C.U.SHAH UNIVERSITY
Summer Examination-2019

Subject Name: Digital Signal Processing
Subject Code: 4TE05DSP1   **Branch:B.Tech (EC)**
Semester: 5   **Date: 26/03/2019**   **Time: 10:30 To 01:30**   **Marks: 70**

Instructions:
  (1) Use of Programmable calculator & any other electronic instrument is prohibited.
  (2) Instructions written on main answer book are strictly to be obeyed.
  (3) Draw neat diagrams and figures (if necessary) at right places.
  (4) Assume suitable data if needed.

Q-1	**Attempt the following questions**	**(14)**

  a) State restriction of DSP system.
  b) What is residue theorem?
  c) Why aliasing is mandatory in DSP system?
  d) Express Aperiodic signal.
  e) Justify the sentence "Sampling reduce the quantization error"
  f) What is fundamental frequency?
  g) State the limitation of even signal.
  h) Enlist the basic elements of DSP.
  i) Define convolution.
  j) What is linear amplitude system?
  k) Define odd signal.
  l) What is ROC?
  m) List the uses of DSP.
  n) State the condition for asymmetry for any signal.

Attempt any four questions from Q-2 to Q-8

Q-2		**Attempt all questions**	**(14)**
	1	State and derive necessary condition for a discrete time system to be BIBO stable.	**07**
	2	With the help of a neat sketch, explain Digital Signal Processor architecture.	**07**
Q-3		**Attempt all questions**	**(14)**
	1	What is DFT? State the properties of DFT in brief.	**08**
	2	Explain sampling theorem in brief in time domain as well as in frequency domain.	**06**
Q-4		**Attempt all questions**	**(14)**
	1	Draw the basic block diagram of DSP.	**03**
	2	Explain convolution and its types in short.	**04**
	3	Stretch the classification of signals in all aspects.	**07**
Q-5		**Attempt all questions**	**(14)**
	1	Define ACF of a sequence and explain ACF's main properties.	**07**

	2	State 'differentiation' and 'time convolution' properties for given transform (Discrete Time Fourier Transform (DTFT) **or** Z-transform). Prove any one of two properties.	**07**
Q-6		**Attempt all questions**	**(14)**
	1	Compare FIR and IIR filters.	**06**
	2	Explain the Decimation in Time FFT algorithm with example.	**08**
Q-7		**Attempt all questions**	**(14)**
	1	State the properties of FFT explain any two in brief.	**08**
	2	Compare energy signal and power signal.	**03**
	3	Briefly explain effect of coefficient quantization in filters.	**03**
Q-8		**Attempt all questions**	**(14)**
	1	Explain Z- transform and its property.	**07**
	2	Give the classification of system.	**07**