questions from **each** Module of Part **B**.*

PART – A

1. Explain DS-CDMA System.
2. What are the Modulation schemes of spread spectrum systems ?
3. Give Orthogonal expansion of SS Signal.
4. Explain forward error control coding in SS systems.
5. Draw and explain super orthogonal convolutional encoder having rate r = $\frac{1}{4}$ and M=3.
6. Give the properties of PN signals.
7. Give Shannon capacity of DS-CDMA.
8. Explain power control in CDMA.
9. Explain decorrelating detector.
10. What is MUD ?

(10×4= 40 Marks)

PART – B

MODULE – I

11. Discuss how frequency hopping spread spectrum works. What are its major applications ? **10**
12. Explain orthogonal and Quasi-orthogonal expansion of spread spectrum signals. **10**
13. Describe coherent reception of FH-SS-signals. **10**

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MODULE – II

14. Describe the generation of pseudo random signals from pseudo random sequences. **10**

15. Describe acquisition process of synchronisation in pseudo random signals. **10**

16. Consider a DS-CDMA system with BPSK, where the spreading sequence is generated by MLSR of length 7. The channel is undergoing Rayleigh fading. Determine the minimum time to acquisition if $K = 100$, $N = NP$, $Tc = 0.5\,\mu s$, $\gamma = 1.2$, $\rho_B = 8$ dB. **10**

MODULE – III

17. With the help of block diagram explain the working of PIC receiver. **10**

18. Explain matched filter in the CDMA channel and calculate probability of error for synchronous users. **10**

19. Explain the working of MMSE receiver and state its merits. **10**

(20×3= 60 Marks)