Program: BE Computer Engineering

Curriculum Scheme: Revised 2016

Examination: Fourth Year Semester VII

Course Code: CSC701 and Course Name: Digital Signal & Image Processing

Time: 1hour Max. Marks: 50

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

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| --- | --- |
| Q1.  | The process of converting continuous-time signal to a discrete-time signal? |
| Option A: | Sampling |
| Option B: | Differentiating |
| Option C: | Integrating |
| Option D:  | Differentiating + Integrating |
|  |  |
| Q2. | What is the type of signal u(n) = 1, n ≥ 0 = 0, otherwise. |
| Option A: | Unit step Signal |
| Option B: | Impulse signal |
| Option C: | Delta Signal |
| Option D: | Ramp Signal |
|  |  |
| Q3. | A digital signal is said to be Odd if x(k)=------- |
| Option A: | x(k)=x(-k) |
| Option B: | x(k)= -x(-k) |
| Option C: | x(k)= x(k) |
| Option D: | x(k)= -x(k) |
|  |  |
| Q4. | If y(n)= x(n/2) then it is------ |
| Option A: | Up scaling |
| Option B: | Downscaling |
| Option C: | Scalar multiplication |
| Option D: | shifting |
|  |  |
| Q5. | For Periodic signal Fourier series used and for Aperiodic signal ---------is used. |
| Option A: | Fourier series |
| Option B: | Unitary transform |
| Option C: | Fourier transform |
| Option D:  | Z transform |
|  |  |
| Q6. | To compute DFT at any one value of ‘k’ following computations required? |
| Option A: | 4N-2 real multiplications and 4N real additions |
| Option B: | 4N real multiplications and 4N-4 real additions |
| Option C: | 4N-2 real multiplications and 4N+2 real additions |
| Option D:  | 4N real multiplications and 4N-2 real additions |
|  |  |
| Q7.  | Find DFT of x(n)={0,1,2,1} . |
| Option A: | {4,2,0,2} |
| Option B: | {4,-2,0,-2} |
| Option C: | {-4,-2,0,-2} |
| Option D:  | {-4,2,0,-2} |
|  |  |
| Q8.  | DIT algorithm divides the sequence into |
| Option A: | Positive and negative values |
| Option B: | Even and odd samples  |
| Option C: | Out and in samples |
| Option D:  | Small and large samples |
|  |  |
| Q9. | For a decimation-in-frequency FFT algorithm, which of the following is true? |
| Option A: | Both input and output are in order |
| Option B: | Both input and output are shuffled |
| Option C: | Input is shuffled and output is in order |
| Option D:  |  Input is in order and output is shuffled |
|  |  |
| Q10.  | Decreasing number of samples in the image causes - |
| Option A: | Enhanced image |
| Option B: | Checker board effect |
| Option C: | False countering |
| Option D:  | High contrast image |
|  |  |
| Q11.  | What is required to convert analog image into Digital image  |
| Option A: | Sampling only |
| Option B: | Quantization only |
| Option C: | Both Sampling and Quantization |
| Option D:  | Neither Sampling and Quantization |
|  |  |
| Q12.  |

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| --- | --- | --- | --- | --- |
| 1 | 2 | P 1 | 2 | 2 |
| 3 | 1 | 1 | 3 | 0 |
| 0 | 2 | 3 | 1 | 0 |
| Q 1 | 3 | 1 | 1 | 0 |

