Seat No.

**B.E. (Electronics) (Part-IV) (Semester-VIII)
Examination, April - 2017
POWER ELECTRONICS & DRIVES
Sub. Code : 67779**

Day and Date : Saturday, 29-04-2017   Total Marks : 100
Time : 2.00 p.m. to 5.00 p.m.

Instructions :   1)   All Questions are compulsory.
                  2)   Figures to the right indicate full marks.
                  3)   Assume suitable data if necessary & state it clearly.

SECTION-I

Q1) Solve any two of the following.   [18]

   a)   Explain with different operating modes the operation of three phase
        semiconverter with RL load. Derive expression for average and rms load
        voltage for three phase semiconverter considering Transformer Leakage
        Inductance Lc=0.

   b)   A three phase fully controlled bridge circuit is fed from 400V, 3 phase
        main supply. The load resistance is 15 ohms. The average output voltage
        is 60% of maximum possible o/p voltage.

        Find.   i)   firing angle.

                 ii)   average load current.

                 iii) rectification efficiency.

   c)   Draw the neat circuit diagram and waveform of three phase half wave
        converter & derive the equation for Vdc & Vrms.

Q2) Solve any two of the following.   [16]

   a)   Explain in detail 180° mode of conduction of three phase IGBT based
        inverter.

   b)   Explain different methods of voltage and frequency control of inverters.

   c)   List different harmonic reduction techniques & explain. Harmonic
        reduction by transformer connection.

P.T.O.

Q3) Solve any two of the following. [16]

    a)   What is the need of cycloconverter? Explain operation of bridge type single phase to single phase cycloconverter.

    b)   Explain single phase cycloconverter which divides the supply frequency by four.

    c)   Expalin methods of harmonic reduction in cycloconverter output.

SECTION-II

Q4) Solve any two. [16]

    a)   Explain the parts of electric drives.

    b)   Explain speed control of separately excited DC motor using single phase half controlled rectifier with appropriate waveform.

    c)   Draw torque speed characteristics of induction motor. Explain the following operating modes.

        i) Motoring region   ii) Breaking region   iii) Generating region

Q5) Solve any two. [16]

    a)   What are the advantages of electric drives.

    b)   Explain the speed control of induction motor by static rotor resistance control.

    c)   A 230V, 960rpm & 200A separately excited D.C. motor has an armature resistance of $0.02\,\Omega$ the motor is fed from a chopper which provides both motoring and braking operation. The source has voltage of 230V. assuming continuous conduction.

        i)   Calculate duty ratio of chopper for motoring operation at 350rpm.

        ii)   Calculate duty ratio of chopper for breaking operation at 350rpm.

Q6) Write note on any three. [18]

    a)   Auto transformer starter.

    b)   Plugging or reverse voltage braking of induction motor.

    c)   Speed control of D.C. series motor using rectifier.

    d)   Selection criteria of a electric drive.

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Seat No.

B.E. (Electronics Engg.) (Part-I) (Semester-VII) (New)
(Revised) Examination, May - 2017
INFORMATION THEORY AND CODING TECHNIQUES
Sub. Code : 67526

Day and Date : Monday, 15-05-2017   Total Marks : 100
Time : 2.00 p.m. to 5.00 p.m.

Instructions :   1)   All questions are compulsory.
                  2)   Figures to the right indicate full marks.
                  3)   Assume suitable data if necessary.

SECTION-I

Q1) Attempt any Three of the following.   **[18]**

   a)   What is mutual information? State and prove the properties of mutual information.

   b)   Explain the encoding & decoding procedure for (n, k) linear block code.

   c)   A channel has the following channel matrix is given by,

   $$P(Y/X) = \begin{bmatrix} 1\text{-}p & p & 0 \\ 0 & p & 1\text{-}p \end{bmatrix}$$

      i)   Draw Channel Diagram.

      ii)   If the sources has equally likely outputs, find probability of output if P = 0.7

   d)   Determine the parity check matrix (H) for the (5, 3) code. Show that $G.H^T = 0$ and $C.H^T = 0$ for C=(1 1 0 1 0). The generator matrix is,

   $$\begin{bmatrix} 1 & 0 & 1 & 0 & 0 \\ 1 & 1 & 0 & 1 & 0 \\ 0 & 1 & 0 & 0 & 1 \end{bmatrix}$$

