Code No: 127CK

R15

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year I Semester Examinations, November/December - 2018
DIGITAL SIGNAL PROCESSING
(Electrical and Electronics 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)	Draw the parallel form of Digital filters.	[2]
b)	Write applications of Z-transform.	[3]
c)	Write any two properties of DFT.	[2]
d)	Differentiate between Over-Lap save and Over-Lap Add method.	[3]
e)	List the properties of Chebyshev filter.	[2]
f)	Give the steps in the design of a digital filter from analog filters.	[3]
g)	What are the properties of IIR filters?	[2]
h)	What are the desirable characteristics of window?	[3]
i)	What is interpolation?	[2]
j)	What is Dead-band of a filter?	[3]

PART-B

(50 Marks)

2.   Explain the cascade form of digital filter realization.   [10]
OR
3.   Explain in detail the Frequency Response of Stable Systems.   [10]

4.   Explain the properties of DTFT.   [10]
OR
5.   Explain Radix- 2 Decimation- in-Frequency FFT algorithms.   [10]

6.   Using Bilinear transformation, design a high pass filter, monotonic in pass band with cutoff frequency of 1000 Hz and down 10dB at 350 Hz. The sampling frequency is 5000 Hz.   [10]
OR
7.   Explain the procedure for designing Analog filters using the Chebyshev approximation.   [10]

8.   Explain the finite word length effects in FIR digital filters.   [10]
OR
9.   Realize the system function $H(z) = \left(\dfrac{2}{3}\right)z + 1 + \left(\dfrac{2}{3}\right)z^{-1}$ by linear phase FIR structure.

[10]

10. Explain the application of sampling rate conversion in sub-band coding.   [10]
OR
11. Explain the different methods to prevent overflow.   [10]

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