Seat
No.

B.E.(Electronics Engineering) (Part - IV) (Semester - VII) (Old) Examination, November - 2016
POWER ELECTRONICS AND DRIVES
Sub. Code : 47947

Day and Date :Thursday, 17-11-2016   Total Marks : 100
Time : 2.30 p.m. to 5.30 p.m.

Instructions :   1)   All questions are compulsory.
                 2)   Figures to the right indicate full marks.
                 3)   Assume suitable data if necessary and clearly maintain in your
                      answer.

SECTION - I

Q1) Attempt any two   **[18]**

   a)   Three phase full controlled converter is supplied from 360 volt 50 Hz
        supply. The load is purely resistive 10 ohm the average voltage is 50% of
        maximum possible output voltage determine Firing angle, Average, RMS
        and Peak SCR current.

   b)   Explain with different operating modes operation of semiconverter at
        RL load. Derive expression for average and rms load voltage.

   c)   Write short note on effect of source inductance on performance of 3-
        phase controlled converters, derive expression for average load voltage
        in overlapping time interval μ.

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

   a)   Draw circuit diagram of inverse cosine firing scheme and explain with
        waveforms.

   b)   Draw block diagram of microcontroller based single phase fully controlled
        converter and explain with waveforms.

   c)   What is need of isolation circuit? Explain the different types of isolation
        circuits.

P.T.O.

Q3) Attemt any two [16]

a) What is need of cycloconverter? Explain operation of bridge type 1 phase to 1 phase cycloconverter.

b) Explain circulating current mode of operation of 1 phase to 1 phase cycloconverter.

c) Explain methods of harmonic reduction in cycloconverter output.

SECTION - II

Q4) Attemt any two [18]

a) Explain operation of full bridge series inverter with circuit diagram and waveforms. List out limitations of it.

b) With neat circut diagram and waveform explain operation of IGBT based three phase bridge inverter with 120° mode of conduction.

c) Explain operation of mac-murray half bridge inverter with different operating modes.

Q5) Attemt any two [16]

a) With block diagram explain operation of PLL controlled closed loop operation of DC drive.

b) Explain multiquadrant operation of separately excited dc motor.

c) Explain with circuit diagram and torque speed characteristic operation of armature control of separately excited dc motor.

Q6) Attemt any two [16]

a) Draw speed torque characteristic of induction motor and explain operating regions in details.

b) Explain operation of slip power recovery method of AC motor.

c) Why only voltage or only frequency control in not sufficient to control AC motor? With block diagram and torque speed characteristic explain operation of V/F control method.

ങ്ങ൚ങ൚

Seat	
No.	

**B.E.(Electronics)(Part-I) (Semester -VII)(Revised)(New)
Examination, November - 2016
INFORMATION THEORY AND CODING TECHNIQUES
Sub. Code :67526**

Day and Date :Tuesday, 15 -11 -2016   Total Marks : 100
Time :2.30 p.m. to 5.30 p.m.

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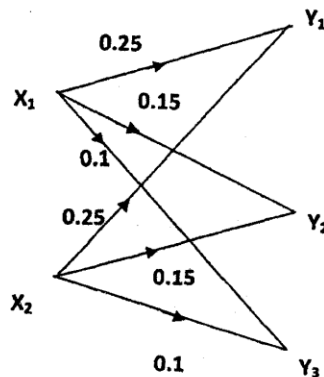
SECTION-I

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

   a)   A(5,1) linear block code generated by generator matrix G=[11111].
        Determine:

        i)   Parity check matirx

        ii)   All code vectors

        iii) Minimum distance & error correction capability

        iv)   If the received vector R=11011 is received, find the corrected
              code ward.

   b)   Find the mutual information for the channel shown in figure(1).

c) What do you mean by binary symmetric channel? Show that channel capacity in BSC is given by, $C=1+P \log P+(1-P) \log (1-P)$

d) What is Joint & Conditional entropy? Derive relation between joint and Conditional entropy.

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

a) Determine all the entropies and transferred information for the channel shown in figure(2), with $P(y_1)=0.2$, $P(y_2)=0.5$ and $P(y_3)=0.3$
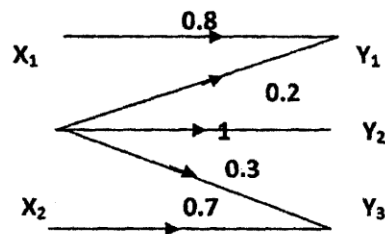
b) i) Prove that maximum capacity of channel is given by,

$$C_\infty = \lim_{B \to \infty} C = 1.44[S/N_0]$$

ii) Design a single error correcting hamming code for a message length of 4.

c) For a systematic linear Block code, the three parity check bits are,

$$C_4 = m_1 \oplus m_2 \oplus m_3$$
$$C_5 = m_2 \oplus m_3 \oplus m_4$$
$$C_6 = m_1 \oplus m_2 \oplus m_4$$

