Q.P. Code : **30085**

(3 Hours) [Total Marks : 80

N.B. : (1) Question No. 1 is **compulsory**.
(2) Attempt any **three** questions out of remaining **five** questions.
(3) Assumptions made should be **clearly** stated.
(4) Illustrate answers with **sketches** wherever **required**.

1. (a) Design the error probability performance of coherent receiver for binary signaling. 10
(b) A DMS has an alphabets of five letters xi, i=1, 2, ... 5 with probabilities 0.4, 0.2, 10
0.2, 0.1, 0.1. Find the average length and efficiency of the code.

2. (a) Give the schematic for the M-ary using optimum receiver using correlators and 10
explain the operation of optirimm detection of received message signal.
(b) Design and implement the M-ary non coherent detector for equiprobable equal 10
energy signals using matched filters.

3. (a) Describe the concept of ISI. State and prove Nyquist's theorem for Band limited 10
signals.
(B) Derive waveform receiver in Coloured Gaussian Noise using whitening approach. 10

4. (a) Explain degradation categories in frequency domain due to signal time spreading. 10
(b) Calculate the mean excess delay, r.m.s. delay spread for the multipath profile given 10
below. Estimate the coherence bandwidth for the channel.
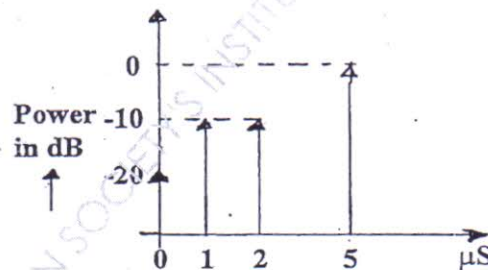
5. (a) What do you mean by relevant and irrelevant noise? Explain their role in signal 10
detection.
(b) Design optimum receiver for 16-QAM and calculate the probability of correct 10
reception of entire 16-point QAM and calculate its Mean Energy.

6. Write a short note on the following : 20
(a) Methods of combating frequency selective fading.
(b) BAY'S detection of received signal.
(c) Lempel-Ziv coding algorithm.
(d) Time and frequency domain characteristics of duo binary signal.

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QP Code : **30087**

(3 Hours) [Total Marks : 80

N.B. : (1) Attempt **any four** questions from the remaining **six** questions.
      (2) **Figures** to the **right** indicate **full** marks.
      (3) Assume suitable data if necessary.

1. (a) Explain Rake Reciver in CDMA system   5
   (b) Discuss power control in WCDMA and CDMA 2000   5
   (c) What is frequency Reuse concept in GSM.   5
   (d) Explain security aspect of bluetooth.   5

2. (a) Explain in detail IS-95 forward and reverse channel in detail.   10
   (b) Discuss IMT 2000 system in detail.   10

3. (a) A cellular service provides decide to use a TDMA Scheme that can to tolerate a   10
      signal to interference ratio of 16 dB in worst case find optimum value of cluster size   10
      N in case of
         (i) Omni dinetional antenna
         (ii) 120^0 sectoring
         (iii) 60^0 sectoring
      Which sectoring will be better 60^0 and 120^0 ?
      Assume path loss component n =4
   (b) With a neat diagram, explain the principle working of adaptive equalize in detail.   10

4. (a) Discuss intelligent cell concept and its application.   10
   (b) Compare Hiper LAN2 with IEEE 802-11 a/b Highlight advantages and disadvantage   10

5. (a) Describe GSM call set up procedure in detail   10
   (b) Explain following terms   10
         (i) Mobile IP and Mobility Management
         (ii) Location Management in MANET.

6. Write short notes on :-   20
   (a) GPRS
   (b) RFID Technology
   (c) Diversity technique.

QP Code : **30115**

(3 Hours) [Total Marks :80

N.B. : (1) Question no. **1** is **compulsory.**
  (2) Attempt any **three** questions out of remaining **five** questions.
  (3) **All** questions carries **equal** marks.

1. (a) What is biometric authentication? Explain its importance w.r.t. security   5
  (b) Compare between vulnerability and control   5
  (c) Define and comments on Intellectual propery and copyrights   5
  (d) What is risk identification?   5

2. (a) What is the role of firewall? Compare different types of firewall   10
  (b) What is TCP/IP protocol flaws? Explain in brief.   10

3. (a) What is digital signature? With example explain digital signature is a "Message 10
     digest"?
  (b) Explain steps for session established? How is a session hijacked?   10

4. (a) Explain the concept of 'Ciphers' What is the difference between block cipher 10
     and stream cipher system?
  (b) Write in details   10
     (i) ARP Spoofing
     (ii) DOS

5. (a) Define enterprise network design? Explain 3 tier model along with vulnerabilities 10
  (b) List the roles of Telecommunication Regulation Authority of India? (TRAI)?   10

6. (a) Write a short notes on (any three):-   20
     (i) Network security audit
     (ii) Ethical issues in computer society and network security
     (iii) Network security testing
     (iv) Iris Recognition

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BB-Con.9372-15.

(3 Hours)   [Total Marks : **80**

N.B.   (1) Question no.1 is compulsory.

       (2) Attempt any three questions out of remaining **five.**

       (3) Figures to right indicate full marks

       (4) Assume suitable data wherever necessary and state it clearly

1. Attempt the following questions:

     A. Explain the significance of substrate thickness with respect to excitation of   5
        surface waves on microstrip antenna.

     B. Explain ferrite loop antenna and its applications.   5

     C. Explain different array tapering mechanisms in brief.   5

     D. Explain the term directivity. How it is different from gain of an antenna.   5

2. Attempt the following questions:

     A. Design a rectangular microstrip antenna on FR4 substrate with dielectric   10
        constant 4.4 and thickness of 1.6 mm so as to resonate at 900 MHz.

     B. Explain the different methods to obtain circularly polarized radiation from   10
        microstrip antenna.

3. Attempt the following questions:

     A. Design a 4 element linear Binomial tapered array for uniform inter-element   10
        spacing of half wavelength. Find the excitation amplitudes of elements and
        form an array factor. Plot this array factor and calculate first null beam
        width.

     B. Explain the mechanism to realize broadband response using parasitic patches   10
        in microstrip antenna.

4. Attempt the following questions:

     A. Design a broadside 3 element Dolph·Chebyshev array with side lobe level   10
        of 26 dB down from the main lobe.
        Find the excitation coefficients of elements and form an array factor.

     B. Discuss various shorted versions of rectangular and circular microstrip   10
        antennas.

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5. Attempt the following questions:
    A. Explain in detail how the planar monopole antenna yields a very high   10
       impedance bandwidth?
    B. Explain the different parameter variation study on a RMSA.   10

6. Attempt the following questions:
    A. Explain various stacked configurations of MSA.   10
    B. Explain adaptive beam forming mechanism principle.   10