

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

QUESTION BANK

FOR

**III B.TECH II SEM (R15)
(2018 – 19)**



MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

(Affiliated to JNTU, Hyderabad, Approved by AICTE - Accredited by NBA & NAAC – 'A' Grade, ISO 9001:2008 Certified)

Maisammaguda, Dhulapally, Secunderabad – 500100.

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4	DIGITAL COMMUNICATION
5	ANTENNA & WAVE PROPAGATION
6	DATA BASE MANAGEMENT SYSTEMS

Code No: R15A0415

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY**(Autonomous Institution – UGC, Govt. of India)****Digital Signal Processing****MODEL PAPER 1**

Roll No									
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Time: 3 hours**Max. Marks: 75****Note:** This question paper contains two parts A and B

Part A is compulsory which carries 25 marks and Answer all questions.

Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer FIVE Questions, Choosing ONE Question from each SECTION and each Question carries 10 marks.

PART – A**(25 Marks)**

- (a) Distinguish between causal and non-causal system. **(2M)**
- (b) Find the impulse and step response of the system. **(3M)**
 $y(n)=2x(n)-3x(n-1)+x(n-2)-4x(n-3)$.
- (c) Define DFT and IDFT of a discrete –time sequence. **(2M)**
- (d) Determine the IDFT of $X(k) = \{ 3, (2+j), 1, (2-j) \}$. **(3M)**
- (e) What are the properties of Bilinear Transformations? **(2M)**
- (f) Write the magnitude response of Chebyshev low pass filter. **(3M)**
- (g) What are the advantages of FIR Filter? **(2M)**
- (h) List the features of Rectangular Window. **(3M)**
- (i) Define Down sampling? **(2M)**
- (j) What is sampling rate conversion? **(3M)**

PART – B**(50 Marks)****SECTION – I**

1. Check the Stability of the following systems **(10M)**

$$a) y(n) = x(n) + \frac{1}{2} x(n-1) + \frac{1}{4} x(n-2)$$

$$b) h(n) = 2^n u(n)$$

(OR)

2. Realize the system described by the following difference equation in cascade and parallel form.

$$y(n) = -\frac{13}{12} y(n-1) - \frac{9}{24} y(n-2) - \frac{1}{24} y(n-3) + x(n) + 4x(n-1) + 3x(n-2) \quad \mathbf{(10M)}$$

SECTION – II

3. a) State and Prove any four properties of DFT.
 b) List the differences between linear convolution and circular convolution. **(5+5M)**

(OR)

4. Find the IDFT of the sequence $X(k)=\{7, -0.707-j0.707, -j, 0.707-j0.707, 1, 0.707+j0.707, j, -0.707+j0.707\}$ using DIT algorithm. **(10M)**

SECTION – III

5. Design a digital Butterworth filter for the following specifications using impulse invariant method. **(10M)**

$$\begin{aligned} 0.8 \leq |H(w)| \leq 1 & \quad 0 \leq w \leq 0.2\pi \\ |H(w)| \leq 0.2 & \quad 0.32\pi \leq w \leq \pi \end{aligned}$$

(OR)

6. Design a digital Chebyshev filter for the following specifications using bilinear transformation method. **(10M)**

$$\begin{aligned} 0.707 \leq |H(w)| \leq 1 & \quad 0 \leq w \leq 0.2\pi \\ |H(w)| \leq 0.1 & \quad 0.5\pi \leq w \leq \pi \end{aligned}$$

SECTION – IV

7. Explain in detail about Fourier Series Method of design of FIR filters. **(10M)**

(OR)

8. Design a five stage lowpass FIR filter with Sampling time 1ms and $f_c=200\text{Hz}$. Also find frequency response of the filter. **(10M)**

SECTION – V

9. Let $x(n)=\{1,3,2,5,-1,-2,2,3,2,1\}$, find
 (a) Up sample by 2 times and down sample by 4 times
 (b) Down sample by 4 times and up sample by 2 times **(5+5M)**
- (OR)
10. Explain the applications of Multi Rate Signal Processing. **(10M)**

Code No: R15A0415

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY**(Autonomous Institution – UGC, Govt. of India)****Digital Signal Processing****MODEL PAPER 2**

Roll No									
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Time: 3 hours**Max. Marks: 75****Note:** This question paper contains two parts A and B

Part A is compulsory which carries 25 marks and Answer all questions.

Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer FIVE Questions, Choosing ONE Question from each SECTION and each Question carries 10 marks.

PART – A**(25 Marks)****1.**

- (a) Classify the Discrete Time Signals. **(2M)**
- (b) Write the Z-transform of the sequence $x(n) = [3,8,2,1,-1,4]$. **(3M)**
- (c) What is Zero padding? Why it is needed? **(2M)**
- (d) List the Differences between Linear convolution and Circular convolution. **(3M)**
- (e) Mention the important features of IIR Filters. **(2M)**
- (f) How will you choose the order N for Butter worth filter? **(3M)**
- (g) List the features of Hamming Window. **(2M)**
- (h) Write the steps involved in FIR Filter Design using windows? **(3M)**
- (i) What are the two basic operations in multi-rate signal processing? **(2M)**
- (j) What is decimation? When it is performed? **(3M)**

PART – B**(50 Marks)****SECTION – I**

2. Describe the Digital Signal Processing System and write the applications? **(10M)**
(OR)
3. Realize the system described by the following difference equation in direct form I, Direct form – II. **(10M)**

$$y(n) = \frac{3}{4} y(n-1) - \frac{1}{8} y(n-2) + x(n) + \frac{1}{3} x(n-1)$$

SECTION – II

4. a) Find the 4-point DFT of $x(n) = \{1, -2, 3, 2\}$
b) Find the IDFT of $X(k) = \{4, -2+j4, 4, -2-j4\}$ **(5+5M)**
(OR)
5. Find the IDFT of the sequence $X(k) = \{4, 1-j2.414, 0, 1-j0.414, 0, 1+j0.414, 0, 1+j2.414\}$ using DIF algorithm. **(10M)**

SECTION – III

6. Design a digital Chebyshev filter for the following specifications using bilinear transformation method. **(10M)**

$$0.707 \leq |H(w)| \leq 1 \quad 0 \leq w \leq 0.2\pi$$

$$|H(w)| \leq 0.1 \quad 0.5\pi \leq w \leq \pi$$

(OR)

7. Design a Butterworth digital filter using the bilinear transformation. The specification of the desired low pass filter are: **(10M)**

$$0.9 \leq |H(\omega)| \leq 1; 0 \leq \omega \leq \frac{\pi}{2}$$

$$|H(\omega)| \leq 0.2; \frac{3\pi}{4} \leq \omega \leq \pi$$

SECTION – IV

8. Design a five stage low pass FIR filter with Sampling time 1ms and $f_c=200\text{Hz}$. Also find frequency response of the filter. **(10M)**

(OR)

9. Explain in detail about design of IIR digital filters using Window Techniques. **(10M)**

SECTION – V

10. Explain in detail the spectrum of up sampling and down sampling. **(10M)**

(OR)

11. Consider the signal $x(n)=nu(n)$ **(10M)**

i) Determine the spectrum of the signal.

ii) The signal is applied to a decimator that reduces the sampling rate by a factor 3.

Code No: **R15A0415****MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY****(Autonomous Institution – UGC, Govt. of India)****Digital Signal Processing****MODEL PAPER 3**

Roll No									
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Time: 3 hours**Max. Marks: 75****Note:** This question paper contains two parts A and B

Part A is compulsory which carries 25 marks and Answer all questions.

Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer FIVE Questions, Choosing ONE Question from each SECTION and each Question carries 10 marks.

PART – A**(25 Marks)**

1.

