Roll No ....

EX-703(C)-CBGS

B.Tech., VII Semester

Examination, December 2020

Choice Based Grading System (CBGS)

Digital Signal Processing

Time : Three Hours

Maximum Marks : 70

Note: i)　Attempt any five questions.

　　　　ii)　All questions carry equal marks.

1. a)　Whether the signal $y(n) = \sin 3n$ is periodic or non-periodic?　　　　　　　　　　7

　　b)　Is the system $y(n) = x(n) \cos(\omega n)$ linear or non-linear?　7

2. a)　Give two advantages of digital signal processing over analog signal processing.　　　　　7

　　b)　In the implementation of a digital system what are the effects of finite-word-length?　　　　7

3. a)　Give the various steps involved in the design of IIR filter.　　　　　　　　　　　　　　　7

　　b)　What is Gibb's Phenomenon?　　　　　7

4. a)　List the various features of DSP processors.　　7

　　b)　Compute the convolution of $x(n) = u(n) - u(n - 5)$, $h(n) = [1, 2, 2, 1]$.　　　　　　　　　　7

5. a)　Obtain the direct form I direct form II, cascade and parallel structure for the following system :
$y(n) = -0.1y(n - 1) + 0.2y(n - 1) + 3x(n) + 3.6x(n - 1) + 0.6x(n - 2)$.　　　　　　　　　　7

b) With the help of neat diagram describe the memory architecture of TMS320C54X. 7

6. a) Give the comparison between DSP processor and general purpose microprocessor. 7

b) Determine the particular solution of the difference equation $y(n) = 56\, y\,(n-1) - 16\, y\,(n-2) + x(n)$ when the forcing function is $x(n) = 2n\, u(n)$. 7

7. a) State and prove the convolution property of Z-transform.
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b) Write short notes on Wiener Filter. 7

8. a) Differentiate between FIR and IIR filter. 7

b) Why the ROC of Z-transform cannot contain any pole?
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