

9fZc`[fY]WXY`FYhhi b[']b BYi VfUbXYbVi f[.'JYfa]gghYf`GYb]cfYb XUb_'<i bXYb`[YZi bXYb

Dc`]nY]'BYi VfUbXYbVi f['fYhhYh'j Yfa]gghYbž'XYa YbhYb'A Ubba]h'<]`ZY'j cb'FYhhi b[g\ibXYb'bUW\']bhYbg]j Yf'Gi W\U_h]cb"

8]Y 'Øb[ghYb'9fY][b]ggY'fi bX'i a 'X]Y'YfZc`[fY]WXY'Gi WXY'bUWX Y]bYa 'j Yfa]gghYb'XYa YbhYb'A Ubb']b'BYi VfUbXYbVi f['\UVYb XUg'6Yk i gghgY]b'ZØf'X]Y'<YfUi gZcfXYfi b[Yb'i bX'Gcf[Yb'j cb A YbgWXYb'a]h'8Ya Ybn'gck]Y'XYfYb'5b[Y\Òf][Yb'[YghÀf_h" 6YgcbXYfg'Y]bXfi W_gj c```k Uf'X]Y'A cV]`]gUh]cb'nU\`fY]WXYf 9]bgUhn_fÀZhY'i bX'X]Y'k]WXh][Y'Fc``Yž'X]Y'FYhhi b[g\i bXY']b X]YgYf'_f]h]gWXYb'G]hi Uh]cb'qd]Y`hYb"

8]Y'Fc``Y'XYf'FYhhib[q\ibXY

 $\label{eq:linear_control_of_con$

9]b [`ØW_`]W Yf 5i g[Ub[

5a 'A]hhk cW\a cf[Ybžia'(.(''I\fž'kifXY'XYf'jYfa]gghY'AUbb[YZ]bXYb"'9f'VYZUbX'g]W\UiZ'Y]bYf': fY]Z\AW\Y'bU\Y'XYf'CfhgW\UZh6fYYgYb"'Hfchn'XYf'gW\k]Yf][Yb'Iagh\abXYž'ibhYf'XYbYb'YfjYfa]ggh'kifXYž'kUf'XUg'HYUa'Yf`Y]W\hYfhž'U`g'Yg'X]Y'dcg]h]jYBUW\f]W\h'Yf\]Y`h''8]Yg'nY][h'b]W\h'bif'X]Y'9ZZ]n]Ybn'XYf

9]bgUhn_fÀZhYžgcbXYfb'Ui W\'X]Y'K]W\h][_Y]h'Y]bYf'gW\bY``Yb FYU_h]cb']b'gc`W\Yb': λ ``Yb"

< YfUi gZcfXYfi b[Yb'ZØf'X]Y'; Ya Y]bgWXUZh

8]Y'Gcf[Y'i a 'j Yfa]gghY'DYfgcbYbž']bgVYgcbXYfY'gc`W\Y'a]h
8Ya Ybnž'\Uh'k Y]hfY]W\YbXY'5i gk]f_i b[Yb'Ui Z'X]Y'VYhfcZZYbYb
: Ua]`]Yb'i bX'X]Y'; Ya Y]bgW\UZh"8]Y'2 ZZYbh`]W_Y]h'k]fX
ni bY\a YbX'gYbg]V]`]g]Yfh'ZØf'X]Y'gdYn]Y``Yb'6YXØfZb]ggY'X]YgYf
VYgcbXYfg'j Yf`Yhn`]W\Yb'; fi ddY"'9]bY'[i hY'?ca a i b]_Uh]cb'i bX
dfÀj Ybh]j Y'A U» bU\a Yb'g]bX'YggYbn]Y``ži a 'XUg'F]g]_c'Y]bYf
À\b`]W\Yb'G]hi Uh]cb']b'Ni _i bZh'ni 'a]b]a]YfYb"

$K \]WX h][\ \underline{Y}]h fY WX hnY]h][Yf = bhYfj Ybh]cbYb$

8]Y'gcZcfh][Y'FYU_h]cb'XYf'Dc`]nY]'i bX'XYf'FYhhi b[gX]YbghY'k Uf j cb'[fc»Yf'6YXYi hi b["8Yf'A Ubb'k i fXY'gW\bY``']bg'?fUb_Yb\Ui g [YVfUW\hž'i a 'Y]bY'l bhYf_Ø\`i b['ni 'j Yfa Y]XYb"'8]Yg j YfXYi h`]W\hž'k]Y'YggYbn]Y``'Yg']ghž'VY]'XYfUfh][Yb'JcfZ\``Yb i a [Y\YbX'ni '\UbXY`bž'i a 'XUg'K c\``XYf'6YhfcZZYbYb g]W\Yfni ghY``Yb"

8]Y; YgWXY\b]ggY']b'BYi VfUbXYbVi f['g]bX'b]WXh'bi f'Y]b
9]bnY`ZU``ž'gcbXYfb'fYZY_h]YfYb'Y]bY'VfY]hYfY'DfcV`Ya Uh]_']a
I a [Ub['a]h'8Ya Ybn"'8]Y; YgY``gWXUZh']gh'[YZcfXYfhž'@Ògi b[Yb
ni 'Z]bXYb'i bX'XUg'6Yk i gghgY]b'ni 'gWXÀfZYbž'i a 'X]Y'G]WXYf\Y]h
i bX'XUg'K c\`VYZ]bXYb'j cb'A YbgWXYb'a]h'XYa Ybn]Y``Yb
9f_fUb_i b[Yb'ni 'j YfVYggYfb"

B 5;

8 Y hU]`a