- (a) Define linear shift invariant system. **(2M)**
- (b) Classify the discrete-time systems? **(3M)**
- (c) Write any two properties of DFT? **(2M)**
- (d) What is a twiddle factor? List out some of its properties? **(3M)**
- (e) What are the advantages of and disadvantages of bilinear transformation? **(2M)**
- (f) What is type-1 and type-2 Chebyshev approximation? **(3M)**
- (g) List the features of Triangular Window. **(2M)**
- (h) What are the main advantages of windowing? **(3M)**
- (i) State sampling theorem. **(2M)**
- (j) What is interpolation? **(3M)**

PART – B**(50 Marks)****SECTION – I**

2. Check whether the following systems are Linear or non-linear and also verify time invariant or time variant. **(10M)**

i) $y(n) = n^2 x(n)$

ii) $y(n) = 2x(n) + 4$

(OR)

3. Solve the following difference equation

$y(n) + 2y(n-1) = x(n)$ with $x(n) = (1/3)^n u(n)$ and the initial condition $y(-1) = 1$

(10M)**SECTION – II**

4. a) Find the 4-point DFT of $x(n) = \{1, -1, 2, -2\}$

b) Find the IDFT of $X(k) = \{0, -1-j, 6, -1+j\}$

(5+5M)

(OR)

5. Compute the 8-point DFT of $x(n)=\{1,1,1,1,1,1,1,0\}$ by using Radix-2 DIF FFT algorithm. (10M)

SECTION – III

6. Design a Butterworth digital filter using the bilinear transformation. The specification of the desired low pass filter are: (10M)

$$0.9 \leq |H(\omega)| \leq 1; 0 \leq \omega \leq \frac{\pi}{2}$$
$$|H(\omega)| \leq 0.2; \frac{3\pi}{4} \leq \omega \leq \pi$$

(OR)

7. Explain Design procedure of Chebyshev and Butterworth IIR filter. (10M)

SECTION – IV

8. Explain in detail about design of IIR digital filters using Window Techniques. (10M)

(OR)

9. A low pass filter has the desired frequency response as given by: (10M)

$$H_d(e^{jw}) = e^{-j2w} \quad -\frac{\pi}{4} \leq w \leq \frac{\pi}{4}$$
$$= 0 \quad \frac{\pi}{4} \leq |w| \leq \pi$$

Determine the filter coefficients if the window function is used is

$$w(n) = 1 \quad 0 \leq n \leq 4$$
$$= 0 \quad \text{otherwise}$$

Also determine the frequency response $H(e^{jw})$ of the designed filter.

SECTION – V

10. Explain the applications of Multi Rate Signal Processing. (10M)

(OR)

11. Consider the signal $x(n)=nu(n)$ (10M)

- i) Determine the spectrum of the signal.
- ii) The signal is applied to a decimator that reduces the sampling rate by a factor 3.

Code No: **R15A0415****MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY****(Autonomous Institution – UGC, Govt. of India)****Digital Signal Processing****MODEL PAPER 4**

Roll No									
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Time: 3 hours**Max. Marks: 75****Note:** This question paper contains two parts A and B

Part A is compulsory which carries 25 marks and Answer all questions.

Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer FIVE Questions, Choosing ONE Question from each SECTION and each Question carries 10 marks.

PART – A**(25 Marks)**

1.

- (a) Define Static and Dynamic system. (2M)
- (b) List the applications of Digital Signal Processing. (3M)
- (c) State the difference between DITFFT and DIFFFT algorithms. (2M)
- (d) Find the IDFT of $X(K) = \{1,1,1,1\}$. (3M)
- (e) Compare impulse invariant and bilinear transformation? (2M)
- (f) Write the magnitude function of low pass Butter worth filter? (3M)
- (g) What is FIR Filter? (2M)
- (h) What are the characteristics of the window? (3M)
- (i) Define up sampling. (2M)
- (j) What are the advantages of multi-rate signal processing? (3M)

PART – B**(50 Marks)****SECTION – I**

2. Check whether the following systems are Linear or non-linear and also verify time invariant or time variant. (5+5M)

a) $y(n) = \log_{10} |x(n)|$

b) $y(n) = x^2(n) + \frac{1}{x^2(n-1)}$

(OR)

3. A linear shift invariant system is described by the difference equation (10M)

$$y(n) - \frac{3}{4}y(n-1) + \frac{1}{8}y(n-2) = x(n) + x(n-1)$$

with $y(-1)=0$ and $y(-2)=-1$.

Find a) the natural response of the system b) forced response of the system.

SECTION – II

4. Find the linear convolution of the sequence $x(n]$ and $h(n]$ using DFT

$$x(n)=\{1,0,2\}, h(n)=\{1,1\}$$

(10M)

(OR)

5. Determine the linear convolution of the following sequences using overlap-add and overlap save methods $x(n) = \{1, -1, 2, 1, 3, 1, 2, -1, 2\}$, $h(n) = \{1, 2, 1\}$ (10M)

SECTION – III

6. Explain Design procedure of Chebyshev and Butterworth IIR filter. (10M)

(OR)

7. Determine the system function $H(z)$ of the lowest order Chebyshev IIR digital filter with the following specifications: (10M)

3dB ripple in pass band $0 \leq \omega \leq 0.2\pi$

25 dB attenuation in stopband $0.45\pi \leq \omega \leq \pi$

SECTION – IV

8. Design a filter with: (10M)

$$H_d(e^{j\omega}) = e^{-j3\omega} \quad -\frac{\pi}{4} \leq \omega \leq \frac{\pi}{4}$$
$$= 0 \quad \frac{\pi}{4} \leq |\omega| \leq \pi$$

using Hamming window with $N = 7$.

(OR)

9. Compare IIR and FIR filters in detail. (10M)

SECTION – V

10. Explain in detail the spectrum of up sampling and down sampling. (10M)

(OR)

11. Consider the signal $x(n)=a^n u(n)$, $|a| < 1$. (10M)

i) Determine the spectrum of the signal.

ii) The signal is applied to an interpolator that increases sampling rate by a factor of 2.

Code No: **R15A0415****MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY****(Autonomous Institution – UGC, Govt. of India)****Digital Signal Processing****MODEL PAPER 5**

Roll No									
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Time: 3 hours**Max. Marks: 75****Note:** This question paper contains two parts A and B

Part A is compulsory which carries 25 marks and Answer all questions.

Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer FIVE Questions, Choosing ONE Question from each SECTION and each Question carries 10 marks.

PART – A**(25 Marks)****1.**

- (a) What are the advantages of direct form –II structures when compared to direct form –I **(2M)**
- (b) Distinguish between periodic and aperiodic signals. **(3M)**
- (c) What is the need for FFT algorithm? **(2M)**
- (d) Find the DFT of $x(n) = \{1,1,1,1\}$. **(3M)**
- (e) Compare Butter worth and Chebyshev filters **(2M)**
- (f) What are the properties of Bilinear Transformations? **(3M)**
- (g) Write the important features of FIR filters. **(2M)**
- (h) Write the steps involved in FIR Filter Design using windows **(3M)**
- (i) What are the advantages of multi-rate signal processing **(2M)**
- (j) List out the applications of multi-rate signal processing. **(3M)**

PART – B**(50 Marks)****SECTION – I**

2. Check whether the following systems are Causal or non-causal and also verify Static or dynamic. **(10M)**
- i) $y(n) = x(n)x(n-2)$
- ii) $y(n) = a^n u(n)$

(OR)

3. Define various elementary discrete- time signals. Indicate them graphically. **(10M)**

SECTION – II

4. Determine the linear convolution of the following sequences using overlap-add and overlap save methods $x(n) = \{1, -2, 2, -1, 3, -4, 4, -3\}$, $h(n) = \{1, -1\}$ **(10M)**

(OR)

5. Compute the 8-point DFT of $x(n) = \{2, 2, 2, 2, 1, 1, 1, 1\}$ by using Radix-2 DIT FFT algorithm. **(10M)**

SECTION – III

6. Determine the system function $H(z)$ of the lowest order Chebyshev IIR digital filter with the following specifications: **(10M)**
- 3dB ripple in pass band $0 \leq \omega \leq 0.2\pi$
- 25 dB attenuation in stopband $0.45\pi \leq \omega \leq \pi$

(OR)

7. Design a digital Butterworth filter for the following specifications using impulse invariant method. **(10M)**

$$\begin{aligned} 0.8 \leq |H(w)| \leq 1 & \quad 0 \leq w \leq 0.2\pi \\ |H(w)| \leq 0.2 & \quad 0.32\pi \leq w \leq \pi \end{aligned}$$

SECTION – IV

8. Design a filter with: **(10M)**

$$\begin{aligned} H_d(e^{jw}) &= e^{-j3w} & -\frac{\pi}{4} \leq w \leq \frac{\pi}{4} \\ &= 0 & \frac{\pi}{4} \leq |w| \leq \pi \end{aligned}$$

using Hamming window with $N = 7$.

(OR)

9. Explain in detail about design of IIR digital filters using Window Techniques. **(10M)**

SECTION – V

10. Consider the signal $x(n) = a^n u(n)$, $|a| < 1$. **(10M)**

- i) Determine the spectrum of the signal.
- ii) The signal is applied to an interpolator that increases sampling rate by a factor of 2.

(OR)

11. Let $x(n) = \{1, 3, 2, 5, -1, -2, 2, 3, 2, 1\}$, find **(10M)**

- (a) Up sample by 2 times and down sample by 4 times
- (b) Down sample by 4 times and up sample by 2 times

Code No: R15A0417

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

III B.Tech II Semester supplementary Examinations, Nov/Dec 2018**Electronic Measurements & Instruments****(ECE)**

Roll No									
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Time: 3 hours**Max. Marks: 75****Note:** This question paper contains two parts A and B

Part A is compulsory which carries 25 marks and Answer all questions.

Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer FIVE Questions, Choosing ONE Question from each SECTION and each Question carries 10 marks.

PART – A**(25 Marks)**

- (a) List any four static characteristics of a measuring system. [2M]
(b) What is an error? What is calibration? [3M]
(c) What are the general requirements of signal generator? [2M]
(d) Give few useful applications of spectrum analyzer. [3M]
(e) What is a Lassajous Figure? [2M]
(f) Explain what is meant by the deflection sensitivity of a CRO? [3M]
(g) What is meant by gauge factor of a strain gauge. [2M]
(h) What are active and passive Transducers?. [3M]
(i) Define data acquisition system. [2M]
(j) Write the applications of Wheatstone bridge. [3M]

PART – B**(50 Marks)****SECTION – I**

- a) Explain the Performance characteristics of measurement system. [6M]
b) Explain about AC voltmeters in detail. [4M]

(OR)

- a) With a neat diagram explain in detail the construction of Multimeter. [5M]
b) What are the different types of errors in measurement? Explain. [5M]

SECTION – II

- a) Describe the working of Heterodyne wave analyzer with the block diagram [5M]
b) Describe the working of a pulse and square wave generator. [5M]

(OR)

- Explain with neat diagrams, the working of the following: [2*5=10]
i) Spectrum analyzer
ii) RF Signal generator.

SECTION – III

- a) Draw the block diagram time base circuit and explain its operation. [5M]
b) Explain block diagram of Dual Beam Oscilloscope with neat diagram. [5M]

(OR)

- a). Draw the block diagram of a CRO and explain the function of each block. [5M]
b) Draw and explain about Storage Oscilloscope with neat diagram. [5M]

SECTION – IV

8. a) Explain the hotwire anemometer. [4M]
b) Explain the construction and operation of Resistance Thermometer and write its applications. [6M]

(OR)

9. a) Explain the construction and operation principles of Linear Variable Differential Transformer (LVDT). [6M]
b) Explain Magnetostrictive Transducers and write its merits, demerits and applications. [4M]

SECTION – V

10. a) Draw a circuit diagram of Kelvin bridge and derive the equation for determining unknown quantities. [5M]
b) Describe with suitable sketches, various basic schemes for measurement of pressure. [5M]

(OR)

11. a) Explain the data acquisition system with neat block diagram. [5M]
b) Draw neat sketch and describe the construction of a capacitive transducer for measurement of liquid level. [5M]

Code No: R15A0417

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

III B.Tech II Semester Regular Examinations, April/May 2018

Electronic Measurements & Instruments

(ECE)

Roll No										
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Time: 3 hours**Max. Marks: 75****Note:** This question paper contains two parts A and B

Part A is compulsory which carries 25 marks and Answer all questions.

Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer FIVE Questions, Choosing ONE Question from each SECTION and each Question carries 10 marks.

PART – A**(25 Marks)**

1. (a) What are the sources of errors in DC voltage measurement? [2M]
- (b) Define the term accuracy and term precision. [3M]
- (c) What is meant by harmonic distortion. [2M]
- (d) Draw the block diagram of basic wave analyzer. [3M]
- (e) Explain what are the essential components of a CRT. [2M]
- (f) Write the applications of CRO. [3M]
- (g) Define Force and displacement Transducers. [2M]
- (h) Explain Magnetostrictive Transducers. [3M]
- (i) Write the applications of Kelvin bridge. [2M]
- (j) What is the difference between pressure and vacuum pressure. [3M]

PART – B**(50 Marks)****SECTION – I**

2. a) Explain the static and dynamic characteristics of an instrument. [6M]
 - b) What are the different types of errors in measurement? Explain. [4M]
- (OR)**
3. a) With a neat diagram explain in detail the construction of DC voltmeter using PMMC Instrument. [6M]
 - b) How do you measure large currents in PMMC. [4M]

SECTION – II

4. Describe the working of function generator with the block diagram. [10M]

(OR)

5. a) Describe the working of a sweep frequency generator. [5M]
- b) Explain the distortion analyzer with the help of suitable diagrams. [5M]

SECTION – III

6. a) Draw the block diagram of a CRO and explain the function of each block. [5M]
b) Explain block diagram of Dual Trace Oscilloscope with neat diagram. [5M]

(OR)

7. a) Draw the block diagram of CRT and explain each part. Explain the how would you measure frequency using CRO. [5M]
b) Draw and explain about Sampling Oscilloscope with neat diagram. [5M]

SECTION – IV

8. a) Explain Bounded and unbounded wire strain gauges. [4M]
b) Explain the construction and operation of Thermocouples and write its applications. [6M]

(OR)

9. a) Explain the construction and operation principles of Linear Variable Differential Transformer (LVDT). [6M]
b) Explain Piezoelectric Transducers. [4M]

SECTION – V

10. Draw a circuit diagram of Wheat stone bridge and derive the equation for determining unknown quantities and also calculate current at unbalanced condition. [10M]

(OR)

11. a) Describe with suitable sketches, various basic schemes for measurement of vacuum Pressure. [5M]
b) Explain the Measurement of Humidity and Moisture. [5M]

R13

Code No: 115AM

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**B.Tech III Year I Semester Examinations, March - 2017****ELECTRONIC MEASUREMENTS AND INSTRUMENTATION****(Electronics and Communication Engineering)****Time: 3 hours****Max. Marks: 75****Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A**(25 Marks)**

- 1.a) Define Accuracy. [2]
- b) What is meant by D'Arsonval Movement? [3]
- c) What is meant by Harmonic Distortion? [2]
- d) What is Sweep frequency generator? [3]
- e) What is the function of electron gun? [2]
- f) List the different control knobs available on the front panel of the CRO. [3]
- g) Define Gauge factor. [2]
- h) What is the purpose of Hotwire Anemometer? [3]
- i) List the advantages of Wheatstone bridge. [2]
- j) What is the method for the measurement of Liquid level? [3]

PART - B**(50 Marks)**

- 2.a) Discuss briefly the different types of static errors of a measuring instrument.
- b) Explain the working of a true RMS voltmeter with the help of a suitable block diagram. [5+5]

OR

- 3.a) Explain the working of Ramp type DVM.
 - b) Discuss the advantages of a digital voltmeter over an analog voltmeter. [5+5]
- 4.a) Discuss the working of spectrum analyzer with its basic circuit.
 - b) Explain the working of Power Analyzer with a neat diagram. [5+5]

OR

- 5.a) With a neat diagram explain the working of Pulse and Square wave generator.
 - b) Explain the working of Capacitance-Voltage meter. [5+5]
- 6.a) Briefly explain the different types of storage oscilloscopes.
 - b) What is the role of Time base generator? Explain. [5+5]

OR

- 7.a) What is sampling oscilloscope? Mention its advantages and disadvantages.
- b) Explain how time and frequency is measured using CRO. [5+5]

- 8.a) What are the factors to be considered for the selection of better transducer? Explain.
b) Explain the principle and working of an LVDT. [5+5]

OR

- 9.a) What is a transducer? Explain the working of Variable Capacitance transducer.
b) A 100Ω strain gauge with a gauge factor of 1 is affixed to a metal bar. The bar is stretched and this causes a change in resistance of 0.001Ω . Find the change in length if the original length is 10cm. [5+5]
- 10.a) With a neat diagram explain the working of Maxwell Bridge.
b) Explain the methods for the measurement of temperature. [5+5]

OR

- 11.a) What are the limitation of Wheat stone's bridge? Derive the balance equation of Kelvin's double bridge for unknown low resistance.
b) Discuss the principle of working of Displacement meters. [5+5]

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Code No: 115AM**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****B. Tech III Year I Semester Examinations, November - 2015****ELECTRONIC MEASUREMENTS AND INSTRUMENTATION****(Electronics and Communication Engineering)****Time: 3 hours****Max. Marks: 75****Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks.

