

9gYbg' [Y[Yb' @UffY`h. 'Hi G`hfÀi a hij cb
ghUV]`Ya `G]Y[`bUWÅ `j YffØW_hYb`8i Y`Yb

9gYbg'hf]hh'U`g': Uj cf]h' [Y[Yb' @UffY`h'Ub" `B UWÅ
, VYffUgWÅi b [Yb']b`XYf`J Yf[Ub [Yb\Y]h`c ZYb`g]Y`Ui ZY]bYb
_`UfYb`G]Y["

⇒ : i » VU``_ca a h'Yg'cZh'ni 'i bYfk UfhYhYb`K YbXi b [Ybž
VYgcbXYfg']b`XYb`i bhYfYb`@[Yb" `9]b`_Ugg]gWÅYg`6Y]gd]Y`XUZØf
g]b`X`X]Y`6Y [Y [bi b [Yb`nk]gWÅYb`XYb`A UbbgWÅ UZhYb`9gYbg`i bX
@UffY`hž`X]Y`]a a Yf`k]YXYf`ZØf`5i ZFY [i b [`i bX` , VYffUgWÅi b [Yb
gcf [Yb" `8]YgY`K cWÅY`ghY`h`Y]b`k Y]hYfYg`gdUbbYbXYg`8i Y`Ui Z
XYa `Dfc [fUa a ž`k cVY]`XYf`Hi G`9gYbg`U`g': Uj cf]h']b`X]Y`DUfh]Y
[Y`h`A Ub`ZfU [h]g]WÅž`cV`X]Y` ; Ya Yb [Y`U [Y`]b`XYf`@[U`ZØf`Y]bY
, VYffUgWÅi b [` [i h]gh"

K]Y`gWÅcb`VY]`ZfØ`YfYb`6Y [Y [bi b [Yb`_ØbbhY`g]WÅ`Ua`GcbbhU [ž
XYa`%) `I` \f`Ui ZXYa`D`Uhn`Ub`XYf`K`c`ZgVi f [Yf`GhfU»Y`]b`9a`XYbž
k]YXYf`U`Yg`ZØf`cXYf` [Y [Yb`XYb`Hi G`9gYbg`YbhgWÅY]XYb" `HfU]bYf
F`U`Z`6UW`_`Ui`g`]gh`g]WÅ`XYggYb`VYk`i`gghž`XUgg`X]Y`Gd]Y`Y` [Y [Yb
@UffY`h`cZh`i`bj`cf`YfgY`VUfY`9f [YVb]ggY`ni`f` : c` [Y` \UhhYb" `9g [UV
Y]bYb` (.) !F`ØW`_ghUbX`bUWÅ`Y]bYf` (. \$! : Ø` \fi b [`i bX`Y]b`_UfYg`* . \$`
gc`gdY`_hU`_i` `Àf`k]Y`XUg`_`]b [hž`nY] [h`Yg`XcWÅ`ž`k]Y`i bVYfYWÅYbVUf
X]Y`Gd]Y`Y`gY]b`_ØbbYb`ž`gU [h`Yf`i bX`V`]W`_h`Ui Z`X]Y
ni fØW`_]Y [YbXYb`DUfh]Yb`ni fØW`_"

@UffY`h`i bhYf`8fi W`_

8]Y`U`_hi Y`Y`@U [Y`XYf`GdcfhZFYi bXY`@UffY`h`]gh`Y`XcWÅ
VYgcf [b]gYffY [YbX" `⇒`X]YgYf`GU]gcb` \UVYb`g]Y`g]WÅ`a`]h` : f]gWÅ
5i Z`K`mVY`gi`a`ni`gUa`a`Yb [YhUbž`XcWÅ`XYf`Yf`c`ZhY`GWÅ`k`i`b [
V`]YV`V]g`Yf`Ui`g" `A`]h`XfY]`B]YXYf`U [Yb`]b`XfY]`Gd]Y`Yb`]gh`XYf`GhUfh

XYf'A UbbgWkUZhYbhhAi gWYbX'j Yf'Ui ZYb"8Yf'HfU]bYf'j cb'9gYbgž
F'U'Z'6UW_\Ui gž'gWk]XYfh'X]Y'G]hi Uh]cb'gY]bYf'; Y[bYf.' @UffY'h'k Uf
gWkcb'ja a Yf'Y]bY'K i bXYfhØhY"8]Yga U'g]bX'g]Y'k c\`gY`Vghj cb
]\fYa `GhUfhØVYffUgWk.h"