Q2) Attempt any two of the following. [16]

a) Using Huffman's Coding for the following message ensemble:

[X]	= [	X_1	X_2	X_3	X_4	X_5	X_6	X_7	]
P [X]	= [	0.45	0.15	0.1	0.1	0.08	0.08	0.04	]

Determine entropy of the source, average length of coded message and the coding Efficiency.

b) Prove the following relationship:

   i) $I(XY) = H(Y) - H(Y/X)$

   ii) $H(XY) = H(X/Y) + H(Y)$

c) A (6, 3) linear block code generated by the generator matrix as

$$G = \begin{bmatrix} 1 & 1 & 0 & 1 & 0 & 0 \\ 0 & 1 & 1 & 0 & 1 & 0 \\ 1 & 0 & 1 & 0 & 0 & 1 \end{bmatrix}$$

Determine: i)   Parity check Matrix (H)

           ii)   All code wards

           iii)   Minimum distance & error correction capability of code

           iv)   Prepare decoding table.

           v)   If received code vector R = [0 0 0 1 0 1] is received. Find the corrected code ward.

Q3) Attempt any Two of the following. [16]

a) For the given channel matrix, determine the all entropies & mutual information. Given $P(y_1) = 0.6$, $P(y_2) = 0.3$ and $P(y_3) = 0.1$

$$P(X/Y) = \begin{matrix} & \begin{matrix} Y_1 & Y_2 & Y_3 \end{matrix} \\ \begin{matrix} X_1 \\ X_2 \\ X_3 \end{matrix} & \begin{bmatrix} 0.8 & 0.5 & 0.1 \\ 0 & 0.2 & 0.5 \\ 0.2 & 0.3 & 0.4 \end{bmatrix} \end{matrix}$$

b)   i)   For an AWGN channel with 4 kHz bandwidth, noise power spectral density ($\eta/2$) is 1 pico watts/Hz and the signal power at the receiver is 0.1 mW. Determine the actual & maximum capacity of channel.

     ii)   A binary sequence is emitting an independent sequence of 0's and 1's with probabilities P and (1-P) respectively. Prove that entropy is maximum when both messages are equally likely. Also Plot the entropy of this source versus P (0 < P < 1).

c) i) Derive an expression for channel capacity of binary symmetric channel.

ii) What is minimum Distance? Explain how error detection and correction Capabilities of block code are related to minimum distance?

SECTION-II

Q4) Attempt any Three of the following. **[18]**

a) Explain the procedure for constructing extension field GF (2^m) using suitable primitive polynomial. Also prepare addition & multiplication table for GF (8).

b) A (7, 3) cyclic code has generator polynomial $g(x) = X^4 + X^2 + X + 1$. Determine the code vectors for the message vector (101) and (111) using nonsytematic & systematic form method.

c) Explain the structural & distance properties of convolutional code.

d) Find the generator polynomial for (7, 5) RS code over GF (8). Also determine the code polynomial & code if the message vector is (α^2, α^5, α^3).

Q5) Attempt any Two of the following. **[16]**

a) Design an encoder and Syndrome calculator for the (7, 4) Cyclic code generated by, $g(X) = X^3 + X^2 + 1$ and verify it's operation using the message vector (1111). Also determine syndrome Vector for the error pattern (0100000).

b) A (15, 7) BCH double error correcting code has the generator polynomial, $g(X) = X^8 + X^4 + X^2 + X + 1$. Find the transmitted Code ward, if the received code ward is ($X^3 + X^2$). Consider a Primitive polynomial is $f(x) = X^4 + X^3 + 1$.

c) i) Write a short note on Minimal polynomial.

ii) What is cyclic redundancy Check Codes? Explain the procedure to obtain CRC.

Q6) Attempt any Two of the following. [16]

a) Generate a (7, 4) systematic cyclic code using generator matrix. What are the error correcting Capabilities of this code. Design a decoding method using parity check matrix if the following code wards are received as

i) 1101101 and

ii) 0101000, find the corrected transmitted code ward.

b) A convolutional encoder using three shift registers and r = 1/3 has three generating vectors as : $g_1 = [1\ 1\ 0]$, $g_2 = [1\ 0\ 1]$ and $g_3 = [1\ 1\ 1]$

i) Sketch the encoder configuration

ii) Determine the generator matrix

iii) Determine the output code sequence of the encoder for the message sequence is (1 0 1 1).

iv) Draw Code Tree and state diagram.

c) i) State the difference between code tree & code trellis in convolutional code.

ii) Determine the various primitive elements of the Galois field GF (5).