Find D m(P,Q)distance in given image where v{0,1} |
| Option A: | 5 |
| Option B: | 3 |
| Option C: | 4 |
| Option D: | 2 |
|  |  |
| Q13. | What is the expanded form of JPEG? |
| Option A: | Joint Photographic Expanded Group |
| Option B: | Joint Photographic Experts Group  |
| Option C: | Joint Photographic Expansion Group |
| Option D:  | Joint Photographs Expansion Group |
|  |  |
| Q14.  | Y(n)=nx(n) is |
| Option A: | Linear |
| Option B: | Non-linear |
| Option C: | Time invariant |
| Option D:  | Non causal |
|  |  |
| Q15. | Compute the convolution of y(n)=x(n) \* h(n) where x(n)={1,1,0,1,1}h(n)={1,-2,-3,4} |
| Option A: | {1,-1,-5,2,3,-5,1,4,0} |
| Option B: | {1,-1,-5,2,3,-6,1,4,0} |
| Option C: | {1,-1,-5,2,3,-5,1,4,0} |
| Option D:  | {2,-1,-5,2,3,-5,1,4,0} |
|  |  |
| Q16.  | X(n)={1,2,3,4} find x(-n) |
| Option A: | X(-n)={-1,-2,-3,-4} |
| Option B: | X(-n)={4,3,2,1} |
| Option C: | X(-n)={0,1,0,2,0,3,0,4} |
| Option D:  | X(-n)={-1,-2,-3,-4}  |
|  |  |
| Q17. | Perform circular convolution of two periodic signal x1(n)={1,2,3,4} x2(n)={4,1,1,2} |
| Option A: | {25,19,23,22} |
| Option B: | {15,19,20,23} |
| Option C: | {15,9,23,23} |
| Option D: | {15,19,23,23} |
|  |  |
| Q18. | In uniform PDF, the expansion of PDF is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Option A: | Portable Document Format |
| Option B: | Post Derivation Function |
| Option C: | Previously Derived Function |
| Option D:  | Probability Density Function |
|  |  |
| Q19.  |

|  |  |  |
| --- | --- | --- |
| 1 | 2 | 1 |
| 2 | 4 | 2 |
| 1 | 2 | 1 |

1/16 |
| Option A: | Mean filter  |
| Option B: | Weighted average filter |
| Option C: | Average filter |
| Option D:  | Median filter |
|  |  |
| Q20. | Histogram of image is defined as |
| Option A: | Total pixel graph |
| Option B: | Total frequency graph |
| Option C: | Graph to plot occurrences of each gray level in image |
| Option D: | To plot spatial resolution |
|  |  |
| Q21. | Which filter is used to retain the background while enhancing sharp details in image? |
| Option A: | Average filter |
| Option B: | Median filter |
| Option C: | High pass filter |
| Option D:  | High boost filter |
|  |  |
| Q22.  | Segmentation can be done on : |
| Option A: | Continuity |
| Option B: | Discontinuity  |
| Option C: | Continuity and Discontinuity |
| Option D:  | Neither Continuity nor Discontinuity |
|  |  |
| Q23. | For detecting line in -45 0which mask is used? |
| Option A: |

|  |  |  |
| --- | --- | --- |
| 2 | 1 | 1 |
| 1 | 2 | 1 |
| 1 | 1 | 2 |

 |
| Option B: |

|  |  |  |
| --- | --- | --- |
| 2 | -1 | -1 |
| -1 | 2 | -1 |
| -1 | -1 | 2 |

 |
| Option C: |

|  |  |  |
| --- | --- | --- |
| -1 | -1 | 2 |
| -1 | 2 | -1 |
| 2 | -1 | -1 |

 |
| Option D:  |

|  |  |  |
| --- | --- | --- |
| 1 | 1 | 2 |
| 1 | 2 | 1 |
| 2 | 1 | 1 |

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|  |  |
| Q24.  | Which is not a first derivative filter  |
| Option A: | Sobel |
| Option B: | Previtt |
| Option C: | Robert |
| Option D:  | Lapalacian |
|  |  |
| Q25. |

|  |  |  |
| --- | --- | --- |
| 30 | 60 | 65 |
| 0 | 35 | 63 |
| 10 | 5 | 38 |

Find edge direction of following image |
| Option A: | -510 |
| Option B: | 39 0 |
| Option C: | -45 0 |
| Option D:  | 45 0 |