APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

SEVENTH SEMESTER B. TECH DEGREE (HONS.) EXAMINATION DEC 19

Course code: 04EC6805

Course Name: ADVANCED DIGITAL COMMUNICATION

Max. Marks: 60 Duration: 3 Hours

PART A

Answer All Question

Each question carries 3 marks

1. Draw the signal space representation of BPSK, QPSK and PAM.
2. Explain correlation demodulator in detail.
3. Explain decision feedback equalization briefly.
4. What are the challenges in multicarrier modulation? Explain briefly.
5. Write the characteristics of a frequency selective slowly fading channel.
6. Explain the RAKE demodulator.
7. Write notes on processing gain in spread spectrum systems.
8. Explain Frequency hopping spread spectrum.

PART B

Each question carries 6 marks

9. Explain the representation of band pass signals and systems.

OR

10. Explain various memory less digital modulation methods.
11. Explain matched filter demodulator in detail.

OR

12. Derive an upper bound for probability of symbol error for M-ary orthogonal signals
13. Explain MSE criterion for equalization.

OR

14. State and prove Nyquist pulse shaping criterion.
15. Explain multicarrier modulation with overlapping sub channels.

OR

16. A multicarrier system with 128 sub-channels and $T_N = 0.2\ ms$ and $T_N \gg T_m$, T_m is the channel delay spread. If the time-limited raised cosine pulses with $\beta = 1$ are used and if the additional bandwidth required to ensure minimal power outside the signal bandwidth is $\varepsilon = 0.1$, then what is the total bandwidth of the system?
17. Characterize fading multipath channels.

OR

18. Explain the effect of signal characteristics on the choice of a channel model.
19. Explain direct sequence spread spectrum in detail.

OR

20. Explain RAKE receivers in detail.