PART - A (25 Marks)

- 1.a) Distinguish between accuracy and precision. [2]
- b) Enumerate the salient features of a measuring system. [3]
- c) What is Barkhausen Criteria for sustained oscillation? [2]
- d) Draw the block diagram of spectrum analyzer. [3]
- e) What will happen when sweep signal is applied to horizontal plates of CRO? [2]
- f) Draw the internal structure of CRT and list its functions. [3]
- g) What are the factors to be considered for selections of transducers? [2]
- h) What are the applications of LVDT? [3]
- i) Give the significance of Kelvin Bridge. [2]
- j) Write about velocity measurement system. [3]

PART - B (50 Marks)

- 2.a) Describe the Operating Principle involved in the integrating type digital voltmeter with a neat block diagram.
- b) List out the advantages of Digital Voltmeter over other voltmeters. [6+4]

OR

- 3.a) How do you extend the range of a given ammeter and voltmeter?
- b) Explain different types of errors in digital voltmeters. [5+5]

- 4.a) State the application of a spectrum analyzer.
- b) Draw the block diagram of a distortion measuring component type meter and explain its working. [5+5]

OR

5. Discuss the following with neat block diagram.
 - a) Pulse wave generator
 - b) Square wave generator. [5+5]

6. How does the Digital storage Oscilloscope differ from the conventional storage oscilloscope using a storage cathode ray tube? What are the advantages of each? [10]

OR

7. Discuss about the electrostatic focusing deflection system of a CRO with necessary diagrams. [10]

8. What is meant by Piezo electric transducer? Explain its working with a neat block diagram. [10]

OR

9. Describe the construction and working of potentiometer type resistance transducer for measuring linear displacement. [10]

10. Draw the block diagram of analog data acquisition system and explain the function of the components. [10]

OR

11. Explain how the Humidity and Moisture are measured. [10]

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Code No: 115AM**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****B. Tech III Year I Semester Examinations, November/December - 2016****ELECTRONIC MEASUREMENTS AND INSTRUMENTATION****(Electronics and Communication Engineering)****Time: 3 hours****Max. Marks: 75****Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

(25 Marks)

- 1.a) Define accuracy and precision. [2]
- b) What is loading effect in voltmeter? [3]
- c) Compare Moving coil with Moving iron instruments. [2]
- d) Draw the internal structure of CRT and list its functions. [3]
- e) Draw the block diagram of spectrum analyzer. [2]
- f) What are the advantages of digital instruments over analog instruments? [3]
- g) Draw the block diagram of Digital Data Acquisition System. [2]
- h) Name the different temperature sensors and their advantages. [3]
- i) State the LVDT principle. [2]
- j) Explain the procedure of air-flow measurement. [3]

PART - B**(50 Marks)**

- 2.a) Explain about source for different types of errors and precautions to minimize them.
 - b) The accuracy of five digital voltmeters are checked by using each of them to measure a standard 1.0000V from a calibration instrument. The voltmeter readings are as follows: $V_1=1.001v$, $V_2=1.002v$, $V_3=0.999v$, $V_4=0.998v$ and $V_5=1.0000v$. Calculate the average measured voltage and the average deviation. [5+5]
- OR**
- 3.a) With a neat diagram, explain the working of a True RMS responding volt meter.
 - b) A PMMC instrument has FSD of $100 \mu A$ and a coil resistance of $1K \Omega$. Calculate the required shunt resistance value to convert the instrument into an ammeter with (i) FSD=100mA and (ii) FSD=1A. [5+5]
- 4.a) What is the principle of harmonic distortion analyzer? Explain its operation with the help of a functional block diagram.
 - b) Compare the selectivity characteristics of the Spectrum Analyzer and Heterodyne Wave Analyzer. [5+5]
- OR**
- 5.a) With a neat sketch explain the operation of a heterodyne type wave analyzer.
 - b) Explain the following www.ManuResulUs.co.in characteristics of a Spectrum Analyzer.
i) Sensitivity ii) Dynamic Range iii) Harmonic Mixing [5+5]

- 6.a) Explain how Lissajous figures are used to determine the characteristics of unknown input. Show how to estimate input if the pattern is (i) Circle (ii) Ellipse (iii) Parabola.
b) Derive an expression for electrostatic deflection sensitivity of a CRO. [5+5]

OR

- 7.a) Draw the block diagram of storage oscilloscope and explain the function of each block.
b) Derive the expression for vertical deflection of electron beam in CRT. [5+5]

- 8.a) Explain how LVDT is used to measure linear displacement.
b) Show that a parallel plate capacitor serves as the most suitable transducer for measurement of linear and angular displacements. [5+5]

OR

- 9.a) Show that a parallel plate capacitor serves as the most suitable transducer for measurement of linear and angular displacements.
b) A transducer that measures force has nominal resting resistance of $300\ \Omega$ and is excited by 7.5V . When a 980 dyne force is applied, all four equal resistance bridge elements change resistance by $5.2\ \Omega$. Find the output voltage E_o . [5+5]

- 10.a) The basic AC bridge consists of the following constants:
AB: $R=400\ \Omega$, BC: $R=150\ \Omega$, CD: unknown and DA: $R=100\ \Omega$ in series with $L=10\text{mH}$. Oscillator frequency is 1KHz . Determine the constants of arm CD.
b) What is Wien's bridge? Derive the expression for the frequency. [5+5]

OR

- 11.a) Explain different methods of liquid level measurements.
b) Explain different steps adopted by a controller in data acquisition in asynchronous Mode. When asynchronous method of data acquisition is required. [5+5]

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Code No: R15A0414

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
III B.Tech II Semester supplementary Examinations, Nov/Dec 2018
Microprocessors and Microcontrollers
(ECE)

Roll No										
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Time: 3 hours**Max. Marks: 75****Note:** This question paper contains two parts A and B

Part A is compulsory which carries 25 marks and Answer all questions.

Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer FIVE Questions, Choosing ONE Question from each SECTION and each Question carries 10 marks.

PART – A (25 Marks)**1.**

- a) What is the purpose of segment registers in 8086? [2M]
- b) What is the need of a flag register in 8086. [3M]
- c) Define Procedure. Write down the syntax & example of Procedure definition [2M]
- d) Classify the Instruction sets available in 8086. [3M]
- e) What are the basic modes of operation of 8255? [2M]
- f) State the cascading signals of 8259programmable interrupt controller. [3M]
- g) Compare Microprocessor and Microcontroller. [2M]
- h) What are the different group of instructions supported by 8051. [3M]
- i) Draw the diagram for Interrupt Priority register. [2M]
- j) Draw the diagram for TCON and TMOD register. [3M]

PART – B**(50 Marks)****SECTION – I**

2. a) Explain the register organization of 8086 microprocessor. [5M]
- b. What is memory segmentation ? Explain the use of segmentation in different applications. [5M]

(OR)

- 3.a) With a neat sketch describe the Minimum and Maximum mode of operation of 8086. [5M]
- b. Discuss in detail the various signals of 8086. [5M]

SECTION – II

- 4.a) Write an 8086 assembly language program to sort an array of data in descending order. [5M]
- b.) Discuss about the different Address Modes of 8086. Give Example for each type [5M]

(OR)

- 5.a) Write an 8086 assembly language program to multiply two 8 bit binary numbers. [5M]
- b.) Explain in detail about the Stack Structure of 8086. Write a sample program to illustrate the concept of programming the stack. [5M]

SECTION – III

- 6.a) Explain about I/O Interfacing and Memory Interfacing with 8086 with an example? [5M]
- b.) Draw the Block diagram and explain the operations of 8251 serial communication interface? [5M]

(OR)

- 7.a) Draw the Block diagram of 8255 and explain the functions of each block. [5M]
- b.) Draw the Block diagram of 8257 DMA controller and explain its operations. [5M]

SECTION – IV

- 8.a) With the functional block diagram, explain the architecture of 8051 microcontroller. [5M]
b.) Write an Assembly Language Program using 8051, i) Addition of two 8 bit Numbers ii). Multiplication of two 8 bit Numbers [5M]

(OR)

- 9.a) Draw the Pin diagram of 8051 Microcontroller and explain the functions of each pin. [5M]
b.) Discuss in detail about the Addressing Modes of 8051 Microcontroller. [5M]

SECTION – V

10.a) Explain about the Timers of 8051 with its Modes of Operation, and the Registers used for 8051 Timers. [5M]

b.) What are the interrupts available in 8051? Explain about the Interrupt Structure. [5M]

(OR)

11. Explain about the Serial data communication of 8051 with its registers. Also explain about the Modes of operation of the same. [10M]

Code No: 126EM**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****B. Tech III Year II Semester Examinations, December - 2017****MICROPROCESSORS AND MICROCONTROLLERS****(Common to ECE, ETM)****Time: 3 hours****Max. Marks: 75****Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A**(25 Marks)**

- 1.a) Which type of operation indicated by status lines of 8086? [2]
- b) What are the capabilities of I/O address lines of microprocessor? [3]
- c) Define the term macro's. [2]
- d) Give the advantages of assembly language over machine language. [3]
- e) Define the term Interrupt. [2]
- f) List out the difference between static and dynamic memories. [3]
- g) What is the function of Port 3 of 8051 microcontroller? [2]
- h) What is the function of clock generator of 8051? What are the signals are used for clock in 8051. [3]
- i) What is the function of Timer? [2]
- j) How does effect the SBUF SFR in serial communications of 8051? [3]