6YgcbXYfg`\Yfj cfni \YVYb']ghžXUgg'@UffY'hž'hfchn']\fYf'gWk`YWk hYb
6]`Ubnž'b]Wk.h'ni `i bhYfgWk`ÅhnYb`]gh" ð`XYf'J Yf[Ub[Yb\Y]h`\UVYb
g]Y`[Y[Yb`HYUa g`XYf'cVYfYb`HUVY`YbYf[]cb'cZh'ghUf_`[Ygd]Y`h"
8]YgYf'la ghUbX'gh]a a h'6UW_\Ui g'j cfg]Wk.h][ž'XU'Ui Wk`X]Y
9gYbgYf'Ui g'Y]bYf'[Ya]gWk.hYb`GU]gcb`_ca a Ybž'X]Y'ni `Ynhh
`YXcWk`Y]bYb`@]Wk.hV`]W_\nY][hY" ð`Y]bYf'j cf\Yf[Y\YbXYb`DUfh]Y
ØVYfnYi [hYb'g]Y'a]h'Y]bYa `i hYb'Gd]Y`[Y[Yb`K Yghf\Ui XYfZY\b"

< YfUi gZcfXYfi b[Yb`ZØf`9gYbg

Hfchn`XYf'Ni j Yfg]Wk.hž'X]Y'6UW_\Ui g'Ui gghfU\`hž'[]Vh'Yg
< YfUi gZcfXYfi b[Ybž'X]Y`XUg`HYUa `ja `6`]W_\UVYb`a i gg"K Ybb
Gd]Y`Yf'k]Y`:]bb`FcgYbVcca `UVk YgYbX'g]bX'i bX': fUb`_H`
Ui Z[fi bX`Y]bYg': i » Vfi Wk`g`Àb[Yf'Ui gZÀ`hž']gh'XUg`Y]b`F ØW_gWk`U["
8Ug']gh'bUhØf`]Wk`Åf[Yf`]Wk`"5VYf'k]f`\UVYb`U`Y]bYb`[fc» Yb
? UXYf ž'[]Vh'g]Wk`XYf'HfU]bYf'cdh]a]gh]gWk`"8]Y`HYUa Vfy]hY`gc`
\Y`ZYbž'XYb`J Yf'i gh'k]Wk.h][Yf'Gd]Y`Yf'Ui gni [`Y]Wk`Yb`i bX`XYbbcWk
XYb`Ub[YghfYVhYb`G]Y[`ni `c`Yb"

8]Y`5bgdfØWk`Y'g]bX`_Uf.'5`Yg`UbXYfY`U'g`XfY]'Di b_hY'k ÅfYb`ZØf
XUg`HYUa `Y]bY`9bhhAi gWk`i b["': Øf'6UW_\Ui g'i bX'gY]bY
A UbbgWkUZh]gh'XYf': c_i g`XUfUi Z[Y`Y[hž'X]Y`DUfh]Y'g]Wk`Yf'ni
[YghU`hYb`i bX`XYb`Gd]Y`j Yf'Ui Zni `Xca]b]YfYb"8]Yga U`
k ØbgWk`Yb`k]f'i bg`Y]bYb`Y\Yf`Ub[k Y']][Yb`G]Y[ž`ZØ[h'Yf
\i a cfj c``Ub"8cWk`ja `Gdcfh`_Ubb`a Ub`b]Y'g]Wk`Yf'gY]bž'k Ug
dUgg]YfYb`k]fX`X]Y`Øb[ghYb`Gd]Y`Y`X]YgYf`VY]XYb`HYUa g
nY][Ybž'XUgg', VYffUgWk`i b[Yb`ghYhg`]a `FUi a `ghY`Yb"

ðg[YgUa h'k]fX`X]Y`6Y[Y[bi b[`b]Wk`h'bi f`ZØf`X]Y`5_hYi fY`Ui Z`XYa
D`Umž'gcbXYfb`Ui Wk`ZØf`X]Y`Ni gWk`Ui Yf'k]YXYf`Y]ba U`Y]b
VYgcbXYfYg`9fY][b]g"8]Y`Gd]Y`g]hi Uh]cb`V]YhYh'Y]bY`dYfZY`_hY
6Ø\bYž'i a `Y]bY`a Ø[`]Wk`Yfk`Y]gY`k Y[k Y]gYbXY`K YbXY`]b`XYf
GU]gcb`ni `Yf`YVYb"8Ua]h'ghY`h'X]Y`DUfh]Y`nk]gWk`Yb`9gYbg'i bX

@UffY`h`i]a`NY]W`Yb`j`cb`gck`c`HfUX]h]cb`U`g`Ui`W`XYf`
VYffUgW`i`b[`ž`X]Y`XYf`i`i`»`VU`]]a`a`Yf`k`]YXYf`a`]h`g]W`Vf]b[`h`

