QP Code : 62887

(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** if **required** and **mention** the **same** in **answer** sheet.

1. (a) Explain in brief different methods used to combating frequency-selective fading. 10
   (b) A DMS has an alphabet of seven letters X_i, i = 1, 2,....... 7 with probabilities of 0.36, 0.14, 0.13, 0.12, 0.10, 0.09, 0.06. Generate a Huffman code for source. Also find Entropy and efficiency. 10

2. (a) Describe the basic concept of ISI. State and prove Nyquist theorem for band limited Signals. 10
   (b) Explain Average cost of decision in Bays detection of received signal. 10

3. (a) Give the schematic for M-ary using optimum receiver using correlator and explain the operation for optimum detection of received message signal. 10
   (b) Design the optimum coherent receiver for Rician channels. 10

4. (a) Derive waveform receiver in coloured Gaussian Noise using Time Sampling approach. 10
   (b) Explain Optimum waveform receiver in White Gaussian Noise. 10

5. (a) What do you mean by relevant and Irrelevant Noise. Explain their role in signal Detection. 10
   (b) Explain I-Q modulator and demodulator using real signals with functional diagram. 10

6. (a) Describe in detail process of model based source coding. 10
   (b) Explain time- variant nature of the channel in Doppler-shift domain. 10

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QP Code : 62890

(3 Hours)   [Total Marks:80

N.B. : (1) **All** questions are **compulsory**.
      (2) Answer any **four** questions.
      (3) **Figures** to the **right** indicate **full** marks.

1. (A) Why shape the antenna field pattern? Explain.   5
   (B) Discuss power control in WCDMA and CDMA 2000.   5
   (C) Explain security aspect of Bluetooth.   5
   (D) Compare various WI-FI significant standards.   5

2. (A) Describe GSM call set up procedure in detail.   10
   (B) Discuss IMT-2000 system in detail.   10

3. (A) A cellular Service provider to use a TDMA scheme that can tolerate a signal to   10
interference ratio of 16 db in worst case .Find the optimum value of cluster
size 'N' in case of:-
    (i)   Omni directional antenna
    (ii)   120° sectoring and
    (iii)   60° sectoring
Which sectoring will be better 60° or 120° ? Assume path loss component n =4
   (B) Explain forward and reverse channel of WCDMA in detail.   10

4. (A) Explain intelligent cell concept and its application.   10
   (B) Explain with neat diagram function of adaptive equalizer in details.   10

5. (A) Compare Hiper-LAN2 with IEEE 802.1la/b. Highlight advantage and   10
disadvantage of Hyper-LAN technology.   10
   (B) Explain following terms   1) Mobile IP and Mobility Managen:tent
                               2) Location management in MANET

6. Write short notes on. **(any two)**   20
    (a). Diversity technique
    (b) GPRS technology
    (c) EDGE Technology

QP Code : 62903

(3 Hours) [Total Marks : 80

NB: 1. Question No. 1 is Compulsory
2. Attempt any three questions out of remaining five
3. Assume suitable data if necessary
4. Figures to the right indicate the maximum marks

1. Write short notes on following,
    Polarization 5
    Radiation Resistance of dipole 5
    Radiation pattern of Loop Antenna 5
    Smart Antenna 5

2. A. With reference to the feeding mechanism, compare between uniform and 20
        non- uniform Arrays? Design Uniform linear array to realize gain of 8 dBi
        along $\theta° = 60°$ (measured from the horizontal axis) at frequency of 1.5
        GHz? Explain the principle of pattern multiplication?

3. A. With appropriate feed location, draw the field distribution at fundamental 6
        mode in Rectangular, circular and equilateral Triangular Microstrip
        Antennas?

    B. Design rectangular Microstrip antenna at 2.4 GHz using RT - Duroid 14
        substrate? (h = 1.6 mm, tan δ = 0.001, εr = 2.33)

4. A. Explain the working of broadband radiating and non-radiating edge gap- 14
        coupled rectangular microstrip antennas?

    B. State the resonance frequency equation of Equilateral Triangular Microstrip 6
        antenna? Draw and explain field distribution at its fundamental mode?

TURN OVER

5. A. Explain the necessity of compact microstrip antenna designs? 5
   B. Design edge center shorted rectangular microstrip antenna at 950 MHz using air substrate? (h = 2 mm, tan δ = 0, er = 1) 10
   C. Discuss the various compact variations of Equilateral triangula microstrip antenna? 5

6. A. Explain in detail Woodward-Lawson sampling method applicable to Antenna Synthesis? 10
   B. State and explain resonance frequency equation for varying substrate thickness in planar monople antenna? 10

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QP Code : 62917

(3 Hours) [Total Marks : 80

N.B. : (1) Question No. 1 is compulsory
(2) Write any three question from Question No. 2 to Question No.6.
(3) Draw neat diagram if necessary.

1 Solve following: 20
    a) What is CIA triangle?
    b) Comment on computer crime
    c) Differentiable between treat and vulnerability
    d) What is ARP spoofing ?
    e) List the advantages of Biometric authentication over conventional methods.

2 A) What are the roller of Telecommunication Regulation Authority of India 10
    (TRAI)?
  B) How the security is provided by firewall to the network? Differenciate packet 10
    filter firewall and proxy firewall.

3 A) What do you mean by "Message digest" explain working of Digital signature. 10
  B) What is meant by reconnaissance of network. 5
  C) Discuss Intellectual property and copyrights 5

4 A) What is Bucket brigade attack in DHKE algorithm? How it is implemented. 10
  B) Discuss how the security provided by IPsec protocol. 10

5. A) Define: 3
    (i) Network security   (ii) Information security
    (iii) Network attack

  B) Explain types of attack that compromise the information on the network. 7
  C) Explain working principle of Iris recognition system. List the advantages 10
    over other biometric recognition system.

6. A) Differenciate between symmetric key cryptography and asymmetric key 10
    cryptography. Highlight the importance of key management.
  B) What is role of SSL? How does SSL works. 5
  C) Alice's non secret no(n) = 23, secret no(x) = 6 and Bob's non 5
    secrete no(g) = 5, secrete no(y) = 15 show how both will exchange key by
    Diffi-Helman key exchange algorithm.

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