

**R15**

Code No: 127CK

**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.
- b) Write applications of Z-transform.
- c) Write any two properties of DFT.
- d) Differentiate between Over-Lap save and Over-Lap Add method.
- e) List the properties of Chebyshev filter.
- f) Give the steps in the design of a digital filter from analog filters.
- g) What are the properties of IIR filters?
- h) What are the desirable characteristics of window?
- i) What is interpolation?
- j) What is Dead-band of a filter?

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**PART-B****(50 Marks)**

2. Explain the cascade form of digital filter realization.
- OR
3. Explain in detail the Frequency Response of Stable Systems.
4. Explain the properties of DTFT.
- OR
5. Explain Radix- 2 Decimation- in-Frequency FFT algorithms.
- OR
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.
- OR
7. Explain the procedure for designing Analog filters using the Chebyshev approximation.
- OR
8. Explain the finite word length effects in FIR digital filters.
- OR
9. Realize the system function  $H(z) = \left(\frac{2}{3}\right)z + 1 + \left(\frac{2}{3}\right)z^{-1}$  by linear phase FIR structure.
- OR
10. Explain the application of sampling rate conversion in sub-band coding.
- OR
11. Explain the different methods to prevent overflow.

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