Code No.: **40420**

MR14

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, MAY-2019

Subject: **Electronic Measurements and Instrumentation**

Branch: **ECE**

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

PART – A

I. Answer **ALL** questions of the following **5x1Mark=5 Marks**

1. What is fidelity?
2. What are the different patterns produced in video signal generator?
3. Write the equation for deflection sensitivity.
4. What is poissons ratio? Give relation between poissons ratio and gauge factor.
5. What are the devices used to measure humidity?

II. Answer **ALL** questions of the following **10x2Marks=20 Marks**

1. What is repeatability
2. What is Arithmetic mean and deviation from the mean?
3. What is oscillator and test oscillator?
4. Mention the audio frequency and radio frequency range
5. What are the materials used in storage mesh of analog oscilloscope.
6. How phase is measured using Lissajous patterns.
7. What are the applications of LVDT?
8. What is piezoelectric effect?
9. Draw the Kelvin`s bridge and give the expression for unknown resistance.
10. Why Kelvin bridge is used for measurement of low resistance?

PART-B

Answer **ALL** questions of the following **5x10 Marks= 50Marks**

1. a) What is DC Ammeter? How it is used for multi range.

   b) Design a multirange ammeter with range of 0-1A, 5A and 10A employing individual shunt in each A D'Arsonval movement with an internal resistance of 500 Ω and a full scale deflection of 10mA is available.

OR

2. Draw the basic dc voltmeter circuit and define its sensitivity and how its range can be extended.

3. a) Draw the block diagram and explain the working of a function generator.
   b) State with a diagram the working principle of a pulse generator. Describe with the help of a block diagram the operation of a pulse generator.

OR

4. Explain the working of spectrum analyzer using parallel filter tank techniques

5. a) What is sampling oscilloscope and explain its operation.
   b) In chop mode of operation, explain working of dual trace oscilloscope.

OR

6. What are the modes of operation of dual trace oscilloscope? Explain them with neat diagrams.

7. Explain about differential output transducer and give its advantages.

OR

8. Explain the working of hot wire anemometer

9. What are the methods to measure force

OR

10. Explain about vertical deflection system in CRO.

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III B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, MAY-2019

Subject: **Digital Signal Processing**

Branch: **ECE**

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

PART – A

I. Answer **ALL** questions of the following **5x1Mark=5 Marks**

1. Define even and odd signal.
2. What is radix-2?
3. Give the magnitude function of chebyshev filter.
4. Give the mathematical equations for hamming window and Blackman window.
5. Define upsampling.

II. Answer **ALL** questions of the following **10x2Marks=20 Marks**

1. Distinguish between recursive realization and non recursive realization.
2. State the methods of evaluating inverse Z-transform.
3. What is the difference between DTFT and DFT?
4. Give the difference between linear convolution and circular convolution?
5. Why IIR filter do not have phase linear.
6. Compare impulse invariance and bilinear transformation method?
7. What are the desirable characteristics of a window?
8. Draw the frequency response of N-point rectangular window.
9. What is the difference between decimation and interpolation
10. Draw the spectrum of down sampled signal?

PART-B

Answer **ALL** questions of the following **5x10 Marks= 50Marks**

1. Obtain D-I & D-II structures for the given system function.

$$H(z)=\frac{1+\frac{1}{4}z^{-1}}{1+\frac{1}{2}z^{-1}+\frac{1}{4}z^{-2}+\frac{1}{8}z^{-3}}$$

(OR)

2. Check for following systems are linear, causal, time invariant, stable, static.
   a) y(n)=x(2n) b) y(n)=cos(x(n)) c) y(n)=x(-n+2) d) y(n)==x(n)cos(x(n))
3. Determine the 8-point DFT of the sequence x(n) = {1,1,1,1,1,1,0,0}

(OR)

4. State and prove any three properties of DFT.
5. Design a band pass butterworth filter with the following specifications.
   Sampling frequency F=8 kHz
   Attenuation of 2dB in the pass band 800 Hz $\leq f \leq$ 1000 Hz
   Attenuation of 20dB in the stop band $0 \leq f \leq 400$ and $2000 \leq f \leq \infty$

(OR)

6. Write a short note on frequency translation in both analog and digital domain.

7. Design a digital FIR band pass filter with lower cutoff of 2000Hz and upper cutoff frequency of 3200Hz using hamming window of length N=7. Sampling rate is 10000Hz.

(OR)

8. Design an FIR low pass digital filter using Fourier series method for the following specifications.

   Cutoff frequency=1500Hz sampling frequency=15000Hz
   filter length=11.

9. Derive the relationship between input and output of a down sampler in Z-domain and Frequency domain

(OR)

10. For the given recursive filter the input x(n) hs a range of values of ±100V, represented by 8 bites. Compute the variance of output due to A/D conversion process.