Name: ID. No.

Eskişehir Osmangazi University - Electrical Engineering Department

Fundamentals of Control Systems- Final Examination - Spring 2016

Duration: 70 minutes; **Allowed**: An A4 size two sided formula sheet and a calculator; **Directions**: All answers must be written below the questions. Anything written elsewhere won't be graded. Use the back side of the exam sheet if you need scratch paper.

Question 1.



Question 4.

For the difference equation $y_{n+2} = 0.25 \cdot C \cdot y_n + u_n$, $n = 0, 1, \dots$ where C is a constant real number.

(a) Find the transfer function $\frac{Y(z)}{U(z)}$.

(b) For which constants C is the system stable?

$$(a) \ \frac{Y(z)}{U(z)} = \frac{1}{z^2 - C \cdot 0.25}, \ \ (b) \ |C| < 4$$

Good Luck A. Karamancıoğlu