MR13 & MR 14

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)
(Affiliated to JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD)
Gundlapochampally (H), Maisammaguda (V), Medchal (M), Medchal-Malkajgiri (Dist), Hyderabad.

III B.Tech II Semester Supplementary Examinations, NOVEMBER-2017

SUBJECT: **Microprocessors And Microcontrollers**

Branch: **Common to EEE & ECE**

Time: 3 hours   Max. Marks: 75

PART – A

I. Answer All Questions   5x1Mark=5Marks

1. How many data lines and address lines are available in 8086?
2. Explain about JUMP and CALL instructions of 8086.
3. Discuss the types of serial communication.
4. Name 5 items that have a built in microcontroller.
5. What is the function of timer and counter in 8051?

II. Answer All Questions   10x2Marks=20Marks

1. Draw the pin diagram of 8086 microprocessor.
2. What are the advantages of using memory segmentation?
3. Explain XOR and TEST instructions of 8086?
4. Write a program to exchange the data from one register to other.
5. Describe the three modes of operations for 8255.
6. Explain the following instruction
   a) AAA   b) XLAT
7. What are the 8051 microcontroller specifications?
8. Discuss about the interrupts of 8051.
9. Give the sequence of events that takes place when the interrupt occurs in 8051.
10. Draw the register format of TMOD.

PART-B

Answer all questions   5x10 Marks= 50Marks

1. Explain the function of following pins in 8086.

   i) NMI   ii) $\overline{INTA}$ iii) DEN   iv) S_1 & S_0

   v) $\overline{QS_0}$ & $\overline{QS_1}$ vi) IO/$\overline{M}$ vii) HOLD   viii) HLDA

   (OR)

2. a) i) If CS contain 03E0H and IP contains 1F20H, from what value address is the next
        instruction fetched?

       ii) If SS contain 0400H and SP contain 3FFEH, where is the top of the stack located?

       iii) If a data segment begins at address 24000H, what is the address of the last
        location in segment?

   b) Explain common mode signals in 8086.

3. Explain the instruction set of 8086 processor with minimum of 5 examples for each instruction set.

(OR)

4. a) Explain the use of PUSH and POP instructions in 8086.

   b) Write an 8086 ALP to find sum of numbers in the array.

5. Interface memory with 8086 for the following specifications:

   i) Two 8kb EPROMs ending with FFFFFH

   ii) Two 8kb SRAMs starting with C0000H

(OR)

6. Design a memory interface for the following specs:

   i) 8kb of ROM chips using 4kx8 ROM chips

   ii) 8kb of RAM chips using 2kx8 RAM chips

7. a) Explain about memory organization of 8051 microcontroller

   b) How does 8051 differentiate between the external and internal program memory?

(OR)

8. Explain Timer-1 modes of 8051.

9. a) Give the formats of the registers which are used for the counters/timers

   b) Explain with waveforms, the different modes of counter/timer in 8051

(OR)

10. a) Write 8051 program to initialize timer 1 in mode 0.

    b) Write an 8051 program to generate a square wave of 10kHz, with Timer 0 in mode 2 at port pin P1.2.

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)
(Affiliated to JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD)
Gundlapochampally (H), Maisammaguda (V), Medchal (M), Medchal-Malkajgiri (Dist), Hyderabad.

III B.Tech II Semester Supplementary Examinations, NOVEMBER-2017
SUBJECT: DIGITAL SIGNAL PROCESSING

Branch: ECE

Time: 3 hours

Max. Marks: 75

PART-A

Answer the following Questions   5×1=5M

1. Define system and discrete time system.
2. Define DTFT pair.
3. What are the advantages of IIR Filter?
4. What is the reason that FIR filter is always stable?
5. Define upsampling.

