

A.D.C.

QP Code : 15098

(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) Implement binary cross correlation receiver and also evaluate its performance in terms of probability of error. 10
2. (a) Design an optimum Non-coherent receiver in random phase channels. 10
- (b) Give the schematic diagram for M-ary optimum receiver using Matched filters. Also derive the probability of error for orthogonal signal set. 10
3. (a) Describe in detail process of model-based source coding. 10
- (b) Explain time-variant nature of the channel in Doppler-shift domain. 10
4. (a) What do you understand by ISI? State and prove Nyquist theorem for band-limited channels. 10
- (b) Explain Time sampling approach to detect signal in coloured Gaussian Noise. 10
5. (a) Explain optimum waveform receiver in white-Gaussian Noise. 10
- (b) Draw the duo binary encoder with precoder. The binary sequence 10010110010 is the input. Construct a table showing precoded sequence, transmitted amplitude levels, received signals, levels and decoded sequence. 10
6. (a) Explain Average cost of decision in Bay's detection of received signal. 10
- (b) What do you mean by relevant and Irrelevant noise. Explain their role in signal detection. 10

Network Security.

Q.P. Code : 667100

(3 Hours)

[ Total Marks : 80

- N.B. : (1) Question No. 1 is compulsory  
(2) Attempt any three questions from remaining five questions

- 1 a) Compare Electronic Code Book (ECB), Cipher Block Chaining (CBC) and Cipher Feedback (CFB) 5
- b) What is Integrity and Non-Repudiation? 5
- c) ARP Spoofing 5
- d) Iris Recognition system 5
- 2 A) What is symmetric key and asymmetric key cryptography 5
- B) Alice's non secret no.  $(n) = 23$ , secret no.  $(x) = 6$  and Bob's non secret no.  $(g) = 5$ , secret no.  $(y) = 15$ . Show how both will exchange key by Diffi-Helman Key exchange algorithm. 10
- C) What is role of Digital certificate in message authentication? What are the applications of Digital certificate? 5
- 3 A) What is role of SSL in security services? Where SSL is located in TCP/IP stack? How does SSL works? 10
- B) What is Importance, application and advantages of IPsec? Where IPsec is located in TCP/IP Stack? 10
- 4 A) Classify Intrusion Detection system and explain its role of in network Security 10
- B) Explain the enterprise wide network and vulnerabilities 10
5. A) Explain in brief steps involved in DES? 10
- B) Explain Ethical issues in Intellectual property and copyright 5
- C) Explain Equipment security testing? 5
5. Write short note on (Any Four) 20
- A) What are the required properties of HASH functions?
- B) Explain DOS and DDOS attack
- C) Security Audit
- D) Role of TRAI
- E) Computer Crime

ME (EXTC) EBS

20/5/2016

Sem-II Advanced Antenna & Arrays

Q.P. Code : 667601

(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. (a) How small loop antenna is different from small dipole antenna. Draw the antenna and its radiation pattern. 5  
(b) How gain is different from directivity. While designing a practical antenna which parameter is preferred and why? 5  
(c) What are the advantages and disadvantages of a compact antenna? 5  
(d) How Hansen woodyard array is different from end fire array? 5
- 2.(a) Derive an expression of array factor (AF) of N elements uniform linear array, Hence write an expression of AF of N x M elements uniform planar array. Also write an expression of N element non uniform array which has non uniform spacing and non uniformly fed. 10  
(b) What do you mean by pattern multiplication. Draw the radiation pattern of 4 half wave dipole placed at  $\lambda/2$  apart. Draw the elements and using pattern multiplication draw the radiation pattern. 10
3. (a) Explain Schkelnoff method of pattern synthesis. 10  
(b) Explain Woodward Lawson method of antenna beam synthesis. 10
4. (a) Design a circular or rectangular MSA at 900 MHz on a substrate which has dielectric constant of 4.2, loss tangent of 0.02 and 1.6 mm thickness. 10  
(b) What are the various feeding techniques used to feed a MSA. Compare them with the help of suitable diagrams. 10
5. (a) What are the various techniques used in enhancing the bandwidth of MSA. Explain any two with suitable diagrams. 10

Con. 10061-16.

TURN OVER

**Q.P. Code : 667601**

2

- (b) How MSA is different from planar circular monopole antenna. Draw the radiation pattern in both plane of MSA and planar circular monopole antenna. 10
6. (a) What do you mean by smart antenna? What are its advantages and disadvantages? 10
- (b) What is MIMO antennas? Why are MIMO antennas becoming popular nowadays? 10
- (c) Draw at least 4 configurations of compact antennas. 10
- 

5/20/2016 10:14:24 AM

MUPD1644572016 PAIFUING

Microwave & Millimeter Wave  
Communication System

Q.P. Code : 667300

(3 Hours)

[ Total Marks : 80

- N.B. : (1) Question Number 1 is compulsory.  
(2) Attempt any three questions from remaining.  
(3) Assume suitable data if required.

1. (a) Why calibration is required in millimeter wave design? 5  
(b) How balanced FSK modulator is used to eliminate the DC offset and enhanced noise? 5  
(c) Explain importance of axial ratio in polarization diversity. 5  
(d) Discuss use of PN sequence as preamble in SC FDE system. 5
2. (a) Explain 'Link Budget Analysis' used in millimeter wave communication. 10  
(b) Explain operational principle of OFDM with symbol pattern. 10
3. (a) Write acquisition and tracking algorithm for beam steering. 10  
(b) What are beam switching array? Compare them. 10
4. (a) Draw block diagram of SC-FDMA system and explain. 10  
(b) Describe a protection switching arrangement. Contrast the two types of protection switching arrangements. 10
5. (a) Explain adaptive channel estimation for SC-FDE wireless system. 10  
(b) In QPSK system Justify, the higher the value of M is, the lower power efficiency will be. Also explain bit error probability of QAM signal. 10
6. (a) Explain spatial and temporal diversity used in millimeter wave communication. 10  
(b) List performance specifications of BPSK and QPSK modulator for millimeter wave applications. Describe any four of them. 10

305

13/5/2016

M.E (EXTC) Sem II CBU  
Mobile & Wireless Comm.

Q.P. Code : 667200

(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 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) How does sectoring improves S/I in cellular system. 10  
(B) Explain forward and reverse channel of WCDMA in detail. 10
3. (A) A cellular Service provider to use a TDMA scheme that can tolerate a signal to interference ratio of 16 db in worst case .Find the optimum value of cluster size 'N' in case of:- 10  
(i) Omni directional antenna  
(ii) 120° sectoring and  
(iii) 60° sectoring  
Which sectoring will be better 60° or 120°? Assume path loss componet  $n = 4$   
(B) Discuss IMT-2000 system 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) Describe IEEE 802.11 architecture compares DSSS and FHSS. 10  
(B) Explain following terms 1) Mobile IP and Mobility Management 10  
2) Location management in MANET
6. Write short notes on 20  
(a) Diversity technique  
(b) RFID Technology  
(c) EDGE Technology