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Seat
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B.E. (Electronics) (Part - I) (Semester - VII) (Revised) Examination, May - 2017
EMBEDDED SYSTEM DESIGN
Sub. Code : 67527

Day and Date : Tuesday, 16 - 05 - 2017   **Total Marks : 100**
Time : 2.00 p.m. to 5.00 p.m.

Instructions :
1) All questions are compulsory.
2) Figure to right indicate full marks.
3) Write answers to bits in questions at one place and in sequence. Do not place answers randomly.
4) Answers to the bits written randomly may not be assessed.
5) Write answers neatly and should be legible.
6) Draw diagrams neatly and giving appropriate labels and legends.

SECTION - I

Q1) Solve any three: **[18]**

a) What are advantages and disadvantages of coding using Machine coding, Assembly coding, C coding?

b) Discuss important features observed in standard IDE (Integrated Development Environment).

c) Write suitable instructions to perform following operations:

    i) Return from non-nested call

    ii) Return from nested call

    iii) R0=R1*7

    iv) Push register R0, R1, R, R3 on stack memory like 8085 stack operation

    v) Loading constant 0xFF000000 in R0

    vi) Load effective address of a variable 'Result' In R1.

d) Explain with suitable diagram, how nested call is implemented in ARM CPU.

P.T.O.

Q2) Solve any two: [16]

a) With suitable example explain SWP instruction with suitable code, explain use of SWP instruction to handle semaphore in ARM system.

b) What is undefined mode of ARM? Why SWI and Undefined exception have same priority?

c) Write four assembly language codes to enabling and disabling FIQ and IRQ interrupts code in ARM assembly language.

Q3) Solve any two: [16]

a) With suitable diagram explain how SPI master communicate with, independent slaves and daisy chained slaves. What are advantages and disadvantages of each connection method?

b) What different frame types are in CAN bus? Discuss role of each frame.

c) Compare features of RS232 and RS485 communication protocol. Discuss advantages, disadvantages and applications of each.

SECTION - II

Q4) Answer any three of the following: [18]

a) Explain with Block diagram architecture of LPC214x series of Microcontroller.

b) Explain with block diagram role of Memory Acceleration Module on LPC 2148.

c) Explain role of Brown Out Detect facility provided on LPC 2148.

d) Explain various types of resets used on LPC 2148.

Q5) Answer any two of the following: [16]

  a)   Explain with block diagram the UART0 on LPC 2148 microcontroller.

  b)   Explain with block diagram how event capture (timer snapshot) can be taken using external input. Give an application example of such event capture.

  c)   Write a short note on A to D converters available on LPC 2148.

  d)   Explain the role of Boot loader on LPC 2148.

Q6) Answer any two of the following: [16]

  a)   Explain different task scheduling algorithms.

  b)   Explain working mechanism followed by Mutex.

  c)   Explain role of mailboxes and message queues in inter task synchronization and communication.

Seat No.

B.E. (Electronics Engineering) (Part-IV) (Semester-VII) (Old) (Pre-Revised) Examination, May - 2017
INFORMATION THEORY AND CODING
Sub. Code : 47949

Day and Date : Thursday, 18-05-2017   Total Marks : 100
Time : 2.00 p.m. to 5.00 p.m.

Instructions :   1)   All questions are compulsory.
                  2)   Figures to the right indicate full marks.
                  3)   Assume suitable data if necessary.

SECTION-I

Q1) Attempt any Three of the following.   **[18]**

a)   What do you mean by Binary symmetric channel? Show that in Binary Symmetric Channel, the channel capacity is given by,

$$C = 1 + P \log P + (1-P) \log (1-P)$$

b)   Prove the following.

   i) $H(X, Y) = H(Y/X) + H(X)$

   ii) $I(X ; Y) = H(X) + H(Y) - H(X/Y)$

c)   State the Shannon channel capacity theorem. Show that the maximum channel capacity is given by, $C_{\infty} = \lim_{B \to \infty} C = 1.44 [S/N_0]$

d)   What is mutual information? State and prove the properties of mutual information.

