

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (Electronics & Communication Engineering) (Sem.-5)

DIGITAL SIGNAL PROCESSING

Subject Code : BTEC-502-18

M.Code : 78298

Date of Examination : 14-06-2024

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

1. Write briefly :

- (a) Define orthogonal signals.
- (b) Write sampling theorem.
- (c) How can you define fundamental period?
- (d) Define fast fourier transform.
- (e) Determine DFT of finite length sinusoidal sequence.
- (f) What do you mean by impulse response?
- (g) Define limit cycles.
- (h) Differentiate between cascaded and parallel forms.
- (i) Explain multirate systems.
- (j) Define up-sampler.

SECTION-B

2. Explain various properties of z-Transform.
3. Write steps to find the pole location of Goertzel filter for calculation of fourth DFT coefficient.
4. Draw and explain direct form realization of IIR system.
5. What is the effect of finite register length in FIR filter design?
6. What are the limitations of analog signal processing? Also, explain advantages of DSP.

SECTION-C

7. Explain the architecture of ADSP. Also, discuss the concept of multirate signal processing.
8. Generate a 4×4 basis matrix M for DFT computation and show that it is orthogonal.
9. Design IIR digital filter using Butterworth method.

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.