PART - B**(50 Marks)**

- 2.a) Draw and explain the each bit of flag register of 8086 family microprocessor.
 - b) Describe the implementation of pipelined process of 8086. [5+5]
- OR**
- 3.a) Draw and explain the read and write cycle timing diagrams of 8086 in maximum mode.
 - b) Explain the physical memory organization of 8086 system. [6+4]
4. Enlist the addressing modes of 8086 and describe briefly each addressing mode with one example. [10]
- OR**
5. Explain the all assembler directives of 8086 with suitable examples. [10]
- 6.a) Interface Eight 8K RAM chips and Four 8K×4 EPROM chips with 8086 so as to form a completely working system configuration.
 - b) Explain the interfacing procedure of an 8-bit ADC with 8086 microprocessor. [5+5]
- OR**
- 7.a) Explain the briefly the different modes operation of 8255 PPI.
 - b) Draw and explain the synchronous mode transmitter and receiver data formats of 8251. [5+5]

8. Draw and explain the internal architecture of 8051 family microcontroller and explain each block of it. [10]

OR

9.a) Describe briefly the register set of 8051 microcontroller.

b) Explain the importance of data transfer type instructions of 8051. [5+5]

10. Draw and explain the following SFRs. [5+5]

a) IE b) IP

OR

11.a) Write and explain the instructions to read the SBUF eight times with an interval of 0.33ms and save the results between the R0 and R7 of the register bank 0.

b) How does the timer overflow interrupt differ from real time clocked interrupts? Discuss in detailed. [5+5]

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Code No: 126EM

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**B. Tech III Year II Semester Examinations, May - 2017****MICROPROCESSORS AND MICROCONTROLLERS****(Common to ECE, ETM)****Time: 3 hours****Max. Marks: 75****Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A**(25 Marks)**

- 1.a) Name the fourteen registers used for 8086 microprocessor? [2]
- b) Draw the flag register bits in 8086 microprocessor. [3]
- c) Write a program to find the factorial of 4 using 8086 microprocessor. [2]
- d) What is the purpose of using macro's? [3]
- e) What are the different memories used to interface 8086 microprocessor? [2]
- f) Give the serial communication standards. [3]
- g) Write about PSW used in 8051 microcontroller. [2]
- h) Write TCON special function register used in 8051 microcontroller. [3]
- i) What are different types of interrupts are used in 8051 microcontroller? [2]
- j) Draw the timer/counter control logic diagram in 8051 microcontroller. [3]

PART - B**(50 Marks)**

- 2.a) Explain about the architecture of 8086 microprocessor with a neat sketch.
- b) Draw the timing diagram used for minimum mode of chip diagram of 8086 microprocessor. [5+5]

OR

- 3.a) Explain signal description of 8086 microprocessor.
 - b) What is an interrupt? Explain various types of interrupts in 8086 microprocessor. [5+5]
- 4.a) Explain various addressing modes of 8086 microprocessor.
 - b) Describe the instruction set of 8086 microprocessor: [5+5]
 - i) SHR
 - ii) ADD
 - iii) DAA
 - iv) CMP
 - v) CBW

OR

- 5.a) Write a program for finding multibyte addition using 8086 microprocessor.
 - b) Write a program to print a string 'MICRO' using 8086 microprocessor. [5+5]
- 6.a) Describe the interfacing of D/A Converter with a neat sketch.
 - b) Explain about the mode 2 operation used in 8255 PPI in detail. [5+5]

OR

- 7.a) Explain about the architecture of 8251 USART with a neat sketch.
- b) Write a short notes on www.ManalResults.co.in [5+5]

- 8.a) Write an overview of 8051 microcontrollers.
b) Write a program to find 1's and 2's complement of a number using 8051 microcontroller. [5+5]

OR

- 9.a) Write a program to find 8-bit subtraction using 8051 microcontroller.
b) Write a program to add 16 bit numbers using 8051 microcontroller. [5+5]
- 10.a) Describe the timer mode 0 used in 8051 microcontroller with a neat sketch.
b) Describe the timer mode 1 used in 8051 microcontroller with a neat sketch. [5+5]

OR

- 11.a) Describe the timer mode 3 used in 8051 microcontroller.
b) Write a short notes on external interrupts in 8051 microcontroller. [5+5]

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R13

Code No: 126EM

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**B. Tech III Year II Semester Examinations, April - 2018****MICROPROCESSORS AND MICROCONTROLLERS****(Common to ECE, ETM)****Time: 3 hours****Max. Marks: 75****Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A**(25 Marks)**

- 1.a) When does the 8086 processor is in minimum mode and maximum mode? [2]
- b) List different types of 8086 hardware interrupts. [3]
- c) Write the different logical instructions of 8086. [2]
- d) Give the advantages of assembly language over machine language. [3]
- e) Give the RS 232 Standard details. [2]
- f) List out the important features of the A/D converter. [3]
- g) What is push and POP instructions in 8051? [2]
- h) What is the difference between microprocessor and micro controller? [3]
- i) Draw the read cycle timing diagram for 8086 under minimum mode of operation. [2]
- j) How does effect the SBUF SFR in serial communications of 8051? [3]

PART-B**(50 Marks)**

- 2.a) Explain the concept of segmented memory. What are the advantages? [5+5]
- b) Describe the implementation of pipelined process of 8086. [5+5]

OR

3. Explain the internal hardware architecture of 8086 microprocessor with neat diagram. [10]

- 4.a) Write an 8086 ALP to find the sum of numbers in the array of 10 elements. [5+5]
- b) Explain any five assembler directives of 8086 with suitable examples. [5+5]

OR

- 5.a) Write an assembly language program (ALP) which counts the number of A's and a's in a string of characters [5+5]
- b) Explain the function of the following instructions. [5+5]
 - i) AAD ii) MOVSB iii) LAHF
 - iv) JNZ v) LEA vi) DAD

- 6.a) Explain the briefly the different modes operation of 8255 PPI. [5+5]
- b) Draw and explain the synchronous mode transmitter and receiver data formats of 8251. [5+5]

OR

- 7.a) Write a program to interface 4×4 keyboard to 8086 through ports A and B operating at I/O base addresses 0FFF9. Draw the necessary interface details.
- b) Explain the interfacing procedure of an 8-bit DAC with 8086 microprocessor. [5+5]
- 8.a) Explain SCON register programming in 8051.
- b) Write an ALP to generate the 1 kHz square wave form using mode 1 timer programming. [5+5]

OR

- 9.a) Explain the I/O pins ports and circuit details of 8051 with its diagram.
- b) Write a program to multiply the data in RAM location 3AH by the number 11H. Put the result in R4 and R5 registers. [5+5]
- 10.a) Explain: i) TCON ii) TMOD registers in detail.
- b) Discuss about 8051 serial port programming. [5+5]

OR

- 11.a) How does 8051 process generate the ISR address on an un-marked interrupt?
- b) How does timer over flow interrupts differ from real time clocked interrupts? [5+5]

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MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY**(Autonomous Institution – UGC, Govt. of India)****III B.Tech II Semester Regular Examinations, April/May 2018****Microprocessors and Microcontrollers****(ECE)**

Roll No									
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Time: 3 hours**Max. Marks: 75****Note:** This question paper contains two parts A and B

Part A is compulsory which carries 25 marks and Answer all questions.

Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer FIVE Questions, Choosing ONE Question from each SECTION and each Question carries 10 marks.

PART – A**(25 Marks)****1**

- What is the use of Instruction Pointer in 8086? (2M)
- What are the two modes of operations present in 8086? (3M)
- Differentiate Macros and Procedures. (2M)
- What are the types of Addressing modes of 8086? (3M)
- What is an USART? (2M)
- Give the Modes of operation of 8255? (3M)
- List the features of 8051 microcontroller? (2M)
- Write the difference between microprocessors and microcontroller. (3M)
- Describe the timer modes of operation. (2M)
- Explain the pipe line concept of ARM processor.? (3M)

PART – B**(50 Marks)****SECTION – I**

2. Explain the architecture of 8086 with neat diagram. (10M)

(OR)

3. Explain the function of following registers 8086 microprocessor. a) AX,BX,CX,DX b) CS,DS,SS, ES c) BP,SP, SI& DI d) IP and instruction queue (10M)

SECTION – II

4. Explain the instructions of 8086 with examples. (10M)

(OR)

5.a) Write an 8086 assembly language program to convert Binary to BCD number? (5M)

b.) Describe in detail about the Procedures with suitable syntax and example. (5M)

SECTION – III

6. Draw the Block diagram and explain the operations of 8255 PPI. (10M)

(OR)

7. Explain the architecture of 8251A with neat diagram. (10M)

SECTION – IV

8. a) Explain the architecture of 8051 microcontroller. (5M)

b.) Explain in detail about Ports of 8051. (5M)

(OR)

9. a) Explain about the Memory Structure of 8051. (5M)

b.) Write an Assembly Language Program using 8051, i) Addition of two 8 bit Numbers ii). Addition of two 16 bit Numbers? (5M)

SECTION – V

10 Describe the various timers/ counters of 8051. (10M)

(OR)

11.(a) Explain about the CPSR register of ARM processor (5M)

(b). Explain about data flow model of ARM processor. (5M)

Code No: R15A0413

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

III B.Tech II Semester Regular Examinations, April/May 2018

Digital Communications**(ECE)**

Roll No									
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Time: 3 hours**Max. Marks: 75****Note:** This question paper contains two parts A and B

Part A is compulsory which carries 25 marks and Answer all questions.

Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer FIVE Questions, Choosing ONE Question from each SECTION and each Question carries 10 marks.

PART – A**(25 Marks)**

1. (a) What is the function of predictor in DPCM system? [2M]
- (b) Compare PCM and DM. [3M]
- (c) Mention the advantages of BPSK. [2M]
- (d) Explain A-law and μ -law of companding in PCM systems. [3M]
- (e) Define mutual information and Entropy [2M]
- (f) Prove that $I(X;Y) = H(X)+H(Y)-H(X,Y)$ [3M]
- (g) Mention the properties of cyclic code. [2M]
- (h) Explain about the syndrome calculation. [3M]
- (i) Compare between linear block codes and convolutional codes [2M]
- (j) Write the difference between code tree and Trellis diagram [3M]

PART – B**(50 Marks)****SECTION – I**

2. (a) State and prove the sampling theorem for band limited signals. [5]
- (b) What is the difference between uniform and non-uniform quantization. [5]

(OR)

3. Draw the Delta modulation system? And Explain noise in DM. [10]

SECTION – II

4. (a) Draw and explain the operating principles of ASK Modulator. [5]
 - (b) Explain the DPSK modulation technique with help of neat diagram [5]
- (OR)**
5. Explain the coherent detection of FSK and also derive the expression for probability of error. [10]

SECTION – III

6. (a) Explain about the bandwidth and signal to noise ratio trade off? [5]
- (b) Define conditional entropy. Explain how it is related to mutual information. [5]

(OR)

7. Given six messages $X_1, X_2, X_3, X_4, X_5, X_6$ with probabilities $P(X_1)=1/3, P(X_2)=1/4, P(X_3)=1/8, P(X_4)=1/8, P(X_5)=1/12, P(X_6)=1/12$. Find the Shannon-Fano code. Evaluate the coding efficiency. [10]

SECTION – IV

8. Consider the (15,9) cyclic code generated by $G(p) = p^6+p^5+p^4+p^3+1$, draw the encoder and Syndrome calculator. [10]

(OR)

9. (a) Briefly discuss about a linear block code error control technique .[5]
(b) Briefly discuss about Parity check bit error control technique. [5]

SECTION – V

10.

For the convolutional encoder shown in figure 2, determine the following:

- | | |
|--|-----|
| a. Dimension of the code | [3] |
| b. Constraint length | [3] |
| c. Generating sequences (impulse responses) | [2] |
| d. Output sequence for the message sequence of $m = (1 0 0 1 1)$ | [2] |

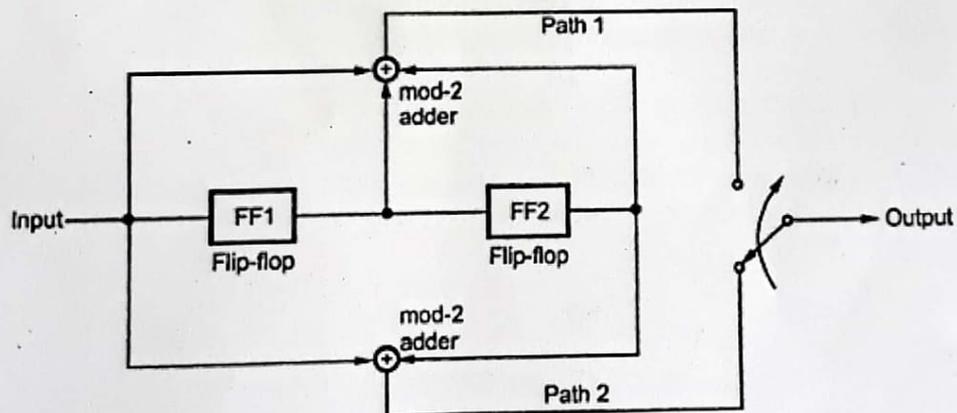


Fig 2: Convolutional Encoder

11. Explain generation of convolutional code using an example. Also explain the term constraint length and its significance in convolutional code. [10]

Code No: R15A0413

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

III B.Tech II Semester supplementary Examinations, Nov/Dec 2018

Digital Communications

(ECE)

Roll No									
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Time: 3 hours**Max. Marks: 75****Note:** This question paper contains two parts A and B

Part A is compulsory which carries 25 marks and Answer all questions.

Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer FIVE Questions, Choosing ONE Question from each SECTION and each Question carries 10 marks.

PART – A**(25 Marks)**

1. (a) Discuss the drawbacks of DM System [2M]
- (b) Write the advantages of digital communication [3M]
- (c) Compare QPSK and other digital modulation schemes [2M]
- (d) Define base band transmission [3M]
- (e) What is Hartley Shannon law? [2M]
- (f) What is aliasing effect? [3M]
- (g) Explain about error correction and error detection in (n, k) cyclic codes [2M]
- (h) Explain the principle of linear block codes [3M]
- (i) Write the advantages of convolution codes [2M]
- (j) Compare between Code tree and Trellis diagram [3M]

PART – B**(50 Marks)****SECTION – I**

2. (a) Derive the expression for signal to quantization noise ratio in PCM system. [6M]
- (b) Explain DPCM transmitter with a neat diagram . [4M]

(OR)

3. (a) Draw and explain the elements of digital communication system?[7M]
- (b) List out the applications of DPCM[3]

SECTION – II

4. (a) Derive an expression for error probability of non-coherent ASK scheme. [5M]
- (b) Describe the BPSK modulation technique with help of neat diagram. [5M]

(OR)

5. (a) Explain the working of non-coherent FSK detector.[5M]
- (b) Explain optimum filter using correlator . [5M]

SECTION – III

6. A source emits different symbols a, b, c, d, e with respective probabilities 0.1, 0.2, 0.1, 0.1, 0.5. Obtain the code words using Huffman coding and also calculate entropy. [10M]

(OR)

7. Explain the concept of amount of information and its properties. And prove at least three properties. [10M]

SECTION – IV

8. Design a syndrome calculator for a (7, 4) cyclic Hamming code generated by the polynomial $G(p) = p^3 + p + 1$. Calculate the syndrome for $Y = (1001101)$. [10M]

(OR)

9. (a) Explain how to decode cyclic codes.[5M]

(b) Give the matrix description of linear block codes. [5M]

SECTION - V

10. Draw the state diagram, tree diagram, and trellis diagram for $k=3$, rate= $1/3$ code generated by $g_1(x) = 1+x^2$, $g_2(x) = 1+x$, $g_3(x) = 1+x+x^2$. [10M]

(OR)

11. (a) Explain the decoding of convolution codes using Viterbi algorithm. [7M]

(b) Discuss about tree and state diagram. [3M]

Time: 3 hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A (25 Marks)

- 1.a) What are the drawbacks of delta modulation? [2]
- b) Explain the need for non-uniform quantization in digital communication. [3]
- c) Draw the Signal space Diagram of ASK. [2]
- d) List out the Advantages of Pass band Transmission over Baseband transmission. [3]
- e) Define Entropy. [2]
- f) Derive the Expression for the Information Rate. [3]
- g) Explain in one sentence about (i) Block Size (ii) Linear block codes. [2]
- h) List out Properties of Cyclic Codes. [3]
- i) Briefly explain about "Spread spectrum." [2]
- j) What is Frequency hopping spread spectrum? [3]

PART - B (50 Marks)

- 2.a) With neat block diagram, Explain the process of Sampling and Quantization in digital communication.
 - b) Derive the expression for the Quantization error. [5+5]
- OR
- 3.a) Explain about the noise in PCM systems.
 - b) Write the comparison between PCM and Analog modulation techniques. [5+5]
- 4.a) With neat diagrams and equations, explain about PSK system.
 - b) Draw the space representation of BPSK. And also draw its waveforms? [5+5]
- OR
- 5.a) The bit stream 1011100011 is to be transmitted using DPSK. Determine the encoded sequence and transmitted phase sequence.
 - b) Explain about DPSK system. And also give the comparison between DPSK and PSK. [5+5]
- 6.a) What is the need of pulse shaping for optimum transmission in baseband transmission? Explain.
 - b) What is meant by Cross talk? Explain in detail about the causes for cross talk. [5+5]
- OR
- 7.a) Briefly explain about Variable length coding.
 - b) Explain in detail about Huffman coding and Lossy source code. [5+5]

8.a) Write short notes on Hamming codes.

b) Explain about Error detection and Correction capabilities of Hamming codes. [5+5]