Q2) Attempt any Two of the following. [16]

   a) . For the given channel matrix, determine the all entropies & mutual information. Given $P(Y_1) = 0.6$, $P(Y_2) = 0.3$ and $P(Y_3) = 0.1$

$$P(X/Y) = \begin{array}{c} \\ X_1 \\ X_2 \\ X_3 \end{array} \begin{array}{ccc} Y_1 & Y_2 & Y_3 \\ \begin{bmatrix} 0.8 & 0.5 & 0.1 \\ 0 & 0.2 & 0.5 \\ 0.2 & 0.3 & 0.4 \end{bmatrix} \end{array}$$

   b) i) What is minimum Distance? Explain how error detection and correction capabilities of block code are related to minimum distance.

   ii) What is entropy? Derive an expression for entropy.

   c) The Parity digits of a (6, 3) linear block code are given as,

   $C_4 = m_1 \oplus m_2$, $C_5 = m_1 \oplus m_2 \oplus m_3$, $C_6 = m_1 \oplus m_3$

   Determine:

   i) Generator matrix (G) and Parity check matrix (H)

   ii) All code wards

   iii) Error detecting and correcting capability.

   iv) If the received code ward is (101101), find the transmitted message.

Q3) Attempt any Two of the following. [16]

   a) A discrete memory less source has five symbols X_1, X_2, X_3, X_4 and X_5 with Probabilities $P(X_1) = 0.4$, $P(X_2) = 0.2$, $P(X_3) = 0.15$, $P(X_4) = 0.15$, $P(X_5) = 0.1$.

   i) Construct Shannon fano Code and Huffman's Code.

   ii) Calculate code efficiency of both codes and compare the result with Comment.

-2-

b) i) A Gaussian channel has a bandwidth of 4 KHz and a two sided noise power spectral density ($\eta/2$) of 10^{-14} Watt/Hz. The signal power at the receiver has to be maintained at a level less than or equal to 0.1 mW. Calculate the capacity of this channel.

ii) Explain in brief the procedure of encoding and decoding operation in linear block code.

c) i) Show that generator matrix G is the parity check matrix of dual code.

ii) Write a note on Binary Erasure channel.

SECTION-II

Q4) Attempt any Three of the following. [18]

a) Find the generator matrix and parity check matrix for Systematic (7, 4) Cyclic code. The primitive polynomial is $g(X) = 1 + X + X^3$.

b) Explain in brief the encoding and decoding procedure of Turbo code.

c) Explain the following terms in connection to convolution code:

i) Constraint length   ii) State diagram

d) What do you mean by cryptography? Explain symmetric cryptography technique.

Q5) Attempt any Two of the following. [16]

a) Design an encoder and Syndrome calculator for the (7, 4) Cyclic code generated by, $g(X) = X^3 + X + 1$ and verify it's operation using the message vector (0110).

Also Determine syndrome Vector for error pattern (0001000).

b) Determine the systematic code for (7, 3) RS double error correcting code using message (α^2, α^3, α^4) . Consider primitive polynomial $f(X) = 1 + X^2 + X^3$.

Seat No.

B.E. (Electronics Engineering) (Part-IV) (Semester-VII) (Old) (Pre-Revised) Examination, May - 2017
INFORMATION THEORY AND CODING
Sub. Code : 47949

Day and Date : Thursday, 18-05-2017   Total Marks : 100
Time : 2.00 p.m. to 5.00 p.m.

Instructions :   1)   All questions are compulsory.
                   2)   Figures to the right indicate full marks.
                   3)   Assume suitable data if necessary.

SECTION-I

Q1) Attempt any Three of the following.   **[18]**

a)   What do you mean by Binary symmetric channel? Show that in Binary Symmetric Channel, the channel capacity is given by,

$$C = 1 + P \log P + (1-P) \log (1-P)$$

b)   Prove the following.

i) $H(X, Y) = H(Y/X) + H(X)$

ii) $I(X ; Y) = H(X) + H(Y) - H(X/Y)$

c)   State the Shannon channel capacity theorem. Show that the maximum channel capacity is given by, $C_{\infty} = \lim_{B \to \infty} C = 1.44 [S/N_0]$

d)   What is mutual information? State and prove the properties of mutual information.

