nepal colege of information technology

Assessment

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| Level: Bachelor | Semester – Spring | Year : 2013 |
| Programme: BE | | Full Marks: 100 |
|  | | Pass Marks : 45 |
| Course: Network Theory | | Time : 3hrs. |

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| *Candidates are required to give their answers in their own words as far as practicable.* |
| *The figures in the margin indicate full marks.* |
| Attempt all the questions. |

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|  | 1. In the given circuit, switch opens at t=0.      1. Find differential equation of i(t) for t>0. 2. Find i(0+) and di/dt(0+) 3. Solve i(t) for V=12 V,R=4Ω,c=1/3F and L=1 H. 4. Find the total response vc(t) for the voltage across the capacitor in circuit given below using classical method. The switch S is closed at t=0. | 8  7 |
|  | 1. A dc current of 5A is suddenly connected to a parallel RLC network at t=0. Obtain the particular solution for voltage v(t) across the circuit elements. Given that R=1/5Ω, L=0.1H and C=4F. Assume zero initial charge across capacitor and zero initial current through inductor. 2. An R-L circuit is connected to an ac voltage e=100sin (500t+30) volts at t =0.If R= 5 Ω and L=0.01 H,find the equation for the current using classical method. | 8  7 |
|  | 1. What are the advantages of laplace transform over classical method? The response v(t) in a series RLC circuit is described by the differential equation   d2v/dt2+12 dv/dt+100v=1000  the initial conditions are v(0)=0 and dv/dt(0)=0.Find the complete  response for v(t) using Laplace Transform method.   1. Solve the following equations using the Laplace transformation method: [7] [Laplace Transform]   Given that | 8  7 |
|  | 1. Check for the positive realness of given function [7] [One Port Network]   Z(s) = (2s2+2s+4)/(s3+2s2+s+2)   1. The denominator polynomial of a network is given as   S4+S3+S2+S+K=0  Determine the range of K for which the system is stable using  Routh- Hurwitz criteria. | 8  7 |
|  | 1. write the properties of RC impedance /RL admittance function. 2. Obtain the Fourier series representation of the waveform shown. | 7  8 |
|  | 1. Find z and y parameters of the given circuit.      1. Synthesize the given LC network function in Foster and Cauer   first forms. [7] | 8  7 |
|  | Write Short notes on (**Any Two**):   1. Hybrid Parameter representation of two port network 2. Symmetry and Reciprocity of the network 3. Initial and final value theorem. | 5×2 |