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**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

**Subject: – LINEAR CONTROL SYSTEMS**

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| Faculty Name: K.MURALI KRISHNA RAJU | Year / Sem: B.Tech in ECE 3/1 | Academic Year: 2019-20 |

**Assignment –II**

1. **Explain the correlation between time and frequencies responses**

Explain the correlation between time and frequencies responses. -12M

1. **Consider a unity feedback system having an open loop transfer function  sketch the polar plot and determine the value of K so that i) Gain margin is 20db ii) phase margin is **

sketch the polar plot -6M

and determine the value of K so that i) Gain margin is 20db -3M

ii) phase margin is  -3M

1. **Given find K .so that the system is stable with i) Gain margin is 6db ii) phase margin is **

find K with Gain margin is 6db -6M

Find K with phase margin is  -6M

1. **Construct Nyquist plot for a system whose open loop transfer function is given by find the range of K for stability**

 Nyquist plot -9M

the range of K for stability - 3M

1. **Sketch the bode plot for the following transfer function and deter mime phase margin and gain margin **

Sketch the bode plot -6M

Calculate phase margin -3M

Calculate gain margin -3M

1. **Derive the expressions for Resonant Peak, Resonant Frequency, Bandwidth and phase margin.**

Derive the expressions for Resonant Peak, -3M

Derive the expressions for Resonant Frequency, -3M

Derive the expressions for Bandwidth -3M

Derive the expressions for phase margin. -3M **Signature of the faculty**

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**Scheme of Evaluation of ASSIGNMENT-II with CO & BT Mapping**

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| --- | --- | --- | --- | --- |
| **Question Number** | **Question** | **Course Outcome** | **Taxonomy Level** | **Scheme of evaluation** |
| 1 | Explain the correlation between time and frequencies responses | C 311.3 | comprehension | 12 |
| 2 | Consider a unity feed back system having an open loop transfer function  sketch the polar plot and determine the value of K so that  i) Gain margin is 20db ii) phase margin is | C 311.3 | application | 12 |
| 3 | Given find K .so that the system is stable with i) Gain margin is 6db ii) phase margin is | C 311.3 | evaluation | 12 |
| 4 | Construct Nyquist plot for a system whose open loop transfer function is given by find the range of K for stability | C 311.3 | application | 12 |
| 5 | Sketch the bode plot for the following transfer function and deter mime phase margin and gain margin | C 311.3 | application | 12 |
| 6 | Derive the expressions for Resonant Peak, Resonant Frequency, Bandwidth and phase margin. | C 311.3 | comprehension | 12 |

**Signature of the faculty**

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**Scheme of Evaluation of MID-2**

1. a) What is the frequency response? -1M

b) Define bandwidth -1M

c) Define phase margin. -1M

d) What is Bodeplot? -1M

e) Define corner frequency. -1M

f) What is minimum phase system? -1M

**SECTION-B**

1. Sketch the bode plot of the transfer function  (6M)

**(OR)**

1. Sketch the polar plot for the transfer function  (6M)

**SECTION-C**

1. Sketch the root locus plot of the control system with loop transfer function

. (6M)

**(OR)**

1. Check whether the system represented by  is controllable (or) not. (6 M)

**Signature of the faculty**

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| Faculty Name: K.MURALI KRISHNA RAJU | Year / Sem: B.Tech in ECE 3/1 | Academic Year: 2019-20 |

**Scheme of Evaluation of MID-II with CO & BT Mapping**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Question Number** | **Question** | **Course Outcome** | **Taxonomy Level** | **Scheme of evaluation** |
| 1 | What is the frequency response? | C 311.3 | Knowledge | 1 |
| Define bandwidth | 1 |
| Define phase margin | 1 |
| What is Bodeplot | 1 |
| Define corner frequency | 1 |
| What is minimum phase system? | 1 |
| 2 | sketch the bode plot of the transfer function given by | C 311.3 | application | 6 |
| 3 | Sketch the polar plot for the transfer function | C 311.3 | application | 6 |
| 4 | Sketch the root locus plot of the control system with loop transfer function | C 311.4 | application | 6 |
| 5 | Check whether the system represented by  is controllable (or) not | C 311.5 | knowledge | 6 |

**Signature of the faculty**