Program: BE Computer Engineering

Curriculum Scheme: Revised 2012

Examination: Final Year Semester VII

Course Code: CPC701 and Course Name: Digital Signal Processing

Time: 1-hour Max. Marks: 50

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Note to the students: - All the Questions are compulsory and carry equal marks.

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| Q1.  | Which type of signal is defined for every value in time? |
| Option A: | Continuous time Signal |
| Option B: | Discrete time Signal |
| Option C: | Power Signal |
| Option D:  | Energy Signal |
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| Q2. | Unit Step Signal Series is given by: Note: The underlined number is at Origin |
| Option A: | {...0,0,0,1,0,0,0,...} |
| Option B: | {...0,0,0,1,1,1,1,...} |
| Option C: | {...1,1,1,1,0,0,0,...} |
| Option D: | {...1,0,0,1,0,0,1,...} |
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| Q3. | Which type of signal has amplitude that can take any value in continuous range?  |
| Option A: | Continuous time Signal |
| Option B: | Analog Signal |
| Option C: | Discrete time Signal |
| Option D: | Power Signal |
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| Q4. | Linear Convolution of the signal x(n)={3,2,1,2} with h(n)={1,2,1,2} is given by: Note: The underlined number is at Origin |
| Option A: | {3,8,8,12,9,4,4} |
| Option B: | {3,8,8,12,9,4,4} |
| Option C: | {3,8,8,12,9,4,4} |
| Option D: | {3,8,8,12,9,4,4} |
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| Q5. | Let x(n)={1,2,3,4}, with origin at 3, and y(n)=x(-n-2), then y(n) is given by: |
| Option A: | {4,3,2,1} |
| Option B: | {4,3,2,1} |
| Option C: | {4,2,3,1} |
| Option D:  | {4,2,3,1} |
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| Q6. | Ramp Signal Series is given by: Note: The underlined number is at Origin |
| Option A: | {...0,0,0,1,0,0,0,...} |
| Option B: | {...0,0,0,1,2,3,4,...} |
| Option C: | {...1,1,1,1,0,0,0,...} |
| Option D:  | {...1,0,0,1,0,0,1,...} |
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| Q7.  | For practical implementation IIR system require  |
| Option A: | Infinite memory |
| Option B: | Finite memory |
| Option C: | No requirement of memory |
| Option D:  | Less memory |
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| Q8.  | FIR system directly implemented by  |
| Option A: | Convolution Summation |
| Option B: | Correlation Summation |
| Option C: | Delayed Unit |
| Option D:  | Advanced Unit |
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| Q9. | y(n)= nx(n), determine the system is linear or non linear |
| Option A: | Linear  |
| Option B: | Non linear |
| Option C: | Causal |
| Option D:  | Non-Causal |
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| Q10.  | y(n)= Ax(n)+B, determine the system is linear or non linear |
| Option A: | Linear  |
| Option B: | Non linear |
| Option C: | Causal |
| Option D:  | Non-Causal |
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| Q11.  | By means of the DFT and IDFT, determine the response of the FIR filter with impulse response h(n)={1,2,3} to the input sequence x(n)={1,2,2,1}? |
| Option A: | {1,4,11,9,8,3} |
| Option B: | {1,4,9,11,8,3} |
| Option C: | {1,4,9,11,3,8} |
| Option D:  | {1,4,9,3,8,11} |
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| Q12.  | What is the sequence y(n) that results from the use of four point DFTs if the impulse response is h(n)={1,2,3} and the input sequence x(n)={1,2,2,1}? |
| Option A: | {9,9,7,11} |
| Option B: | {1,4,9,11,8,3} |
| Option C: | {7,9,7,11} |
| Option D: | {9,7,9,11} |
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| Q13. | In Overlap save method of long sequence filtering, how many zeros are appended to the impulse response of the FIR filter? |
