

Duration 3 Hours

[Maximum marks 80]

- NOTE:-**1) Question 1 is **compulsory**
 2) Solve **any three** from the remaining five questions
 3) Assume suitable data if necessary.
 4) Figures to the right indicate full marks

- Q.1. a.** State and explain relation between L.T and Z.T **20**
b. What are special features of DSP Processor?
c. Compare BLT and ILT.
d. What do you mean limit cycle oscillations?

- Q.2. a.** Explain different windowing techniques in FIR filter design **10**
b. Explain Gibb's phenomenon and it's physical interpretation in filter design. **10**

- Q.3. a.** Given the transfer function of the analog filter $(s) = \frac{1}{(s+1)(s+3)}$, **10**
T= 2 second. Design IIR filter using BLT method. Explain the concept of frequency warping.
b. Explain product quantization error with suitable example. **10**

- Q.4. a.** Explain the architecture of TMS32067xx DSP processor. **10**
b. Explain different addressing modes of DSP processor. **10**

- Q.5. a.** Compute the 8-point DFT of the sequence using DIT-FFT algorithm **10**
 $x(n) = \{0.5, 0.5, 0.5, 0.5, 0, 0, 0, 0\}$
b. Find the linear convolution of the sequences **10**
 $x(n) = \{1, 2, 3, 4\}$ and $h(n) = \{1, 1, 1\}$.

Also obtain the same result using circular convolution.

- Q.6. a.** Explain the significance of VLIW architecture in DSP processor. **10**
b. Explain the application of DSP in speech processing. **10**