Determine:
   i) Generator Matrix(G) and parity check Matrix(H)
   ii) All code vectors
   iii) Error detecting and Correcting capability
   iv) Prepare decoding table
   v) If the received code vector is (1011011), find transmitted message

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

   a) Construct Huffman's code for the given message ensemble as:

$$[X]=[X_1 \quad X_2 \quad X_3 \quad X_4 \quad X_5 \quad X_6]$$

$$P[X]=[0.3 \quad 0.25 \quad 0.2 \quad 0.12 \quad 0.08 \quad 0.05]$$

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

   b) Write a note on:

      i) Binary Erasure channel

      ii) Average Information.

   c) i) Prove that $I(X,Y)= H(X)+H(Y) - H(X\,Y)$

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

SECTION - II

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

   a) With a help of neat schematic, explain the operation of cyclic encoder& syndrome calculator for(n,k) cyclic code.

   b) Determine the minimal polynomial of GF(8) whose transfield is GF(2) with primitive polynomial $f(x)=X^3+X^2+1$

   c) Explain the following terms related to convolutional code.

      i) Code tree

      ii) State diagram

      iii) code trellis

   d) Determine the generator & parity check matrix for (7,4) systematic cyclic code using suitable primitive polynomial.

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

   a) A convolutional encoder using three shift registers and r=1/2 has two generating vectors as: $g_1=[1 \ 1 \ 1]$ and $g_2=[011]$

      i) Sketch the encoder configuration

      ii) Determine the generator matrix

      iii) If the message sequence is (1011), determine the output sequence of the encoder.

      iv) Draw code tree and state diagram.

b) Design a (7,3) RS double error correcting code for message $(\alpha, \alpha^2, \alpha^6)$ & determine the code polynomial & code using nonsystematic& Systematic method.

c) i) Explian the distance properties of convolutional code.

ii) Expalin the procedure for generation of systematic cyclic code.

Q6) 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(1101). Also determine syndrome vector for error pattern (0001000).

b) A(15,7) BCH double error correcting code has the generator polynomial, $g(x)=x^8+x^7+x^6+x^4+1$. Find the transmitted code ward if the received code ward is X^3+X^2. Consider primitive polynomial is X^4+X+1.

c) Write a note on:

i) Cyclic redundancy check code

ii) Primitive element

◄► ◄► ◄►

Seat No.

**B.E.(Electronics) (Part - IV) (Semester - VII) (Revised) (New)
Examination, November - 2016
EMBEDDED SYSTEM DESIGN
Sub. Code : 67527**

Day and Date :Thursday, 17-11-2016   Total Marks : 100
Time : 2.30 p.m. to 5.30 p.m.

Instructions :   1)   All questions are compulsory.
                  2)   Figures 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: (6 marks for each question)   **[18]**

a)   Classify embedded system in to three categories and state important features of each class.

b)   Explain the need of watchdog timer and reset after watched time.

c)   What will be the result, after execution of following instructions:

      i)   ADDEQ R2, R4, R5;

      ii)   MOVS PC, R14;

      iii)   LDR R1, [R2, #16];

      iv)   LDRH r11, [r0];

      v)   STMFD R13, {R0-R14}^;

      vi)   SWP R0, R1, [R2];

d)   Explain with suitable example and diagram pre and post indexing addressing mode.

P.T.O.

Q2) Solve any two: (8 marks for each question) **[16]**

a) Draw CPSR, explain purpose of each Mode of ARM processor.

b) Explain encoding of SWI instruction. Discuss application of SWI instruction to call a function in supervisory mode with suitable arguments.

c) Why it is necessary to define separate stack area for each mode, write program to set stack pointer for IRQ mode, Assume ARM is in supervisor mode.

Q3) Solve any two: (8 marks for each question) **[16]**

a) How Start, Stop, Repeat start and Acknowledge conditions are created in I2C Bus.

b) With suitable timing diagram discuss CAN bus arbitration process.

c) With suitable diagram explain why SPI is data exchange protocol?

SECTION - II

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

a) Explain the role of various buffers in Memory Acceleration Module (MAM) and operation modes of MAM.

b) Describe with diagram the oscillator selection algorithm for LPC 2148.

c) What are various reset options available on LPC 2148?

d) How power optimization can be achieved using Power Control block and what are the registers associated with power control?

Q5) Answer any two of the following [16]

a) Explain with registers associated with the Pin Connect Block of LPC 2148.

b) Differentiate between Fast GPIO and Legacy GPIO on LPC 2148. Explain role of FIOMASK register.

c) Differentiate between UART0 and UART1 on LPC 2148 microcontroller chip.

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

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

a) State different states of tasks and explain.

b) What is the role of semaphores in resolving shared resources problem?

c) Explain priority inversion problem associated with memory management on RTOS.

CЗ୫୦CЗ୫୦

Seat
No.

