ME Sem II CBGS
ExTC

10/12/14

Sub— Network Security

QP Code : 16545

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

N. B. : (1) Question No. **1** is **compulsory**.
(2) Solve any **three** questions out of remaining **five** questions.
(3) **All** questions carry **equal** marks.

1. (a) Difference between vurnability, access control & attack. **5**
   (b) What is denial of srvice (DoS) attack. **5**
   (c) What is authorization. **5**
   (d) Explain need for securying Telecom Network. **5**

2. (a) Explain enterprise wide network design with various vurnability. **10**
   (b) Compare between symmetric & Asymmetric crytptography **10**

3. (a) What is firewall? List & explain the functions of firewall. **10**
   (b) Explain the role of Honey Pot in network security. **10**

4. (a) Explain (i) Network Security audit (ii) Risk Management. **10**
   (b) What is Telecom Regulation & license. **10**

5. (a) What is IDS? Enlist the types of IDS with their limitations. **10**
   (b) Describe IpSec protocol in detail. **10**

6. Write short notes on following (**five** marks each)
   (a) Secure socket layer (SSL) **5**
   (b) Ethical Issues in network security **5**
   (c) Biometric for security **5**
   (d) Equipment security Testing **5**

ME Extc sem II CBGS

Sub- S.A.N

10/12/14

QP Code : **16542**

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

N. B. : (1) Question No. **1** is **compulsory**.
(2) Solve any **three** out of **five**.

1. (a) Explain in detail various types of sensor arrays. **10**
   (b) Explain types of wave fields with their governing equations and also explain properties of wave fields. **10**

2. (a) What is mean by spatial sampling ? Explain spatial sampling of one dimensions signals in detail. **10**
   (b) Derive the wave equation in cartesian co-ordinates for spatiotermporal signals. **10**

3. (a) Explain capon method in detail with algorithm. **10**
   (b) What are the effects of aliasing on spatiotemporal signals in frequency domain. **10**

4. (a) What is mean by Beamforming ? Explain discrete time beamforming in detail. **10**
   (b) Explain in detail array transfer (steering) vector for uniform linear array (ULA). **10**

5. (a) Explain far field and near field signals in detail. **10**
   (b) Explain minimum norm technique in detail. **10**

6. Write short note (any **two**) :- **20**
   (a) Direction vs frequency
   (b) Broadband arrays
   (c) Spatial domain filtering
   (d) Spatialty white signal.

ME EXTC sem II CBGS

10/12/14

Sub- cloud computing

QP Code : 16539

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

N.B : (1) Question No **1** is **compulsory.**
(2) Attempt any **three** from the rest.
(3) Make suitable assumption wherever **necessary.**

1. (a) What is cloud computing ? Explain it with architecture of cloud computing. **10**
   (b) Write short note on Google App Engine. **5**
   (c) Explain virtualization security. **5**

2. (a) Explain distributed file system. **5**
   (b) Write the application of virtualization in enterprises. **5**
   (c) Explain AJAX with types of interfaces. **5**
   (d) What are the measured issues in cloud computing. **5**

3. (a) Explain client – server Architectures. **10**
   (b) Explain Virtual machine technology. **10**

4. (a) What is synchronization ? Explain clock synchronization algorithms. **5**
   (b) Differentiate SOAP and REST. **5**
   (c) Explain any one – (i) Microsoft Azure (ii) Elastic computing. **5**
   (d) What are the pitfalls of virtualization. **5**

5. (a) Write short note on NFS or CODA. **5**
   (b) What is load Balancing in cloud. **5**
   (c) Explain Identity Management and Access control. **10**

6. (a) Draw and explain security Architecture in cloud computing. **10**
   (b) Deploy application over cloud. **5**
   (c) What are Distributed lock services in Google. **5**

4/12/14

M.E. Extc Sem II CBGS Nano-electronics Dec-14

QP Code : 16530

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

N. B. : (1) Solve any **four** questions out of **six**.
(2) Draw diagrams/sketches wherever necessary.

1. (a) Explain scaling in MOS transistor and discuss its impact on threshold voltage in terms of body effect, Darin-Induced Barrier lowering and short channel effect. **10**

   (b) Compare merit and demerits of PD SOI & FDSOI **10**

2. (a) Explain the following parameters significance in performance of Nano Mosfet **10**
   1. velocity saturation and overshoot
   2. ballistic transport

   (b) Significance of CNT in the field of Nano-electronics. **10**

3. (a) Explain 6T-SRAM cell design flow with nanoscale SOI Mosfets for low voltage applications. **10**

   (b) Corelate CV and IV techniques with performance of Mosfets designed using various gate materials. **10**

4. (a) What are Hetero structure MOSFETs. Explain the term quantization for the same. **10**

   (b) Justify the need of Non-classical MOS transistor in today's world applications. **10**

5. (a) Impact of gate oxide thickness scaling on interface quality of MOS capacitor. **10**

   (b) Explain SRAM cell design using vertical transistor. **10**

6. Write short notes on (any **two**) :- **20**
   (a) FDSOI
   (b) Carbon nanotubes
   (c) Nano devices and materials.

1/12/14

M.E. ExTC Sem II CBGS Dec-14 Advanced Antenna & Arrays

Q.P. Code : 16533

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

N.B.: (1) Attempt any **four** question out of **Six**.
(2) Assume suitable **data** wherever **necessary** and indicate the same.

