Roll No. | | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 18

B.Tech. (ECE) (Sem.–5)

DIGITAL SIGNAL PROCESSING

Subject Code : UC-BTEC-502-18

M.Code : 78758

Time : 3 Hrs. Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

Answer briefly :

1) What is the importance of window technique?

2) What do you mean by twiddle factor? Show how it is cyclic?

3) What is the difference between auto correlation and cross correlation?

4) What are energy and power signals?

5) Explain low pass Chebyshev filter.

6) A band pass signal extends from 1 KHz to 2 KHz. What is the minimum sampling frequency needed to retain all information in the sampled signal?

7) What is time shifting property of DFT?

8) A continuous time signal $y(t) = x(t^2)$ is causal or non-causal.

9) Find the zeros of $h[n] = \delta[n]+1/6\ \delta[n-1]-1/6\ \delta[n-2]$.

10) Find the z transform of $x(n) = \delta(n+3)$.

SECTION-B

11) Write down the applications of DSP.

12) Discuss the various types of signals.

13) Draw the FIR Direct Form I structure and find its transfer function.

14) Find the cross-correlation for a discrete time system has x[n] = 2, 1, 3, 1 and h[n] = 1, 2, 2, 3.

15) Determine the Z-transform of the signal $x(n) = (-1)^{n2}(-n)u(n)$.

SECTION-C

16) Explain the architecture of TMS 320C6XX processor.

17) Write short note on :

a) Goertzel Algorithm

b) Limitations of analog processors.

18) Solve using 8-point DFT butterfly method $x(n) = \{1, 3, 2, 4, 1, 1, 2, 2\}$.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.