

Time: 3 Hours

Marks: 80

- N.B.: 1. Question No. 1 is compulsory.
2. Attempt any three questions out of remaining five questions.
3. Figures to the right indicate full marks.
4. Assume suitable data if required and mention it in answer sheet.

- Q1. (20 Marks)
a) Compare DSP and Microprocessor
b) Explain quantization effect in computations of DFT
c) Explain subband coding.
d) Explain limit cycle oscillations.
- Q2. a) Write design steps of FIR filter using window techniques. Compare windows. (10 Marks)
b) Explain VLIW architecture in details. (10 Marks)
- Q3. a) Explain Gibbs phenomenon in details (10 Marks)
b) Explain different addressing modes of TMS320C67XX DSP processor (10 Marks)
- Q4. a) Design a linear phase FIR highpass filter using hamming window, with a cutoff frequency, $\omega_c = 0.8\pi$ rad/sample and $N = 7$ (10 Marks)
b) Explain in details application of Digital Signal Processor in Biomedical and Audio. (10 Marks)
- Q5. a) Find the DFT of the following sequence using DIT-FFT, $x[n] = \{1, 1, 1, 1, 1, 1, 0, 0\}$ (10 Marks)
b) Justify many to one mapping in s-plane to z-plane in Impulse Invariance method. Compare it with the mapping in Bilinear transformation. (10 Marks)
- Q6. a) Compare IIR and FIR filters. (20 Marks)
b) Prove Parseval's theorem for the sequence $x[n] = \{1, 2, 1, 0\}$
c) Explain frequency wrapping in IIR filter
d) Explain Silent features of TMS320C67XX DSP processor
