

Total No. of Questions : 8]

[Total No. of Printed Pages : 2

Roll No .....

**EC-4002-CBGS**

**B.E. IV Semester**

Examination, June 2020

**Choice Based Grading System (CBGS)**

**Signals and Systems**

*Time : Three Hours*

*Maximum Marks : 70*

**Note:** i) Attempt any five questions.

ii) All questions carry equal marks.

1. a) Derive and explain the convolution integral. 7  
b) Write the classification of signals and explain. 7
2. a) Write about basic system properties. 7  
b) Properties of convolution with proof. 7
3. Write a short note on:
  - a) Relationship between DTFT and Z-transform 4
  - b) Properties of the ROC 5
  - c) Properties of Z-transforms 5
4. a) Properties of convolution summation? 7  
b) Impulse response DT-LTI system and properties. 7
5. a) Explain about the Fourier transform for Periodic signal. 7  
b) Explain the representation of Aperiodic signal. 7

EC-4002-CBGS

PTO

[2]

6. Obtain the direct form-I, direct form-II cascade and parallel form realization of the LTI system governed by the equation. 14

$$y(n) = \frac{-13}{12} y(n-1) - \frac{9}{24} y(n-2) - \frac{1}{24} y(n-3) + x(n) + 4x(n-1) + 3x(n-2)$$

7. Write a short note on:
- a) Application of DTFS 3
  - b) Applications of DTFT 3
  - c) Unilateral Z transforms 4
  - d) Inverse Z transforms 4
8. a) Find  $X(z)$  and sketch the zero dash pole plot and the ROC for  $a < 1$  and  $a > 1$  for the signal  $X[n] = a^{|n|}$  7
- b) Determine the inverse z transform of

$$X(z) = \log\left(\frac{1}{1-az^{-1}}\right) \quad 7$$

\*\*\*\*\*