1. (a) Explain with the help of suitable diagram the concept of Small Loop antenna. **5**
   (b) Design a rectangular microstrip antenna on a FR4 substrate with dielectric constant 4.4 and thickness 1.6mm so as to resonate at 2.4 GHz. **10**
2. (a) Design a four-element ordinary end-fire array with the spacing 'd' between the elements and maximum of the array factor directed towards $\theta = 0°$. For $d = \lambda/2$ find the excitation coefficients and form the array factor. **10**
   (b) Design a broadside 3-element, -26dB side lobe level dolph - Tschebyscheff array, find the normalized excitation coefficients and for the array factor. **10**

3. (a) Describe beam shaping Woodward Lawson method used for antenna pattern synthesis. **10**
   (b) Using Schelkunoff's method design a Linear array with elements spaced $\lambda/4$ aparts with zero's at $\theta = 0°$, 60° and 120°. Determine the number of elements their excitation and plot the derived pattern. **10**

4. (a) Explain Radiating - Edge gap coupled RMSA : **8**
   (b) Design a stack multireasonator MSA **7**
   (c) Write a short note on compact shorted CMSA and its variations. **5**

5. (a) Explain the effect of "Dimensions of RMSA with a single shorting post and its positions. **10**
   (b) Explain the calculations of the Lower frequency of the planar monopole antenna. **10**

6. (a) Write a short note are :--
      (1) Planar circular monopole antenna. **10**
      (2) Evolution of cellular radio systems.
   (b) Explain the smart antenna beam farming. **10**

4/12/14

M.E EXTC II Dec-2014 CBGS Adaptive Signal Processg

QP Code : 16527

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

N.B : (1) **Attempt** any **four** questions.
(2) **Assume** suitable data wherever **necessary**, justify the same.
(3) **Figures** to the **right** indicate **full** marks.

1. (a) Explain the linear adaptive filtering problem in brief and derive an expression for principle of orthogonality **10**
(b) Explain the application of adaptive filters in linear predictive coding. **10**

2. (a) Explain in detail the LMS algorithm. **10**
(b) Explain the applications of closed loop adaptation with block diagrams. **10**

3. (a) Prove by deriving necessary equation that the mean-square error in FIR wiener filter is quadratic function of filter coefficients. **10**
(b) Explain the steepest descent technique of obtaining solution for filter coefficients. **10**

4. (a) What are the properties of maximum likelihood estimators? Explain Cramer Rao inequality **10**
(b) Explain the principles of Blind Equalization with a diagram. Which methods are used for blind equalization? **10**

5. (a) State and explain the Kalman filtering problem **10**
(b) How is the effect of echo minimised in a telephone communication?

6. (a) Discuss practical limitation of the basic LMS algorithm. **10**
(b) Derive for mean square error in RLS algorithm with optimization. **10**

M E E&TC Sem 2 (CBGS)
Optical N/w

4/12/14.

Q.P. Code : 16536

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

N.B. : (1) **All** questions carry **equal** marks.
(2) Attempt any **four** questions.
(3) Assume suitable **data** wherever **necessary**.

1. (a) SONET / SDH is successful compared to first generation TN ? Justify. **10**
   (b) Explain in detail the optical transport Network layered model. **10**

2. (a) Explain In-Band and Out-of-Band control signalling. **10**
   (b) Explain the protection switching with respect to point-to-point, Ring and Mesh topology. **10**

3. (a) Discuss generalized MPLS using optical Network. **10**
   (b) What is label switching ? Explain method of doing label switching in optical Network with suitable diagram. **10**

4. (a) Explain SONET, SDH and OTN multiplexing hierarchy with diagram. **10**
   (b) Explain the optical counter design and lumped delay design. **10**

5. (a) What is the basic function of LMP ? Explain the LMP message header. **10**
   (b) Discuss in detail WDM amplifiers. **10**

6. Write short notes on any **two** :– **20**
   (a) Passive optical Networks
   (b) Optical cross connects (OXC)
   (c) Scalability and granularity in FEC.

M.E. EXTC Sem II (CBGS)
MMSC

24/11/14

QP Code : 16521

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

N.B. : (1) Questions 1 is **compulsory**.
(2) Solve any three questions from Remaining questions.
(3) Figures to the right indicate full marks.

