Program: BE Electronics Engineering

Curriculum Scheme: Revised 2012

Examination: Third Year Semester V

Course Code: EXC504

Course Name:R12\_ETRX\_V\_EXC504\_ Signals and Systems \_QP3

Time: 1 hour Max. Marks: 50

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| Q1. | For an energy signal \_\_\_\_\_\_\_\_\_\_ |
| Option A: | E=0 |
| Option B: | P= ∞ |
| Option C: | E= ∞ |
| Option D: | P=0 |
|  |  |
| Q2. | A signal is anti-causal if \_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Option A: | x(t) = 0 for t = 0 |
| Option B: | x(t) = 1 for t < 0 |
| Option C: | x(t) = 1 for t > 0 |
| Option D: | x(t) = 0 for t > 0 |
|  |  |
| Q3. | Which of the following is the process of ‘aliasing’? |
| Option A: | Peaks overlapping |
| Option B: | Phase overlapping |
| Option C: | Amplitude overlapping |
| Option D: | Spectral overlapping |
|  |  |
| Q4. | Determine the Nyquist rate of the signal x(t) = 1 + cos 2000πt + sin 4000πt. |
| Option A: | 2000 Hz |
| Option B: | 4000 Hz |
| Option C: | 1 Hz |
| Option D: | 6000 Hz |
|  |  |
| Q5. | What is a fundamental period? |
| Option A: | Every interval of a periodic signal |
| Option B: | Every interval of an aperiodic signal |
| Option C: | The first interval of a periodic signal |
| Option D: | The last interval of a periodic signal |
|  |  |
| Q6. | An LTI system is memoryless only if \_\_\_\_\_\_\_\_\_\_\_\_ |
| Option A: | It does not store the previous value of the input |
| Option B: | It does not depend on any previous value of the input |
| Option C: | It does not depend on stored values of the system |
| Option D: | It does not depend on the present value of the input |
|  |  |
| Q7. | Which of the following system is causal? |
| Option A: | y[n] = 2[n] – 3[n+1] |
| Option B: | y[n] = 2[n] + 3 |
| Option C: | y[n] = 2[n-7] – 3[n+1] |
| Option D: | y[n] = 2[n]\*3[n+1] |
|  |  |
| Q8. | Weighted superposition of time-shifted impulse responses is termed as \_\_\_\_\_\_\_ for discrete-time signals. |
| Option A: | Convolution integral |
| Option B: | Convolution multiple |
| Option C: | Convolution sum |
| Option D: | Convolution |
|  |  |
| Q9. | Find the convolution sum of sequences x1[n] = (1, 2, 3) and x2[n] = (2, 1, 4). |
| Option A: | {2, 5, 12, 11, 12} |
| Option B: | {2, 12, 5, 11, 12} |
| Option C: | {2, 11, 5, 12, 12} |
| Option D: | {-2, 5, -12, 11, 12} |
|  |  |
| Q10. | Find the Z-transform of the causal sequence x(n) = {1,0,-2,3,5,4}. (1 as the reference variable) |
| Option A: | 1 – 2z-2 + 3z-3 + 5z-4 + 4z-5 |
| Option B: | 1 – 2z2 + 3z3 + 5z4 + 4z5 |
| Option C: | z-1 – 2z2 + 3z3 + 5z4 + 4z5 |
| Option D: | z – 2z3 + 3z4 + 5z5 + 4z6 |
|  |  |
| Q11. | Find x(∞) if X(z) = (z+1)/(z−0.6)2. |
| Option A: | 1 |
| Option B: | 0 |
| Option C: | ∞ |
| Option D: | 0.6 |
|  |  |
| Q12. | The value of inverse Z-transform of log[z/(z+1)] is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Option A: | (-1)n/n for n = 0; 0 otherwise |
| Option B: | (-1)n/n |
| Option C: | 0, for n = 0; (-1)n/n, otherwise |
| Option D: | 0 |
|  |  |
| Q13. | The inverse Z-transform of z/(z+1)2 is \_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Option A: | (-1)n+1 |
| Option B: | (-1)n-1 n |
| Option C: | (-1)n-1 |
| Option D: | (-1)n+1 n |
|  |  |
| Q14. | 1. The system diagram for the transfer function H(z) = z/(z2+z+1) is shown in fig.     This system diagram is a |
| Option A: | Correct solution |
| Option B: | Not correct solution |
| Option C: | Correct and unique solution |
| Option D: | Correct but not unique solution |
|  |  |
| Q15. | The transfer function of a system is given by  H (z) = z(3z-2)/(z2 - z – 1/4)  The system is |
| Option A: | Causal and Stable |
| Option B: | Causal, Stable and minimum phase |
| Option C: | Minimum phase |
| Option D: | Unstable |
|  |  |
| Q16. | Is the signal eαt periodic? |
| Option A: | Not periodic |
| Option B: | Yes periodic |
| Option C: | Depends on the value of |
| Option D: | Semi- periodic |
|  |  |
| Q17. | Bandwidth of the gate function is \_\_\_\_\_\_\_\_\_\_ |
| Option A: | τ Hz |
| Option B: | 1/τ Hz |
| Option C: | 2τ Hz |
| Option D: | 2/τ Hz |
|  |  |
| Q18. | What is the condition of a periodicity of exponential signal eαt? |
| Option A: | α=1 |
| Option B: | α=2 |
| Option C: | α=3 |
| Option D: | Depends on equation |
|  |  |
| Q19. | What are the conditions called which are required for a signal to fulfil to be represented as Fourier series? |
| Option A: | Dirichlet’s conditions |
| Option B: | Gibbs phenomenon |
| Option C: | Fourier conditions |
| Option D: | Fourier phenomenon |
|  |  |
| Q20. | A discrete-time signal [𝑛] = sin(𝜋 2 𝑛) , 𝑛 being an integer, is |
| Option A: | Periodic with period π |
| Option B: | Periodic with period π2 |
| Option C: | Periodic with period π/2 |
| Option D: | Not periodic |
|  |  |
| Q21. | Convolution of (𝑡 + 5) with impulse function (𝑡 − 7)is equal to |
| Option A: | (𝑡 − 12) |
| Option B: | (𝑡 + 12) |
| Option C: | (𝑡 − 2) |
| Option D: | (𝑡 + 2) |
|  |  |
| Q22. | Energy spectral density defines |
| Option A: | Signal energy per unit area |
| Option B: | Signal energy per unit bandwidth |
| Option C: | Signal power per unit area |
| Option D: | Signal power per unit bandwidth |
|  |  |
| Q23. | Autocorrelation is a function of |
| Option A: | Time |
| Option B: | Frequency |
| Option C: | Time difference |
| Option D: | Frequency difference |
|  |  |
| Q24. | Nyquist sampling frequency formula is |
| Option A: | fs = 2fmax |
| Option B: | fs = 2fmin |
| Option C: | fs = fmax |
| Option D: | fs = fmin |
|  |  |
| Q25. | The step function u(t) is integral of \_\_\_\_\_\_\_ with respect to time t. |
| Option A: | Ramp function |
| Option B: | Impulse function |
| Option C: | Sinusoidal function |
| Option D: | Exponential function |