Code No: RR311102 | RR | SET-1

B. Tech III Year I Semester Examinations, December-2011
DIGITAL SIGNAL PROCESSING
(BIO-MEDICAL ENGINEERING)

Time: 3 hours **Max. Marks: 80**

Answer any five questions
All questions carry equal marks

1.a) Distinguish between Linear Time Invariant and Time Variant Systems and hence discuss the conditions to be satisfied to realize the system physically.
b) Derive the necessary and sufficient conditions to be satisfied for the system to be stable. [8+8]

2.a) Define DFT and List out its any four properties.
b) Find the DFT of the sequence x(n) = {1,2,3,4} [8+8]

3.a) Define Convolution. Distinguish between Linear and Circular Convolution
b) Find the convolution of the given two sequences x(n) = {1,2,3,4} and h(n) = {1,2} using DFT and IDFT. [8+8]

4.a) Discuss the computational complexity of DFT and FFT
b) Find the 8-point FFT of the given sequence x(n) = {1,2,3,4,5,6}. [8+8]

5.a) Discuss any one transformation technique to convert the analog filter transfer function into digital filter transfer function.
b) Write short notes on frequency transformation techniques. [8+8]

6.a) Distinguish between FIR and IIR filters.
b) Design a digital Low pass FIR filter consisting of 9 samples using Hamming window, whose cut-off frequency is 1.2 rad/s. [8+8]

7.a) What are the various building blocks required to realize the digital filters and explain in brief.
b) Implement the following difference equation using cascade and parallel structure y(n)+y(n-1)+4y(n-2)-2y(n-3) = x(n)-2x(n-2). [8+8]

8. Discuss the applications of DSP
a) Spectral analysis
b) Radar Signal Processing. [8+8]

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Code No: RR311102 | RR | SET-2

B. Tech III Year I Semester Examinations, December-2011
DIGITAL SIGNAL PROCESSING
(BIO-MEDICAL ENGINEERING)

Time: 3 hours **Max. Marks: 80**

Answer any five questions
All questions carry equal marks

1.a) Define Convolution. Distinguish between Linear and Circular Convolution
b) Find the convolution of the given two sequences x(n) = {1,2,3,4} and h(n) = {1,2} using DFT and IDFT. [8+8]

2.a) Discuss the computational complexity of DFT and FFT
b) Find the 8-point FFT of the given sequence x(n) = {1,2,3,4,5,6}. [8+8]

3.a) Discuss any one transformation technique to convert the analog filter transfer function into digital filter transfer function.
b) Write short notes on frequency transformation techniques. [8+8]

4.a) Distinguish between FIR and IIR filters.
b) Design a digital Low pass FIR filter consisting of 9 samples using Hamming window, whose cut-off frequency is 1.2 rad/s. [8+8]

5.a) What are the various building blocks required to realize the digital filters and explain in brief.
b) Implement the following difference equation using cascade and parallel structure y(n)+y(n-1)+4y(n-2)-2y(n-3) = x(n)-2x(n-2). [8+8]

6. Discuss the applications of DSP
a) Spectral analysis
b) Radar Signal Processing. [8+8]

7.a) Distinguish between Linear Time Invariant and Time Variant Systems and hence discuss the conditions to be satisfied to realize the system physically.
b) Derive the necessary and sufficient conditions to be satisfied for the system to be stable. [8+8]

8.a) Define DFT and List out its any four properties.
b) Find the DFT of the sequence x(n) = {1,2,3,4} [8+8]

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Code No: RR311102 | RR | SET-3

B. Tech III Year I Semester Examinations, December-2011
DIGITAL SIGNAL PROCESSING
(BIO-MEDICAL ENGINEERING)

Time: 3 hours **Max. Marks: 80**

Answer any five questions
All questions carry equal marks

1.a) Discuss any one transformation technique to convert the analog filter transfer function into digital filter transfer function.
b) Write short notes on frequency transformation techniques. [8+8]

2.a) Distinguish between FIR and IIR filters.
b) Design a digital Low pass FIR filter consisting of 9 samples using Hamming window, whose cut-off frequency is 1.2 rad/s. [8+8]

3.a) What are the various building blocks required to realize the digital filters and explain in brief.
b) Implement the following difference equation using cascade and parallel structure $y(n)+y(n-1)+4y(n-2)-2y(n-3) = x(n)-2x(n-2)$. [8+8]

4. Discuss the applications of DSP
a) Spectral analysis
b) Radar Signal Processing. [8+8]

5.a) Distinguish between Linear Time Invariant and Time Variant Systems and hence discuss the conditions to be satisfied to realize the system physically.
b) Derive the necessary and sufficient conditions to be satisfied for the system to be stable. [8+8]

6.a) Define DFT and List out its any four properties.
b) Find the DFT of the sequence $x(n) = \{1,2,3,4\}$ [8+8]

7.a) Define Convolution. Distinguish between Linear and Circular Convolution
b) Find the convolution of the given two sequences $x(n) = \{1,2,3,4\}$ and $h(n) = \{1,2\}$ using DFT and IDFT. [8+8]

8.a) Discuss the computational complexity of DFT and FFT
b) Find the 8-point FFT of the given sequence $x(n) = \{1,2,3,4,5,6\}$. [8+8]

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Code No: RR311102 | RR | SET-4

B. Tech III Year I Semester Examinations, December-2011
DIGITAL SIGNAL PROCESSING
(BIO-MEDICAL ENGINEERING)

Time: 3 hours **Max. Marks: 80**

Answer any five questions
All questions carry equal marks

1.a) What are the various building blocks required to realize the digital filters and explain in brief.
b) Implement the following difference equation using cascade and parallel structure $y(n)+y(n-1)+4y(n-2)-2y(n-3) = x(n)-2x(n-2)$. [8+8]

2. Discuss the applications of DSP
a) Spectral analysis
b) Radar Signal Processing. [8+8]

3.a) Distinguish between Linear Time Invariant and Time Variant Systems and hence discuss the conditions to be satisfied to realize the system physically.
b) Derive the necessary and sufficient conditions to be satisfied for the system to be stable. [8+8]

4.a) Define DFT and List out its any four properties.
b) Find the DFT of the sequence $x(n) = \{1,2,3,4\}$ [8+8]

5.a) Define Convolution. Distinguish between Linear and Circular Convolution
b) Find the convolution of the given two sequences $x(n) = \{1,2,3,4\}$ and $h(n) = \{1,2\}$ using DFT and IDFT. [8+8]

6.a) Discuss the computational complexity of DFT and FFT
b) Find the 8-point FFT of the given sequence $x(n) = \{1,2,3,4,5,6\}$. [8+8]

7.a) Discuss any one transformation technique to convert the analog filter transfer function into digital filter transfer function.
b) Write short notes on frequency transformation techniques. [8+8]

8.a) Distinguish between FIR and IIR filters.
b) Design a digital Low pass FIR filter consisting of 9 samples using Hamming window, whose cut-off frequency is 1.2 rad/s. [8+8]

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