

Roll No.

Total No. of Pages : 02

Total No. of Questions : 18

**B.Tech. (ECE) (Sem.-5)**  
**DIGITAL SIGNAL PROCESSING**  
Subject Code : BTCS-502-18  
M.Code : 78298

Time : 3 Hrs.

Max. Marks : 60

**INSTRUCTIONS 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**

**Write briefly :**

- 1) List the basic elements of digital signal processing.
- 2) Whether the signal  $y(n) = \sin(3n)$  is periodic or non-periodic?
- 3) State time shifting property of DFT.
- 4) What is correlation?
- 5) Discuss in short the concept of limit cycles in filters.
- 6) List limitations of analog signal processing.
- 7) What are the effects of finite word length in the implementation of digital system?
- 8) Differentiate between FIR and IIR filter.
- 9) List the various features of DSP processors.
- 10) What is the significance of Barrel shifter in ADSP?

### SECTION-B

- 11) Find the linear convolution of the sequences  $\{1,1,2,1\}$  and  $\{1,0,2,0\}$  using circular convolution graphically.
- 12) List and explain any two properties of z transform.
- 13) Discuss the effect of round off noise in digital filters.
- 14) Determine the direct form II realization of the following LTI system.  
$$y(n) = x(n) - x(n-1) + 2x(n-2) - 3x(n-4)$$
- 15) Explain the concept of multirate signal processing.

### SECTION-C

- 16) Find the 8- point DFT of  $\{1,0,2,0,3,0,4\}$  using DIT-FFT algorithm.
- 17) What is Filtering? Why it is not feasible to design an ideal filter? What are the characteristics of practical frequency selective filters?
- 18) Explain parametric and non-parametric spectral estimation in detail.

**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.**