Faculty of Engineering Elec. \& Comm. Dept.
$3^{\text {rd }}$ Year, 2011 / 2012

## Sheet(3): Block Diagram Reduction

1. Determine the TF of the system shown

2. Reduce the following block diagram to an open loop form.

3. Determine $\mathrm{C} / \mathrm{R}$ for the system shown.

4. For the feedback control system shown in the figure, find $G_{e q}(s)$ and $H_{e q}(s)$.


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5. Determine $C / R_{1}$ and $C / R_{2}$ in the shown system.

6. The following block diagram represents a multi-input multi-output (MIMO) system. Determine $\mathrm{C}_{1}$ and $\mathrm{C}_{2}$ and write the transfer function matrix TFM.

7. For the following block diagram use reduction rules to obtain the transfer functions $\mathrm{Y} / \mathrm{R}$ and $\mathrm{Y} / \mathrm{N}$. Is there any relationship between system blocks that makes Y independent of N ? If yes, find this relationship.