P.T.O.

Q2) Attempt any Two of the following. **[16]**

a) . For the given channel matrix, determine the all entropies & mutual information. Given P (Y_1) = 0.6, P (Y_2) = 0.3 and P (Y_3) = 0.1

$$P(X/Y) = \begin{array}{c} \\ X_1 \\ X_2 \\ X_3 \end{array} \begin{array}{ccc} Y_1 & Y_2 & Y_3 \\ \begin{bmatrix} 0.8 & 0.5 & 0.1 \\ 0 & 0.2 & 0.5 \\ 0.2 & 0.3 & 0.4 \end{bmatrix} \end{array}$$

b) i) What is minimum Distance? Explain how error detection and correction capabilities of block code are related to minimum distance.

ii) What is entropy? Derive an expression for entropy.

c) The Parity digits of a (6, 3) linear block code are given as,

$C_4 = m_1 \oplus m_2$, $C_5 = m_1 \oplus m_2 \oplus m_3$, $C_6 = m_1 \oplus m_3$

Determine:

i) Generator matrix (G) and Parity check matrix (H)

ii) All code wards

iii) Error detecting and correcting capability.

iv) If the received code ward is (101101), find the transmitted message.

Q3) Attempt any Two of the following. **[16]**

a) A discrete memory less source has five symbols X_1, X_2, X_3, X_4 and X_5 with Probabilities P(X_1) = 0.4, P(X_2) = 0.2, P(X_3) = 0.15, P(X_4) = 0.15, P(X_5) = 0.1.

i) Construct Shannon fano Code and Huffman's Code.

ii) Calculate code efficiency of both codes and compare the result with Comment.

b) i) A Gaussian channel has a bandwidth of 4 KHz and a two sided noise power spectral density ($\eta/2$) of 10^{-14} Watt/Hz. The signal power at the receiver has to be maintained at a level less than or equal to 0.1 mW. Calculate the capacity of this channel.

ii) Explain in brief the procedure of encoding and decoding operation in linear block code.

c) i) Show that generator matrix G is the parity check matrix of dual code.

ii) Write a note on Binary Erasure channel.

SECTION-II

Q4) Attempt any Three of the following. **[18]**

a) Find the generator matrix and parity check matrix for Systematic (7, 4) Cyclic code. The primitive polynomial is $g(X) = 1 + X + X^3$.

b) Explain in brief the encoding and decoding procedure of Turbo code.

c) Explain the following terms in connection to convolution code:

i) Constraint length   ii) State diagram

d) What do you mean by cryptography? Explain symmetric cryptography technique.

Q5) Attempt any Two of the following. **[16]**

a) Design an encoder and Syndrome calculator for the (7, 4) Cyclic code generated by, $g(X) = X^3 + X + 1$ and verify it's operation using the message vector (0110).

Also Determine syndrome Vector for error pattern (0001000).

b) Determine the systematic code for (7, 3) RS double error correcting code using message (α^2, α^3, α^4) . Consider primitive polynomial $f(X) = 1 + X^2 + X^3$.

c) The Parity Check matrix of a (7, 4) linear Block code is given by,

$$H = \begin{bmatrix} 1 & 1 & 1 & 0 & 1 & 0 & 0 \\ 1 & 1 & 0 & 1 & 0 & 1 & 1 \\ 1 & 0 & 1 & 1 & 0 & 0 & 1 \end{bmatrix}$$

Determine:

i) Generator matrix (G)

ii) All Code vectors

iii) Minimum distance

iv) Error detection and error correction capability

v) Show how syndrome helps in detecting & correcting error.

Q6) Attempt any two of the following. [16]

a) A Convolutional encoder using three shift registers and $r = 1/2$ has two generating vectors as: $g_1 = [1\ 0\ 1]$ and $g_2 = [0\ 1\ 1]$.

   i) Sketch the encoder configuration

   ii) If the message sequence is (0 1 0 1), determine the output sequence of the Encoder using time domain approach.

   iii) Draw Code Tree and State diagram.

b) Write a note on:

   i) Maximum likelihood decoding

   ii) RSA Algorithm

c) Design a coder for (7, 3) BCH code for error correcting capability tc =1. Decode the received vector X^6.