OR

9.a) Explain how Parity checking can be used for error detection or error correction.

b) For a linear block code, prove with example that:

i) The Syndrome depends only on error pattern and not on transmitted code word?

ii) All error patterns that differ by a codeword have the same syndrome? [5+5]

10.a) Explain the role of code division multiple access technique in present generation?

b) Give a brief history about direct sequence spread spectrum. [5+5]

OR

11.a) Explain about PN-Sequences generation and their characteristics.

b) What is meant by Synchronization? Why we require synchronization in spread spectrum? Explain in detail. [5+5]

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Code No: 126AN

R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, HYDERABAD

B.Tech III Year II Semester Examinations, October/November-2016

DIGITAL COMMUNICATIONS

(Electronics and Communication Engineering)

Time: 3 hours

Max. Marks: 75

Note: This question paper contains two parts A and B. Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

- 1.a) Compare PCM and DM. [2]
- b) Write the advantages of digital communication. [3]
- c) Define QPSK. [2]
- d) Draw the block diagram of the PLL. [3]
- e) Define Baseband transmission. [2]
- f) Define conditional entropy. [3]
- g) Mention the properties of cyclic code. [2]
- h) Write the advantages of convolution codes. [3]
- i) List out the applications of CDMA. [2]
- j) Define spread spectrum. List its uses. [3]

PART - B

(50 Marks)

- 2.a) What is Hartley Shannon law? And explain sampling theorem.
 - b) With a neat sketch describe ADPCM concept. [5+5]
- OR
- 3.a) Explain the tradeoff between bandwidth and signal to noise ratio.
 - b) Distinguish between analog communication and digital communication. [5+5]
- 4.a) Draw and explain the operating principle of ASK Modulator.
 - b) Describe the BPSK modulation technique with the help of a neat diagram. [5+5]
- OR
- 5.a) Explain the DPSK modulation technique with the help of a neat sketch.
 - b) Explain the working of non-coherent FSK detector. [5+5]
- 6.a) Draw and explain the working of optimum receiver with a neat diagram.
 - b) Define eye diagram. Draw the eye diagram for FSK. [5+5]
- OR
- 7.a) Explain Huffman coding with an example.
 - b) Explain crosstalk concept. [5+5]

8.a) Describe the algebraic structure of cyclic codes. [5+5]
b) Explain how to encode cyclic codes. [5+5]

OR

9.a) Give the matrix description for linear block codes.
b) Decode convolution process using viterbi algorithm. [5+5]

10.a) What are the characteristics of PN sequences? Explain [5+5]
b) Describe the process of code division multiple access in detail. [5+5]

OR

11.a) Describe with a neat sketch the direct sequence Spread spectrum technique.
b) Describe the concept of Ranging using DSSS. [5+5]

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MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

B.Tech III Year II Semester Examinations, 2017

DIGITAL COMMUNICATIONS

(Electronics and Communication Engineering)

Model Question Paper-1

Time: 3 hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is Compulsory which carries 25 marks .Answer all questions in Part A. Part B consists of 5 Units.

Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c, as sub Questions

PART-A

(25 Marks)

1. Answer all the following questions:
 - a. What is aliasing effect? How it can be removed?
 - b. What is hunting in Delta modulation?
 - c. Draw the signal space representation for QPSK.
 - d. What are the advantages and disadvantages of DPSK when compared to PSK?
 - e. List any 2 applications of eye pattern.
 - f. What is a matched filter?
 - g. Define the terms i) Code rate ii) Code efficiency iii) Code word iv) Block length.
 - h. What is meant by systematic and non-systematic code?
 - i. What is a PN sequence?
 - j. What is Multipath Fading?

PART-B

(50 Marks)

2.
 - a. State & Discuss Hartley Shannon Law.
 - b. Explain the bandwidth-S/N tradeoff.
- OR**
3.
 - a. Discuss the advantages and disadvantages of digital communication system.
 - b. State and prove sampling theorem in time domain.
 4.
 - a. Draw the block diagram of QPSK system (modulator & detector) and explain its working.
 - b. Derive the expression for the probability of error of QPSK.
- OR**
5.
 - a. Explain non- coherent ASK detector in detail.
 - b. Explain detection of FSK using PLL
 6.
 - a. Draw the block diagram of a baseband signal receiver and explain.
 - b. Obtain the optimum filter transfer function.
- OR**
7.
 - a. State and prove properties of mutual information and entropy.

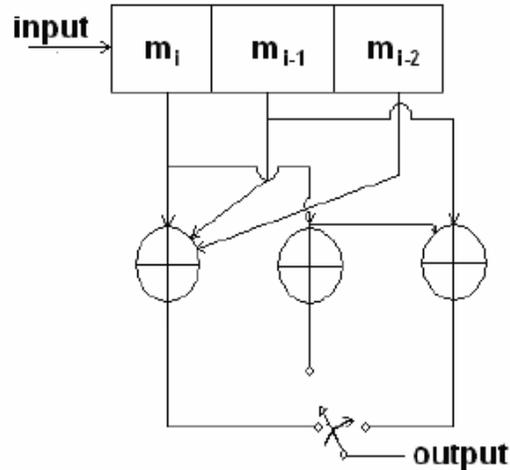
b. Prove that $H(X, Y) = H(X) + H(Y/X) = H(Y) + H(X/Y)$.

8. a. State and explain the properties of cyclic codes

b. The generator polynomial of a (7, 4) cyclic code is $x^3 + x + 1$. Construct the generator matrix for a systematic cyclic code and find the code word for the message (1101) using the generated matrix.

OR

9. a. For the convolutional encoder shown below, draw the state diagram and the trellis diagram



b. What is a convolutional code? Compare error rates in Coded and Uncoded transmission

10. a. Explain how PN sequences are generated. What are the maximal length sequences? What are their properties?

b. Explain the Direct sequence spread spectrum (DSSS).

OR

11. a. Explain the ranging using direct sequence spread spectrum.

b. Explain the slow and fast frequency hopping techniques.

Code No: R15A0416

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

III B.Tech II Semester supplementary Examinations, Nov/Dec 2018

Antennas and Wave Propagation

(ECE)

Roll No									
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Time: 3 hours**Max. Marks: 75****Note:** This question paper contains two parts A and B

Part A is compulsory which carries 25 marks and Answer all questions.

Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer FIVE Questions, Choosing ONE Question from each SECTION and each Question carries 10 marks.

PART – A**(25 Marks)**

1. (a) Define the terms “Beam Area” and “Radiation intensity. [2M]
- (b) Compare ‘Quarter wave Monopole’ and ‘Half wave Dipole’. [3M]
- (c) List out the salient features of ‘Yagi –Uda Array’. [2M]
- (d) What are the applications of ‘Horn Antennas?’ [3M]
- (e) What is the use of ‘Antennas arrays’? [2M]
- (f) How Directivity measurement is done. [3M]
- (g) Explain about Duct propagation. [2M]
- (h) Define Critical frequency. [3M]
- (i) What do you understand by M-Curves [2M]
- (j) Explain about the structure of Ionosphere [3M]

PART – B**(50 Marks)****SECTION – I**

2. Prove that the radiation resistance of half wave dipole antenna is 73 ohm . [10M]
- (OR)
3. Discuss in detail about the Far – Fields and patterns of thin Linear centre fed antennas of different lengths. [10M]

SECTION – II

4. What are ‘Microstrip antennas’? Discuss in detail about its features, advantages and limitations. [10M]

(OR)

5. List out all the steps involved in design considerations of pyramidal Horns. [10M]

SECTION – III

6. Bring out the differences between Broadside arrays and Binomial arrays. Explain in detail about binomial array including radiation pattern. [10M]

(OR)

7. Discuss in detail, about Antenna Gain measurement with respect to various methods. [10M]

SECTION – IV

8. What is line of sight propagation? Elaborate LOS using neat labeled diagram and derive the expression for the same. [10M]

(OR)

9. With a neat diagram, explain in detail the principle involved in Tropospheric Propagation its advantages, limitations and applications. [10M]

SECTION – V

10. Enumerate the concept involved in “Multihop Propagation”. Also give its advantages and limitations. [10M]

(OR)

11. Discuss in detail about the Reflection of sky waves by Ionosphere virtual height and skip distance. [10M]

Code No: R15A0416

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

III B.Tech II Semester Regular Examinations, April/May 2018

Antennas and Wave Propagation

(ECE)

Roll No										
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Time: 3 hours**Max. Marks: 75****Note:** This question paper contains two parts A and B

Part A is compulsory which carries 25 marks and Answer all questions.

Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer FIVE Questions, Choosing ONE Question from each SECTION and each Question carries 10 marks.

