Program: BE Computer Engineering

Curriculum Scheme: Revised 2016

Examination: Fourth Year Semester VII

Course Code: CSC701 and Course Name: Digital Signal and Image 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. | 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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| Q5. | 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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| Q6. | Impulse 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.  |  If yk(n) is the convolution of the finite duration input sequence x(n) of length N, then what is the impulse response of the filter? |
| Option A: | WN-kn |
| Option B: | WN-kn u(n) |
| Option C: | WNkn u(n) |
| Option D:  | WNnk u(n) |
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| Q8.  | Which of the following is not the property of DFT? |
| Option A: | Periodicity  |
| Option B: | Linear |
| Option C: | Symmetry |
| Option D:  | Correlation  |
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| Q9. | How many number of bits are required to compute the FFT of a 1024 point sequence with a SNR of 30db? |
| Option A: | 11 |
| Option B: | 10 |
| Option C: | 5 |
| Option D:  | 20 |
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| Q10.  | How many complex additions are required to be performed in linear filtering of a sequence using FFT algorithm? |
| Option A: | (N/2)logN |
| Option B: | 2Nlog2N |
| Option C: | (N/2)log2N |
| Option D:  | Nlog2N |
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| Q11.  | How many complex multiplications are need to be performed for each FFT algorithm? |
| Option A: | (N/2)logN |
| Option B: | Nlog2N |
| Option C: | (N/2)log2N |
| Option D:  | Nlog2N/2 |
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| Q12.  | What does Non uniform quantization include? |
| Option A: | Compression |
| Option B: | Quantization levels are equally spaced |
| Option C: | Quantization levels are unequally spaced |
| Option D: | Quantization & Sampling |
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| Q13. | When will the quantization will be finer? |
| Option A: | Smaller the number of discrete amplitudes |
| Option B: | Larger the number of discrete amplitudes |
| Option C: | Does not depend on amplitudes |
| Option D:  | Does depend on amplitudes |
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| Q14.  | After digitization process a digital image with M rows and N columns have to be positive and for the number, L, max gray levels i.e. an integer power of 2 for each pixel. Then, the number b, of bits required to store a digitized image is: |
| Option A: | b=M\*N\*k |
| Option B: | b=M\*N\*L |
| Option C: | b=M\*L\*k |
| Option D:  | b=L\*N\*k |
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| Q15. | At which points is a continuous image is digitized? |
| Option A: | random |
| Option B: | vertex |
| Option C: | contour |
| Option D:  | sampling |
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| Q16.  | What is the sequence of operations in which PCM is done? |
| Option A: | Sampling, quantizing, encoding |
| Option B: | Quantizing, encoding, sampling |
| Option C: | Quantizing, sampling, encoding |
| Option D:  | Sampling, encoding , quantizing |
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| Q17. | What is process of converting the analog sample into discrete form called? |
| Option A: | Modulation |
| Option B: | Multiplexing |
| Option C: | Quantization |
| Option D: | Sampling |
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| Q18. | Which filter replaces the pixel value with the maximum values of intensity levels? |
| Option A: | Max Filter  |
| Option B: | Mini Filter |
| Option C: | Smoothening Filter |
| Option D:  | Median Filter |
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| Q19.  | What is a low pass filter also known as? |
| Option A: | Max Filter  |
| Option B: | Mini Filter |
| Option C: | Smoothening Filter |
| Option D:  | Median Filter |
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| Q20. | What is median filter also known as? |
| Option A: | Max Filter  |
| Option B: | Non- Linear Filter |
| Option C: | Smoothening Filter |
| Option D: | Median Filter |
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| Q21. | What is median filter used to eliminate? |
| Option A: | salt and pepper noise |
| Option B: | Black noise |
| Option C: | Reyleigh noise |
| Option D:  | Exponential noise |
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| Q22.  | Salt and pepper noise also referred as a: |
| Option A: | Spike Noise |
| Option B: | Black noise |
| Option C: | Reyleigh noise |
| Option D:  | Exponential noise |
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| Q23. | To detect a horizontal line using a 3x3 mask the second row elements are: |
| Option A: | 2, 2, 2 |
| Option B: | -2, -2, -2 |
| Option C: | -1, -1, -1 |
| Option D:  | 1, 1, 1 |
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| Q24.  | Image smoothing is used for: |
| Option A: | Edge localization |
| Option B: | Detecting Edge points |
| Option C: | Noise reduction |
| Option D:  | Blurring edges |
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| Q25. | Example of discontinuity approach in image segmentation is: |
| Option A: | edge based segmentation |
| Option B: | region based segmentation |
| Option C: | point based segmentation |
| Option D:  | line based segmentation |