| Option A: | L+M |
| Option B: | L |
| Option C: | L+1 |
| Option D:  | L-1 |
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| Q14.  | If x(n)=cosω0n and W(ω) is the Fourier transform of the rectangular signal w(n), then what is the Fourier transform of the signal x(n).w(n)? |
| Option A: | 1/2[W(ω-ω0)- W(ω+ω0)] |
| Option B: | 1/2[W(ω-ω0)+ W(ω+ω0)] |
| Option C: | [W(ω-ω0)+ W(ω+ω0)] |
| Option D:  | [W(ω-ω0)- W(ω+ω0)] |
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| Q15. | DIFFFT algorithm is used to compute |
| Option A: | H(n) |
| Option B: | H(K) |
| Option C: | G(n) |
| Option D:  | G(H) |
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| Q16.  | Find DFT of x(n) =(1,2,3,4) using DITFFT |
| Option A: | (10,-2+j2,-2,-2-j2) |
| Option B: | (10,-2+j2,-2,2-j2) |
| Option C: | (10,2+j2,-2,-2-j2) |
| Option D:  | (10,-2+j2,2,-2-j2) |
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| Q17. | Which of the following is the property of Twiddle factor?  |
| Option A: | Time variance |
| Option B: | Periodicity |
| Option C: | Causality |
| Option D: | Linearity |
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| Q18. | Which of the following is the false statement for DIF algorithms?  |
| Option A: | Use Nlog2N operations |
| Option B: | Complex multiplication takes place after adder  |
| Option C: | Bit reversal is required |
| Option D:  | Decimated in time domain |
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| Q19.  | If L = 4, M = 3, and y1(n) = {-1, 0 , 2, 9,1,-1} and y2(n) = { - 2, 6, -2, -1, -2, -1}, then using overlap Save method what would be the value of y(n) after combining y1(n) and y2(n)? |
| Option A: | {-1, 0, 2, -2, 6, -2} |
| Option B: | {-1, 0, 2, 9, -1, 5, -2, -1, -2, -1} |
| Option C: | {-1, 0, 2, 9, -2, 6, -2, -1} |
| Option D:  | {2, 9, 1, -1, -2, -1, -2, -1} |
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| Q20. | If L = 4, M = 3, and y1(n) = {-1, 0 , 2, 9,1,-1} and y2(n) = { - 2, 6, -2, -1, -2, -1}, then using overlap add method what would be the value of y(n) after addition of y1(n) and y2(n)? |
| Option A: | {-3, 6,0,8,-1,-2} |
| Option B: | {-1, 0, 2, 7, 7, -3, -2, -1, -2, -1} |
| Option C: | {-1, 0, 2, 9, -1, 5, -2, -1, -2, -1} |
| Option D: | {-1, 0, 2, 9, 1, -3, 6, -2, -1, -2, -1} |
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| Q21. | Overlap add method and overlap save method are used for calculating which convolution? Is it for long or short sequences? |
| Option A: | Linear Convolution, long |
| Option B: | Linear convolution, short |
| Option C: | correlation, long |
| Option D:  | correlation, short |
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| Q22.  | In overlap add method how many data points of each output blocks are overlapped during final addition of results? |
| Option A: | L-1 (L is size of sub sequence of x(n)) |
| Option B: | N-1 (N is size of x(n) |
| Option C: | M-1 (M is size of h(n)) |
| Option D:  | L-M-1 |
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| Q23. | How many clock cycles are required for executing an instruction in DSP processor? |
| Option A: | 1 clock cycle |
| Option B: | 2 clock cycles |
| Option C: | 3 clock cycles |
| Option D:  | 4 clock cycles |
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| Q24.  | Who takes care of the program control flow in DSP processor? |
| Option A: | Program sequencer |
| Option B: | Instruction register |
| Option C: | Program sequencer and Instruction register |
| Option D:  | Program counter |
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| Q25. | How many major blocks are present in DSP processor Architecture? |
| Option A: | 8 |
| Option B: | 20 |
| Option C: | 9 |
| Option D:  | 7 |