PART A - (6 x 1 = 6 Marks)

(Answer any six of the following questions)

1. In an N point DFT of a finite duration sequence x(n) of length, the value of N should be such that_____   CO1-R

   (a) N> L   (b) N≥ L   (c) N<L   (d) N≤L

2. If x(n) is a real sequence and X(k) is its N-point DFT, then which of the following is true?   CO1-R

   (a) X(N-k)=X(-k)   (b) X(N-k)=X*(k)

   (c) X(-k)=X*(k)   (d) All of the above

3. The poles of Butterworth filter lies on   CO2-R

   (a) Sphere   (b) Circle   (c) Ellipse   (d) Parabola

4. A causal and stable IIR filter has   CO2-R

   (a) Linear phase   (b) No Linear phase   (c) Linear amplitude   (d) No Amplitude

5. The frequency response of a digital filter is periodic in the range   CO3-R

   (a) $0 < \omega < 2\pi$ (b) $-\pi < \omega < \pi$ (c) $0 < \omega < \pi$ (d)$0 < \omega < 2\pi$ or $-\pi < \omega < \pi$

6. Symmetric impulse response having odd number of samples, N=7 with centre of symmetry α is equal to   CO3-R

   (a) 2   (b) 5   (c) 3.5   (d) 3

7. In Quantization to b-bits(excluding sign bit), if R is the range, then quantization step size q is   CO4-R

   (a) $R/2^b$ (b) $R/2^{b+1}$ (c) $R/2^{b-1}$ (d) $R\, 2^{b+1}$

8. If N is unquantized number and N_t is the number quantized by   CO4-R
truncation then truncation error is,

   (a) N_t - N   (b) N - N_t (c)(N_t – N) / 2   (d) (N_t + N) / 2

9. The total memory space of TMS320C5x family of processors is,   CO5-App

   (a) 224k-words   (b) 224k-bytes   (c) 192k-words   (d) 192k-bytes

10. In TMS320C5x processors, the maximum number independent   CO5-App
circular buffers that can be defined in a program is,

   (a) 1   (b) 2   (c) 3   (d) 4

PART – B (3 x 8= 24 Marks)

(Answer any three of the following questions)

11. Determine the FFT Using DIT algorithm for the signal   CO1- App   (8)
x(n)={2,2,2,2,1,1,1,1}.Analyze the same with DIF and comment about
the result.

12. For the analog transfer function Ha(s)=$(s^2+1)/(s^2+2s+1)$ determine H(z)   CO2- App   (8)
using Impulse invariant transformation with T=1sec.

13. Design an Ideal LPF with frequency response   CO3- Ana   (8)

   $H_d(e^{jw}) = 1$, for -π/2<= |ω | <= π/2

   = 0, for   otherwise.

   Using Rectangular window for N=7 samples.

14. Explain the characteristics of limit cycle oscillation with respect to the   CO4- App   (8)
system described by the difference equation: y(n) = 0.95 y(n-1) + x (n).
Determine the dead band of the system when x(n)=0.875 for n=0, 0 for
n≠0

15. With a neat functional block diagram, explain the architecture of   CO5- U   (8)
TMS320C5X processor and explain

55401