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Seat No.

B.E. (Electronics) (Semester-VII) (Revised) Examination, May - 2017
IMAGE PROCESSING
Sub. Code : 67529

Day and Date : Thursday, 18-05-2017   Total Marks : 100
Time : 2.00 p.m. to 5.00 p.m.

Instructions :   1)   All questions are compulsory.
                  2)   Figures to the right indicate full marks.

Q1) Attempt any Four.   **[20]**

    a)   Describe various types of pixel adjacency.

    b)   Explain sampling and quantization process for images.

    c)   Explain Zooming and Shrinking of an image.

    d)   Explain Contrast stretching used in Image processing.

    e)   Describe image acquisition using sensor strip.

Q2) Attempt any two.   **[16]**

    a)   Explain fundamental steps in digital image processing.

    b)   Explain different applications of image processing.

    c)   Explain different gray level intensity transformation.

Q3) Attempt any two.   **[14]**

    a)   Explain Intensity level slicing and Bit plane slicing used in image processing.

    b)   Explain Histogram and histogram equalization process with an example.

    c)   Explain image averaging & Image subtraction for image enhancement.

P.T.O.

Q4) Attempt any Four. [20]

    a)   Explain basics of spatial filtering.

    b)   What is segmentation? Describe steps to do it.

    c)   Explain smoothing linear filters.

    d)   Explain CMYK color model.

    e)   Explain concept of Gradient operator used for image enhancement.

Q5) Attempt any two. [16]

    a)   Describe how to detect various gray level discontinuities in digital image.

    b)   Explain region splitting and merging.

    c)   Explain region based segmentation? Write basic region growing algorithm.

Q6) Attempt any two. [14]

    a)   Explain RGB color model.

    b)   Explain pseudo color image processing.

    c)   Explain converting colors from RGB to HSI Model and vice versa.

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Seat No.

**B.E. (Electronics) (Part-II) (Semester-VIII)
Examination, April - 2017
MICROWAVE ENGINEERING**
Sub. Code : 67777

Day and Date : Tuesday, 25-04-2017   Total Marks : 100
Time : 2.00 p.m. to 5.00 p.m.

Instructions :   1)   All questions are compulsory.
                  2)   Assume suitable data if necessary.
                  3)   Figures to the right indicates full marks.

SECTION-I

Q1) Attempt any two questions.   **[16]**
   a)   Explain with suitable equations TM mode equations for rectangular waveguide.
   b)   Explain two cavity klystron amplifiers with suitable diagram and equations.
   c)   Determine the cut off wavelength for the dominant mode in a rectangular waveguide of breadth 10cms. For a 2.5 GHz signal propagated in this waveguide in the dominant mode; calculate the guide wavelength, the group and phase velocities?

Q2) Attempt any two questions.   **[16]**
   a)   Explain different materials used for MMIC.
   b)   What is magic Tee? Explain its operation with diagram.
   c)   The dimensions of guide are 2.5×1cms. The frequency is 8.6GHz. Find the following
         i)   Possible modes
         ii)   Cut off frequencies
         iii) Guide wavelength

Q3) Write short notes on any three.   **[18]**
   a)   Directional coupler
   b)   Reentrant Cavities
   c)   Microwave clean rooms
   d)   BWCFA

P.T.O.

SECTION-II

Q4) Attempt any two of the following: [16]
a) Explain three valley model for InP diode.
b) Draw basic structure of HEMT (High electron mobility transistor) and explain processing steps for fabrication.
c) Describe the operating principles with characteristics of the IMPATT diode.

Q5) Attempt any two of the following: [16]
a) Explain in detail high power measurement calorimeter method.
b) Explain reflectometer method for impedance measurement.
c) Draw the diagram and explain the experimental procedure to measure microwave power using thermister.

Q6) Attempt any three of the following: [18]
a) Explain directivity and beam width of slotted antenna.

b) Explain parabolic reflector and how gain of this antenna is determined.

c) Define and explain the terms

i) SWR

ii) Antenna gain

d) Write note on conical antenna.

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Seat No.

