

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
