



SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR
Siddharth Nagar, Narayanavanam Road – 517583

QUESTION BANK (DESCRIPTIVE)

Subject with Code : DCT(18EC4004)

Course & Branch: M.Tech - DECS

Year & Sem: I-M.Tech & I-Sem

UNIT – I

1. (a) Explain in detail about various moment generating functions. [10M]
(b) Write about random variables.
2. What is a Chi-square distribution? Explain in detail. [10M]
3. Evaluate the performance of digital communication systems by using Chebyshev's inequality. [10M]
4. (a) State and prove the central limit theorem. [10M]
(b) Explain in detail covariance matrix stationary process.
5. What is a Rayleigh distribution? Explain in detail. [10M]
6. Evaluate the performance of digital communication systems by using Markov's inequality. [10M]
7. (a) Define a random variable. [2M]
(b) Write about the orthogonal expansion of signals. [8M]
8. What is a Ricean distribution? Explain in detail. [10M]
9. Write about (a) Vector space concepts.
(b) Signal space concepts. [10M]
10. Explain in detail about memory less modulation methods. [10M]



SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR
Siddharth Nagar, Narayanavanam Road – 517583

QUESTION BANK (DESCRIPTIVE)

Subject with Code : DCT(18EC4004)

Course & Branch: M.Tech - DECS

Year & Sem: I-M.Tech & I-Sem

UNIT –II

1. State and prove various properties of Matched filter. [10M]
2. Draw the block diagram of optimum receiver for binary signals and explain. [10M]
3. Explain in detail about optimum AWGN receiver. [10M]
4. Draw the block diagram of Matched filter demodulator and Derive the expression for error probability of matched filter. [10M]
5. Write about the optimum receiver for M- array orthogonal signals. [10M]
6. Draw the block diagram of Correlation demodulator and explain in detail. [10M]
7. Explain in detail about Karhunen – Loeve expansion approach. [10M]
8. (a) Explain the effect of AWGN on signals in detail. [5M]
(b) Explain briefly about Whitening process. [5M]
9. Write about the optimum receiver for colored Gaussian noise channels. [10M]
10. (b) Derive the expression for error probability for envelope detection of M- ary orthogonal signals. [10M]

**SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR**

Siddharth Nagar, Narayanavanam Road – 517583

QUESTION BANK (DESCRIPTIVE)**Subject with Code : DCT(18EC4004)****Course & Branch: M.Tech - DECS****Year & Sem: I-M.Tech & I-Sem****UNIT –III**

1. Explain in detail about characterization of fading multipath channels. [10M]
2. Draw the relationships among channel correlation functions & power spectra and explain.[10M]
3. Write about the statistical models for fading channels in detail. [10M]
4. Explain in detail about narrow band fading channels. [10M]
5. Write about the simulation methodology of fading channels in detail. [10M]
6. Explain in detail about wide band fading channels. [10M]
7. Write about the rayleigh fading channels in detail. [10M]
8. Explain in detail about time varying channel impulse response. [10M]
9. Explain in detail about channel correlation functions. [10M]
10. What are the various key multipath parameters and explain. [10M]



SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR
Siddharth Nagar, Narayanavanam Road – 517583

QUESTION BANK (DESCRIPTIVE)

Subject with Code : DCT(18EC4004)

Course & Branch: M.Tech - DECS

Year & Sem: I-M.Tech & I-Sem

UNIT –IV

1. Evaluate the performance of BPSK digital modulation scheme over wireless channel. [10M]
2. Write about the performance of Rayleigh channels in detail. [10M]
3. Evaluate the performance of QPSK digital modulation scheme over wireless channel. [10M]
4. Write about the optimum coherent receiver in random amplitude. [10M]
5. Evaluate the performance of FSK digital modulation scheme over wireless channel. [10M]
6. Write about the optimum non - coherent receiver in random amplitude. [10M]
7. Evaluate the performance of DPSK digital modulation scheme over wireless channel. [10M]
8. Write about the performance of Ricean channels. [10M]
9. Evaluate the performance of MSK digital modulation scheme over wireless channel. [10M]
10. Explain in detail about random phase channels. [10M]



SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR
Siddharth Nagar, Narayanavanam Road – 517583

QUESTION BANK (DESCRIPTIVE)

Subject with Code : DCT(18EC4004)

Course & Branch: M.Tech - DECS

Year & Sem: I-M.Tech & I-Sem

UNIT –V

1. Describe about the nyquist criterion for zero ISI. [10M]
2. Explain in detail about Orthogonal Frequency Division Multiplexing. [10M]
3. Write about the partial response signaling schemes with an example. [10M]
4. Explain in detail about multichannel and multicarrier system. [10M]
5. Write about the carrier synchronization in detail. [10M]
6. Explain in detail about optimum pulse shaping. [10M]
7. Write about the timing synchronization in detail. [10M]
8. Explain in detail about decision feedback equalization. [10M]
9. Explain in detail about various equalization techniques. [10M]
10. Write about zero forcing linear equalization. [10M]

Prepared by: M SIVALINGAMAIAH