B.E. (Electronics) (Semester - VIII) Examination, May - 2017
HIGH PERFORMANCE COMPUTER NETWORK
Sub. Code : 67786
Day and Date : Wednesday, 03 - 05 - 2017   Total Marks : 100
Time : 02.00 p.m. to 05.00 p.m.
Instructions :   1)   All questions are compulsory.
             2)   Assume suitable datait necessary.

SCETION-I

Q1) Attempt any two   [18]

    a)   Compare and contrast OSI and TCP-IP Model.

    b)   Explain IEEE (802.11) wircless lan standerd.

    c)   Draw and explain FDDI Network.

Q2) Attempt any two.   [16]

    a)   State and explain signaling system-7

    b)   What are possible configurations for ISDN user interface? Explain various functional groupings in ISDN

    c)   Differentitate between ISDN and ATM.

Q3) Attempt any two.   [16]

    a)   Draw and explain cell header structure for NNI.

    b)   Draw and explain various Adpation layers.

    c)   Explain virtual path and virtual channel.

SCETION-II

Q4) Attempt any two.   [18]

    a)   Discuss in detail multi protocol label switching (MPLS)

    b)   Draw and explain frame relay interworking with ATM.

    c)   With help of block diagram explain optical lans.

P.T.O.

Q5) Attempt any two. [16]

    a)   State and explain frame relay protocol.

    b)   Draw and explain WDM System.

    c)   Explain congestion control in frame relay.

Q6) Attempt any two. [16]

    a)   Discuss in detail RSVP.

    b)   Explain in detail frame relay protocal.

    c)   Describe in detail optical cross connect.

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Seat No. |

**B.E. (Electronics Engineering) (Semester-VIII)
(Revised) Examination, April - 2017
WIRELESS COMMUNICATION NETWORK
Sub. Code : 67778**

Day and Date : Thursday, 27-04-2017   Total Marks : 100
Time : 2.00 p.m. to 5.00 p.m.

Instructions :   1)   All questions are compulsory.
                   2)   Use suitable assumptions if required.
                   3)   Draw necessary figures on right side of answer sheet.

SECTION-I

Q1) Solve any three: **[18]**

   a)   Discuss different techniques used for improving coverage and capacity in cellular systems.

   b)   If total of 30Mhz band is allocated for FDD cellular system which uses two 25Khz simplex channels to provide full duplex voice and control channels Compute the no of channels available per cell if system uses 1) 4 cell reuse structure 1) 7 cell reuse structure 2) 12 cell reuse structure. Assume 1Mhz is allocated spectrum for control channels distribute voice and control channels for each cell?

   c)   Differentiate Fixed and Dynamic channel assignment strategies.

   d)   Define Co-channel Interference, Adjacent-channel Interference and near-far effect.

Q2) Solve any two.   **[16]**

   a)   Explain the channel allocation in GSM.

   b)   Compare between FDMA,CDMA and SDMA.

   c)   What is the main reason to accept hexagon shape for construction of cell? Explain concept of Frequency Reuse.

Q3) Solve any two.   **[16]**

   a)   In brief explain objectives and advantages of GSM.

   b)   GSM architecture & interfaces.

   c)   Compare 2G and 3G wireless Networks.

P.T.O.

SECTION-II

Q4) Write a short note on any three: **[18]**

    a)   Bluetooth protocols

    b)   SMS

    c)   Wireless transport layer security

    d)   WML

Q5) Attempt any two.   **[16]**

    a)   Draw and explain architecture of an Infrastructure based 802.11 network.

    b)   Explain speech coding and decoding in GSM.

    c)   Draw and explain GPRS architecture reference model.

Q6) Attempt any two.   **[16]**

    a)   Explain in detail architecture of Bluetooth with neat diagram.

    b)   What is MESs, MDBS, MDIS & CDPD handover in concern with CDPD architecture.

    c)   Explain functions and components of Wireless Application Protocol(WAP) architecture.

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Seat No.

B.E. (Electronics Engineering) (Semester - VII) (Revised) Examination, May - 2017
BIOMEDICAL INSTRUMENTATION (Elective - I)
Sub. Code : 67532

Day and Date : Friday, 19 - 05 - 2017   Total Marks : 100
Time : 02.00 p.m. to 05.00 p.m.