PART – A**(25 Marks)**

1. (a) State Helmholtz theorem. [2M]
- (b) Define the terms 'Directivity' and 'Effective Area'. [3M]
- (c) What are the functions of "Lens Antennas" [2M]
- (d) List of the characteristics of 'Microstrip'. [3M]
- (e) What are the advantages of 'End fire Arrays'. [2M]
- (f) Explain about the principle of 'Pattern Multiplication'. [3M]
- (g) Define wave tilt of ground wave propagation . [2M]
- (h) Compare Space and Surface waves with respect to any three parameters. [3M]
- (i) Define the term 'Skip distance' and give its significance. [2M]
- (j) List out the advantages of Sky wave Propagation. [3M]

PART – B**(50 Marks)****SECTION – I**

2. Discuss in detail about the concepts involved in Fields from Oscillating Dipole and Field Zones. [10M]

(OR)

3. Explain in detail about Retarded Potentials and Helmholtz theorem. [10M]

SECTION – II

4. Discuss in detail about the Geometry of Non Metallic dielectric lenses and zoning. [10M]

(OR)

5. Explain about the operating principle of helical antenna in normal mode. [10M]

SECTION – III

6. Explain in detail about the features, advantages and limitations of Uniform Linear Arrays. [10M]

(OR)

7. Explain in detail about the measurement of radiation pattern with neat diagram . [10M]

SECTION – IV

8. With respect to space wave Propagation discuss in detail about the Effect of Earths Curvature and absorption [10M]

(OR)

9. What do you understand by 'Super Refraction' Also, explain in detail about Scattering phenomena and Wave tilt. [10M]

SECTION – V

10. With new diagrams, explain about Refraction of Sky wave by Ionosphere. [10M]

(OR)

11. Derive the relation between MUF and Skip distance. Also, give the applications of Sky wave propagation. [10M]

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
DATABASE MANAGEMENT SYSTEMS – MODEL PAPER
(ECE)

Roll No										
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Time: 3 hours

Max. Marks: 75

PART – A

- a) List the advantages of DBMS?
- b) List the database Applications?
- c) Define instances and schemas of database?
- d) Discuss Data Independence?
- e) Explain database Access for applications Programs
- f) Define relational database query?
- g) State about SELECT operation in Relational algebra?
- h) State about PROJECT operation in Relational algebra?
- i) Define Aggregate Functions?
- j) Discuss the use of rename operation?

PART-B
SECTION – I

1. What is logical data independence and why is it important?

OR

2. a) What is partial key? How is it represented in ER diagram? Give an example?
b) What is a descriptive attribute? Explain?
c) Discuss the usage of ISA feature in ER diagram?

SECTION – II

3. Explain the following with examples.
a) Key constraints. b) Foreign key constraints.

OR

4. What is a view? Explain about views in detail?

SECTION – III

5. Explain the following
a) Lossless Join b) Lossless decomposition

OR

6. What are the advantages of normalized relations over the unnormalized relations?

SECTION – IV

7. a) How the use of 2PL would prevent interference between the two transactions.
b) Explain the difference between strict 2PL and rigorous 2PL?

OR

8. Explain different recovery techniques used in transaction failure?

SECTION – V

9. Explain all the operations on B+ tree by taking a sample example

OR

10. Explain B+ Trees with examples?

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
DATABASE MANAGEMENT SYSTEMS – MODEL PAPER
(ECE)

Roll No										
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Time: 3 hours

Max. Marks: 75

PART – A

- a) Define redundancy?
- b) Define First Normal Form?
- c) Define Second Normal Form?
- d) Define Third Normal Form?
- e) Define Fourth Normal Form?
- f) Define a Transaction? List the properties of transaction
- g) Discuss different phases of transaction?
- h) Discuss recoverable schedules?
- i) Discuss cascade less schedules?
- j) Define Two Phase Commit protocol?

PART-B
SECTION – I

- 1. a) Describe storage manager component of database system structure?
b) Explain levels of abstraction in DBMS

OR

- 2. Explain the E-R diagram components and notations with their extended features?

SECTION – II

- 3. Explain the following.
a) Types of Join Operations b) Set Operations

OR

- 4. a) Define Relational Algebra, tuple and domain relational calculus?
b) What are the differences between the two types of relational calculus?

SECTION – III

- 5. Define BCNF? How does BCNF differ from 3NF? Explain with an example.

OR

- 6. What is Redundancy? What are the different problems encountered by redundancy? Explain them.

SECTION – IV

- 7. What are the transaction isolation levels in SQL?

OR

- 8. Explain how concurrency execution of transactions improves overall system performance?

SECTION – V

- 9. a) What is the relationship between files and Indexes?
b) What is the search key for an Index?
c) What is Data entry in an Index

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
DATABASE MANAGEMENT SYSTEMS – MODEL PAPER
(ECE)

Roll No										
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Time: 3 hours

Max. Marks: 75

OR

10. Explain shadow-copy Technique for Atomicity and Durability.

PART – A

- a) Discuss about data on External storage?
- b) Explain Clustered Indexes?
- c) Discuss the Primary and Secondary indexes?
- d) Define Tree Indexing?
- e) Explain Hash based Indexing?
- f) Define (i) Database (ii) DBMS
- g) Explain about Database storage structure?
- h) Discuss Transaction management?
- i) Explain the Query Processor?
- j) Define (i) Entity (ii) Attribute

PART-B

SECTION – I

1. Define DBMS? List Database system applications.

OR

2. List four significant differences between a file processing system and a DBMS?

SECTION – II

- 3. a) Write a detail note on participation constraints?
b) What is the class hierarchy? How is it represented in the ER diagrams?**

OR

4. What are NULL values? Explain in detail.

SECTION – III

5. Explain FD and MVD with examples

OR

6. What is Normalization? Discuss what are the types? Discuss the 1NF, 2NF, 3NF with example?

SECTION – IV

7. What are the types of failures of a system?

OR

8. What are the two tables used in crash recovery along with log record? Explain with suitable example?

SECTION – V

9. Explain about tertiary storage media in detail?

OR

10. Explain

- a) Clustered Indexes b) Primary and Secondary Indexes

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
DATABASE MANAGEMENT SYSTEMS – MODEL PAPER
(ECE)

Roll No										
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Time: 3 hours

Max. Marks: 75

PART-A

- a) Discuss the basic form of SQL query?
- b) Define Null Values.
- c) Define tuple variable with its syntax?
- d) Define Dynamic SQL?
- e) Define Assertions?
- f) List out the Problems related to decompositions?
- g) Explain about Loss less-join dependency?
- h) Explain about BCNF?
- i) Explain about multi-valued dependencies?
- j) Define join dependency and fifth normal form?

PART-B
SECTION – I

1. Explain key constraints with an example?
- OR**
2. Discuss the query processor of database system structure?

SECTION – II

3. Explain different types of Join Operations with relevant examples.

OR

4. Explain the following in SQL with examples.
 - a) Nested Queries
 - b) Correlated Queries
 - c) Group by and Having Clauses
 - d) Triggers

SECTION – III

5. Explain about the fourth and fifth normal forms.
- OR**
6. Define Functional dependencies? How are primary keys related to functional dependencies?

SECTION – IV

7. Write the locking compatibility matrix used for multiple granularity?
Explain with suitable examples?

OR

8. Define the concept of schedule for a set of concurrent transaction. Give a suitable example.

SECTION – V

9. Explain about Tree based Indexing and Hash based Indexing.
- OR**
10. a) Explain about fixed length file organization with an example?
b) Explain about byte-string representation in detail.

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
DATABASE MANAGEMENT SYSTEMS – MODEL PAPER
(ECE)

Roll No										
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Time: 3 hours

Max. Marks: 75

PART-A

- a) Explain about locking protocols?
- b) Define timestamp based protocol?
- c) Explain about multiple granularity?
- d) Explain about storage structure?
- e) Explain about remote backup systems?
- f) Explain about static hashing?
- g) Explain about organization of records in files?
- h) Discuss the impact of Workload on Indexes?
- i) Explain about RAID
- j) Define extendable hashing?

PART-B
SECTION – I

- 1). Describe storage manager component of database system structure?
OR
- 2). Make a comparison between Database system and File system.

SECTION – II

- 3). What are the differences between the two types of relational calculus
OR
- 4). Define BCNF? How does BCNF differ from 3NF? Explain with an example.

SECTION – III

- 5). Explain strict 2PL and rigorous 2PL with example?
OR
- 6). Explain different recovery techniques used in transaction failure?

SECTION – IV

- 7). What you mean by query equivalence. Explain with example?
OR
- 8). Explain a) Clustered Indexes b) Primary and Secondary Indexes

SECTION – V

- 9). what is role-based access control? In what ways is it superior to DAC and MAC?
OR
- 10). Explain the following
 - (a) What are Challenges in ORDBMS implementation?
 - (b) Discuss the issues in data mining in detail.