1. (a) Compare WCDMA and CDMA 2000. 5
(b) Diversity Techniques. 5
(c) Frequency Resuse in GSM 5
(d) Wireless Senor Network 5

2. (a) What are the Different Methods to increase the capacity of a Cellular system. 10
(b) Explain UMTS Arhitecture. 10

3. (a) Derive And Establish following Relationship. 10
C/I = 1.76+20 LOG (K)
Where K= Frequency Reuse Factor.
Assume there are only 6 CO-channel interferers in the first tier, which are equidistant from the mobile and path loss Exponent As 4.
Discuss the Interpretation of the expression.
(b) Explain Intelligent cell concept and its Application. 10

4. (a) Discuss IMT-2000 in detail. 10
(b) Compare IS- 136, QSM, IS -95. 10

5. (a) Compare various WPAN standards. 10
(b) Explain Wimax in detail. 10

6. Write short notes on :-
(1) Mobile IP and Mobility Management. 10
(2) Rake Receiver 10

M.E. EXTC - sem II (CBGS). 18/11/14.
Advanced DCOM

QP Code : **16519**

[3 Hours] [Total Marks: 80

N.B. (1) Attempt any **four** questions.
(2) Assume suitable **data** wherever required.

1. (a) The optimum four-level nonuniform quantizer for a gaussian distributed signal amplitude results in the four levels a_1, a_2, a_3 and a_4. with corresponding probabilities of occurrence $P_1=P_2=0.3653$ and $P_3P_4=0.2712$ **12**
   (i) Design a haffman code that encodes a signal level at a time and determine the average bit rate.
   (ii) Design a Haffman code that encodes two outputs levels at a time and determine the average bit rate.
   (iii) What is the minimum rate obtained by encoding 'J' output levels at a time as $J\rightarrow\infty$? **8**

   (b) Explain Average Mutual Information and Frntropy. The output of a DMS consist of the possible letters x_1, x_2, x_3, x_4,.....x_n which occurs with probabilities p_1, p_2, p_3...p_n respectively.
   Prove that the entropy H(x) of the source is at most log n. **10**

2. (a) What is Nyquist Criteria for zero- ISI? Write short notes on raised cosine pulse. Define roll off factor. **10**
   (b) Write the decoding rates for Duobinary Waveform. What are its drawback? Explain how proceeding overcome this problem using the bit stream 010111. **10**

3. (a) Evaluate the performance of optimum Non - Coherent receivers in Ray leigh channels. **10**
   (b) Explain Average cost of decision in Bays detection of received signal. **10**

4. (a) Draw and explain the optimum waveform receiver in coloured Gaussion noise using K-L Expansion Approach. **10**
   (b) What is relevant and Irrelevant noise? Draw vector diagram of transmitted signal, noise and received signal in two dimensional space. **10**

5. (a) Design optimum receiver for 16-QAM signal and calculate the probability of correct reception of entire 16- point QAM and culture its means energy. **10**
   (b) Explain time -variant nature of the channel in Doppler-shift Domain. **10**

6. (a) Write short notes on:—
      (i) Model based sources coding
      (ii) L.Z. source coding for binary source. **10**
   (b) Explain M-ary optimum receiver using N-number of chordates.

A|12-114

M.E. comp. II Soft computing Dec-2014 CBGS

QP Code : 14789

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

N. B. : (1) Question **No.1** is **compulsory**
(2) Attempt **any Three** out of remaining
(3) Assume **suitable** data if **necessary** and justify the assumptions
(4) Figures to the right **indicate full** marks

1. (a) Explain any two Fuzzy membership functions. 5
(b) Using McCulloch-Pitts model design the NAND gate for three input neuron. 5
(c) Explain with example support, core, normality, crossover points, & α-cut for a fuzzy set. 5
(d) Explain Single Continous Perceptron training Algorithm (SCPTA). 5

2. (a) What is learning? Explain the different types of learning with example. Compare the different learning rules. 10
(b) Explain error back propagation training algorithm with the help of a flow chart. 10

3. (a) Explain any five defuzzification methods along with examples. 10
(b) Explain with example linearly separable and non linearly separable pattern classification. 10

Q4 (a) Consider two fuzzy sets given by 10
A= {1/low + 0.5/medium + 0.2/high}
B = {0.7/positive + 0.6/zero + 0.3/negative}
C = {0.1/low + 0.2/medium + 0.7/high}
R=AxB
Find: CoR, C•R
(b) Perform two training steps using the delta learning rule for λ= 1and c =0.25. 10
Train the network using the following data pairs

$$\left(x_1 = \begin{bmatrix} 2 \\ 0 \\ -1 \end{bmatrix}, d_1 = -1 \right), \left(x_2 = \begin{bmatrix} 1 \\ -2 \\ -1 \end{bmatrix}, d_2 = 1 \right)$$

The initial weights are w1 = [1 0 1]'.

5. (a) Explain architechture of BAM network and how storage and retrieval is performed in BAM. 10
(b) Explain Genetic algorithm with example. 10

6. Write short notes on **any two** from the following :– 20
(a) Classification of neuro fuzzy hybrid model.
(b) Kohonen self-organizing map.
(c) Nuero Fuzzy Architecture