Instructions :1) All Questions are compulsory.
2) Use suitable assumptions if required.
3) Draw necessary figures on right side of answer sheet.

SECTION - I

Q1) Solve any three.   [18]

a) What is the function of Cell? What are resting and action potentials?

b) Draw diagrams illustrating the process of respiration and circulation.

c) Name the different types of electrodes used for a Bio-medical Instrumentation system.

d) What is called Respiratory rate? How it can be measured?

Q2) Solve any two.   [16]

a) What is mean by therapeutic equipment? Explain any one therapeutic equipment.

b) How electrical activity of human brain can be monitored explain in brief.

c) What is the frequency range of biomedical signals? Explain the requirements of recorder used for these signals.

Q3) Solve any two.   [16]

a) With neat sketch explain electrodes used for EOG, ERG and EMG.

b) With suitable diagram explain electrodes tissue interface, contact impedance, and effects of high contact impedance.

c) With neat sketch explain physiology of musculoskeletal system.

P.T.O.

SECTION - II

Q4) Attempt any THREE.   **[18]**

    a)   What are different transducer selection factors for biomedical application.Explain with suitable example.

    b)   State and describe different lungs volumes and lungs capacities. Give relationship between these parameters.

    c)   Explain basic X-ray components.

    d)   What are different safety standards applicable to medical instruments?

Q5) Attempt any TWO.   **[16]**

    a)   Explain with neat sketch the different methods used to measure blood pressure.

    b)   What are different heart sounds? Explain how capacitive transducer is used to detect heart sounds.

    c)   With neat block schematic, explain the working of EMG recording machine.

Q6) Attempt any TWO.   **[16]**

    a)   What is cardiac fibrillation ? Explain with neat diagram working of DC defibrillator.

    b)   With suitable diagram explain 10-20 electrode system for measurement of EEG signal.

    c)   Describe the working of image intensifier with detailed of diagram.

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Seat No.

B.E. (Electronics) (Semester - VII) (Pre-revised) (Old) Examination, May - 2017
POWER ELECTRONICS AND DRIVES
Sub. Code : 47947

Day and Date : Tuesday, 16 - 05 - 2017   **Total Marks : 100**
Time : 2.00 p.m. to 5.00 p.m.

Instructions :
1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Use of non-programmable calculator is allowed.

SECTION - I

Q1) Solve any two of the following: **[18]**

a) Explain the operation of three phase semi control converter with RL load & draw the output voltage & current waveform for $\alpha \le \pi / 3$.

b) 3 phase full converter is operating with purely resistive load R = 10 Ω. If $\alpha = 75°$.
   Calculate:
   i) Average output voltage.
   ii) rms output voltage
   iii) ripple factor

c) With neat waveforms explain operation of 3 phase half wave controlled rectifier.

Q2) Solve any two of the following: **[16]**

a) With neat circuit diagram explain the microcontroller based firing scheme for single phase full converter.

b) What is need of isolation? Explain two techniques used for isolation.

c) Write a note on cosine based firing circuit.

P.T.O.

Q3) Solve any two of the following: [16]

a) Explain the operation of single phase to 3 phase cycloconverter feeding R load. Draw the Waveforms.

b) Explain the operation of 3 phase to single phase cycloconverter feeding R load. DRaw necessary Waveforms.

c) Explain harmonic reduction techniques for cycloconverter.

SECTION - II

Q4) Solve any two of the following: [18]

a) Draw circuit diagram and wave forms of IG-BT based single phase half bridge inverter compare half bridge and full bridge inverter.

b) Explain working of single phase full bridge Mc-Murray inverter with necessary waveforms.

c) Explain 120 and 180 mode of conduction of three phase bridge inverter with necessary waveforms.

Q5) Solve any two of the following: [16]

a) Explain working of Three phase fully controlled rectifier control of seperately excited d.c. motor.

b) Explain operation of chopper controlled d.c. drives.

c) Explain multiquadrant operation of seperately excited d.c. motor.

Q6) Solve any two of the following: [16]

a) State and explain speed control methods of three phase induction motor.

b) With the help of block diagram explain working of closed loop control of A.C. drives.

c) Draw and explain torque-speed characteristics of Induction motor. Explain following modes.
   i) Motoring
   ii) Generating
   iii) Breaking