nepal college of information technology

Assessmemt

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| Level: Bachelor | Fall | Year : 2014 |
| Programme: BE ELX | | Full Marks: 70 |
| Course: Control System | | 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. The open loop transfer function of a unity feedback system is given by   G(s)H(s)=100/s(s+4)(s+5)  Determine the static error constants for the given system. Also determine the steady state error for a unit ramp input.   1. Determine transfer function of following system. | 8  7 |
|  | 1. The characteristic equation of a feedback control system is   S(s2+2s+1)(s+4)+k=0  Find the range of k for which system is stable.   1. Sketch the root locus for the open loop transfer function of a unity feedback control system is given below whose open loop transfer is given by   G(s)H(s)=k(s2+4)/(s(s+2)) | 7  8 |
|  | 1. Sketch the Nyquist plot and determine the stability of a unity feedback control system.   G(s)H(s)=k/(s(sT+1))   1. Draw the bode plot using asymptotes for the open loop transfer function given by   G(s)H(s)=5/(s+2)(s+0.25) | 7  8 |
|  | 1. The open loop transfer function of a unity feedback system is given by   G(s)H(s)=k/(s(3s+1))  Design a phase lag network so that the system has Kv=10 sec-1 and PM>350 | 15 |
|  | Write short notes on **(Any Two)**   1. State space representation 2. Controller for closed loop system 3. Stability criteria from Bode plot | 2×5 |