Answer the following Questions   10×2=20M

1. Calculate energy of the signal $x(n) = (1/2)^n u(n)$
2. Draw the direct form-I realization structure of a third order system.
3. What are the two methods used for the sectional convolution?
4. What is DIT algorithm?
5. How one can design digital filters from analog filters?
6. Give the transfer function of Butterworth analog filter H(s) FOR n=1 & 2 with cutoff frequency 1 rad/sec.
7. What is the necessary and sufficient condition for linear phase characteristics in FIR filters?
8. What are the advantages of FIR Filter?
9. What are the three quantization errors due to finite word length registers in digital filters?
10. Draw the spectrum of down sampled signal.

PART-B

Answer the following Questions   5×10=50M

1. a) State and prove any two properties of Z-transform.

   b) Find the inverse Z-transform of X(z)=z(z²-4z+5) / (z-3)(z-1)(z-2) for ROC 2<|z|<3.

(OR)

2. Analyze briefly the different structures of IIR filter.

3. Determine the output response y(n) if h(n)={1,1,1}, x(n)={1,2,3,1} by using

    i) Linear convolution   ii) Circular convolution

(OR)

4. Develop a Radix-2, 8- point DIF FFT algorithm with neat flow chart.

5. Using Bilinear transformation, design a high pass filter monotonic in pass band with cutoff frequency of 1000Hz and down 10dB at 350Hz. The sampling frequency is 5000Hz.

(OR)

6. Briefly explain the differences between Chebyshev and butter worth approximations.

7. Derive the frequency response of linear phase FIR filters with symmetrical impulse response, for odd order system.

(OR)

8. Design an ideal differentiator with frequency response

        $H(e^{jw})=jw$; $-\pi \le w \le \pi$ using a rectangular window.

9. a) What are limit cycles? Discuss various types of limit cycles in brief.

    b) What is meant by overflow error and how it can be avoided?

(OR)

10. Explain the process of interpolation using relevant expressions and block diagram.

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)
(Affiliated to JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD)
Gundlapochampally (H), Maisammaguda (V), Medchal (M), Medchal-Malkajgiri (Dist), Hyderabad.

III B.Tech II Semester Supplementary Examinations, NOVEMBER-2017

SUBJECT: Digital Communications

Branch: ECE

Time: **3 hours**   Max. Marks: 75

PART – A

I. Answer All Questions   5x1Mark=5Marks

1. Define sampling theorem.
2. What is the minimum bandwidth of ASK technique.
3. Write any two properties of information.
4. What is meant by Block Code?
5. Define Spread Spectrum.

II. Answer All Questions   10x2Marks=20Marks

1. A telephone signal with cut off frequency of 4 KHZ is digitized into 8 bit PCM sampled at Nyquist Rate. Calculate transmission bandwidth and Quantization S/N ratio.
2. For the analog signal x(t)=5 cos 40πt +6 sin 200πt-cos50πt , Find the Nyquist rate for the signal.
3. What are the differences between coherent and non-coherent FSK detectors?
4. What are the differences between PSK and FSK?
5. Write the expression for transfer function of optimum filter.
6. Write the expression for probability of error for ASK and PSK techniques.
7. What is constraint length for convolutional encoders?
8. Give the differences between code tree and trellis diagram.
9. State any two properties of pseudo noise sequences.
10. Compare slow FHSS and Fast FHSS.

PART-B

Answer all questions   5x10 Marks= 50Marks

1. a) With neat sketch explain the operation of ADM transmitter and receiver.   [7M]

   b) Find the signal amplitude for minimum quantization error in a delta modulation system if step size is 1Volt, having the repetition period of 1 msec the information signal operating at 100 Hz.   [3M]

(OR)

2. a) Discuss different types of sampling techniques.

   b) Explain the principle and operation of DPCM with neat sketch?

3. a) With the help of neat diagram explain the operation of direct sequence spread coherent BPSK technique.   [7M]

   b) Explain how Pseudo noise sequence is generated.   [3M]

4. Explain BPSK system with the help of transmitter and receiver, and state its advantages and disadvantages over other systems.