**B.E. (Electronics) (Part - I) (Semester - VII) (Revised) (New)
Examination, November - 2016
COMPUTER NETWORK
Sub. Code : 67528**

Day and Date : Monday, 21 - 11 - 2016   Total Marks : 100
Time : 2.30 p.m. to 5.30 p.m.

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

SECTION - I

Q1) Solve any two: **[16]**

   a)   What is network topology? Draw various topologies & compare them.

   b)   With respect to HDLC explain following terms:
      i)   I-Frame
      ii)   S-Frame

   c)   With a neat schematic explain working principle of Routing Information Protocol.

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

   a)   Draw OSI model & explain in brief the functions at each layer.

   b)   How sliding window protocol works for flow control in DLL? Explain with neat schematic.

   c)   What is traffic shaping? Explain Leaky bucket algorithm.

Q3) Solve any three: **[18]**

   a)   A company is granted the site address 201.70.64.0. The company needs six subnets. Design the subnets.

   b)   Write short notes on types of station and modes of operations of HDLC.

   c)   Explain with neat schematic source routing bridge.

   d)   Compare IPV4 and IPV6.

SECTION - II

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

    a)   What are the contents of UDP header? Explain each in detail.

    b)   Draw and explain various TCP services.

    c)   Explain how flow control is achieved in transport layer.

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

    a)   Draw and explain TELNET protocol.

    b)   With suitable example explain HTTP protocol.

    c)   With suitable example explain FTP protocol.

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

    a)   State and explain public key algorithm.

    b)   What are security attacks? Explain each in detail.

    c)   State and explain application of message integrity and authentication.

Seat
No.

**B.E.(Electronics) (Semester-VII) (Revised)
Examination, November - 2016
IMAGE PROCESSING
Sub. Code : 67529**

Day and Date : Wednesday, 23 - 11 - 2016   Total Marks : 100
Time : 2.30 p.m. to 5.30 p.m.

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

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

  a)   Explain image acquisition using single sensor.

  b)   Explain different types of distances used in image processing.

  c)   Explain sampling and quantization process for images.

  d)   Explain power law transformation used in image processing.

  e)   Explain image acquisition using sensor strip.

Q2) Attempt any Two: **[16]**

  a)   Explain different fundamental steps in digital image processing.

  b)   Describe various application of image processing.

  c)   Explain concept of image formation model.

Q3) Attempt any Two: **[14]**

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

  b)   What is Histogram matching? Explain procedure for obtaining histogram
       matching.

  c)   Explain various logical operations used for image enhancement

                                                                       P.T.O.

Q4) Attempt any Four: [20]

    a)   What do you mean by sharpening of image? How it is done?

    b)   Explain order statistic filters.

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

    d)   Explain smoothing linear filters.

    e)   Describe edge models.

Q5) Attempt any Two: [16]

    a)   Explain region splitting and merging.

    b)   Describe edge detection and various mask used for that.

    c)   Describe Thresholding and Write an algorithm used for global Thresholding.

Q6) Attempt any Two: [14]

    a)   Explain HSI color model.

    b)   Explain pseudo color image processing.

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

✓ ✓ ✓

Seat
No.

**B.E. (Electronics Engineering) (Semester - VIII) (Pre revised)
Examination, November - 2016
BIOMEDICAL CONTROL & INSTRUMENTATION
(Elective - II)
Sub. Code : 49439**

Day and Date :Thursday, 10-11-2016   Total Marks : 100
Time : 2.30 p.m. to 5.30 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)   Explain cardiovascular system and Cardiac Cycle.

   b)   Draw diagram illustrating the working of Cardiac Pacemakers.

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

   d)   Explain in brief Measurement of Blood pressure.

Q2) Solve any TWO: **[16]**

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

   b)   What is Regulation of Breathing? How oxygen contents of blood are
        measured?

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

P.T.O.

Q3) Solve any TWO: [16]

    a)   With neat sketch explain electrodes used for ECG.

    b)   Explain computerized patient monitoring system.

    c)   With neat sketch explain measurement of continuous Cardiac Output.

SECTION - II

Q4) Attempt any THREE from following: [18]

    a)   With neat labeled diagram, explain the structure of neuron in nervous system.

    b)   Explain mechanism of hearing with the help of human ear anatomy.

    c)   What is meant by evoked response? Explain with example.

    d)   What are different lungs volumes associated with pulmonary measurement.

Q5) Attempt any TWO: [16]

    a)   With neat sketch explain different components of human nervous system (CNS, PNS & ANS).

    b)   With neat sketch explain the functioning of motor unit in muscle fiber. Explain the characteristics of biopotential generated by muscle fiber.

    c)   Explain in detail the methods used for pulmonary flow measurements.

Q6) Attempt any TWO: [16]

    a)   What are different types of hearing losses? Explain working of pure tone audiometer.

    b)   With neat sketch explain the anatomy of human eye.

    c)   Explain the role of kidney for the regulation of water and electrolyte balance. What is peritoneal dialysis?

<div align="center">CRITICAL</div>