5. Prove the following

   a) H(X,Y)=H(X/Y)+H(Y)

   b) A discrete source exits one of five symbols, once every millisecond with probabilities ½, 1/4, 1/8, 1/16 and 1/16 respectively. Determine the source entropy and source information rate.

(OR)

6. a) Derive an expression for the probability error, Pe for a binary FSK system.

   b) What are the limitations and advantages of Huffman coding?

7. a) Give the Comparison between Linear Block codes and Convolution codes.   [4M]

   b) For a Convolution encoder shown in Fig. Sketch the trellis diagram and determine the output data sequences for Input data sequence of 10110.   [6M]
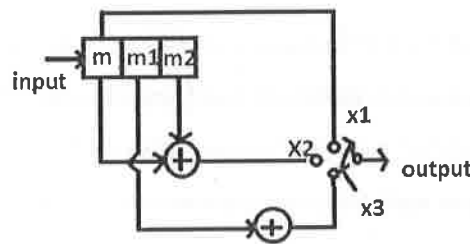
(OR)

8. Determine the state Diagram for the convolution encoder shown in figure. Draw the trellis diagram and code tree diagram for the message 11010.   [10M]
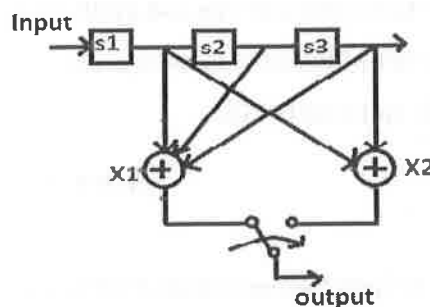
9. a) What are the Advantages & Disadvantages of CDMA?   [4M]

   b) Explain the concept of Synchronization in Spread Spectrum Systems.   [6M]

(OR)

10. a) Explain the Direct sequence spread spectrum technique with neat diagram.   [6M]

    b) Explain the concept of slow and fast frequency hopping technique.   [4M]

24

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

(Affiliated to JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD)

Gundlapochampally (H). Maisammaguda (V). Medchal (M). Medchal-Malkajgiri (Dist). Hyderabad.

III B.Tech II Semester Supplementary Examinations, NOVEMBER-2017

SUBJECT: Human Values And Professional Ethics

Branch: Common to ME, ECE, IT & MINING

Time: 3 hours　　　　　　　　　　　　　　　　　　　　　　　　Max. Marks: 75

PART – A

I. Answer All Questions　　　　　　　　　　　　　　5x1Mark=5Marks

1. Define Ethics.
2. What is 'Self Assessment'?
3. Define Trade Mark.
4. Define Value Education.
5. What do you understand by Eustress?

II. Answer All Questions　　　　　　　　　　　　　10x2Marks=20Marks

1. Compare between moral values and ethical values.
2. Honesty is the best policy-Discuss.
3. Distinguish between Untrained and Trained Memory.
4. Explain how one can assess oneself.
5. What are copy rights?
6. Explain moral dilemma with an illustration.
7. Discuss the meaning of Universal Brotherhood.
8. What are basic aspirations of Human Beings?
9. Enumerate the negative influences of stress on human health.
10. What do you know about Sympathy?

PART-B

Answer all questions　　　　　　　　　　　　　　5x10 Marks= 50Marks

1. As a Citizen of the country every individual has Social Responsibility for the betterment of the society – Justify the statement with examples.

(OR)

2. Why it is important for every citizen to be socially responsible?
3. Discuss Howard Gardener's Multiple Intelligence Model.

(OR)

4. Explain the need of self discipline.
5. Discuss the Carol Gilligan's Theory Moral Development?

(OR)

6. What are customs religion professional life?
7. Value Based Education shapes the Personalities of the Individuals Unique - Justify the statement with examples.

(OR)

8. What are the contents of value education?
9. Identify the different techniques of Stress Management to lead better life?

(OR)

10. Explain how spirituality helps an individual to know the purpose his life