9]b`6`]W`_`Ui`Z`X]Y`6`]`Ub`n`

8]Y`8`i`Y`Y`nk`]gW`Yb`9`gYbg`i`bX`@UffY`h`\`UVYb`]a`@`Ui`Z`Y`XYf`NY]h`
]a`a`Yf`k`]YXYf`\`f`Y][`Yb`Ygž`gd`Ubb`Yb`XYg`b`Uff`Uh]j`Y`Yb`hk`]W`_`Y`h`
8`Uni`[`Y`À`f`h`b]W`h`b`i`f`XYf`Ø`VYff`UgW`Yb`XY`K`Y`W`g`Y`j`cb`
Gd]Y`Z`c`f`a`U]h]cb`Yb`ž`g`cb`XYf`b`Ui`W`X]Y`9`a`c`h]cb`Yb`ž`X]Y`]a`
Gd]Y`Z`Ø`gg][`_`Y]h`_`Ø`bb`Yb`ž`Y]b`ZUW`b]W`h`Ui`g[`Y`g`W`c`gg`Yb`k`Y`f`XYb`"`≠`
Y`XY`a`i`U`k`]f`X`X]Y`g`Yf`G`cb`b`h`U[`Y]b`k`Y]h`Y`f`Y`g`?`Ud]h`Y`]]b`XYf`
;`Y`g`W`]W`h`Y`X]Y`g`Yf`Ui`Z`f`Y[`Y`b`XYb`6`Y[`Y[`bi`b[`Y`b`g`W`f`Y]V`Y`b`"

≠`XYf`;`Y`g`W`]W`h`Y`XYf`6`Y[`Y[`bi`b[`Y`b`nk`]gW`Yb`9`gYbg`i`bX`@UffY`h`
\`UVYb`gh`Y`hg`Ui`»`Yf[`Y`k`Ø`b`]W`Y`9`f`Y][`b]gg`Y`i`bX`K`Y`b`Xi`b[`Y`b`X`U`g`
;`Y`g`W`Y`Y`b`[`Y`d`f`À[`h`"8]Y`i`b`V`Y`f`Y`W`Y`b`V`U`f`_`Y]h`Z`Ø`\`f`h`X`Uni`ž`X`U`gg`X]Y`
A`U`bb`g`W`U`Z`h`Y`b`]a`a`Yf`k`]YXYf`Ui`Z]b`Ub`XY`f`h`f`Y`Z`Y`b`ž`c`b`Y`X`U`gg`Y]b`
_`U`f`Y`f`i`U`j`c`f]h`Ui`gni`a`U`W`Y`b`]gh`"8]Y`g`g`c`f[`h`b]W`h`b`i`f`Z`Ø`f`
Gd`U`bb`i`b[`i`b`h`Y`f`X`Y`b`i`U`bg`ž`g`cb`XYf`b`Ui`W`X`Z`Ø`f`Y]b`\`c`\`Y`g`A`U`»`U`b`
g`d`c`f`h]W`Y`f`F`]j`U`]h`À`h`"≠`XYb`Y`h`h`Y`b`≠`U`f`Y`b`\`U`h`g]W`Y`X`c`W`X`U`g`
6]X`]b`g`V`Y`g`c`b`XY`f`Y`Z`Ø`f`@UffY`h`j`Y`f`À`b`XY`f`h`ž`X`U`g`a`]h`G`W`k`]Y`f][`_`Y]h`Y`b`
_`À`a`d`Z`h`"

9b`hk`]W`_`i`b[`XYf`6`Yn]f`_`g`][`U`

8]Y`6`Yn]f`_`g`][`U`]gh`Y]b`k`]W`h][`Y`f`HY`]`XYf`XYi`hgW`Yb`
5a`Uh`Yi`f`Z`»`VU`g`ž`XYf`HU`Y`b`h`Y`Z`Ø`f`XY`f`h`i`bX`Ui`Z`\`Ø`Y`f`_`U`gg][`Y`
@][`Y`b`j`c`f`V`Y`f`Y]h`Y`h`"8]Y`g`Y`?`U`gg`Y`\`U`h`g]W`]b`XYb`Y`h`h`Y`b`≠`U`f`Y`b`
gh`Y`h][`j`Y`f`À`b`XY`f`h`ž`k`c`V`Y]j`Y`Y`j`Y`f`Y]b`Y`i`a`X]Y`D`U`h`n]Y`f`i`b[`Y`b`i`b`X`
XYb`5i`Z`gh]Y[`]b`X]Y`b`À`W`g`h`\`Ø`Y`f`Y`@[`U`_`À`a`d`Z`Y`b`"8]Y`8`c`a`]b`U`b`n`
Y]b][`Y`f`HY`U`a`g`j`U`f]]Y`f`h`g`h`U`f`_`ž`k`U`g`X`Uni`Z`Ø`\`f`h`ž`X`U`gg`X`Y`f`
K`Y`h`h`V`Y`k`Y`f`V`c`Z`h`g`Y`\`f`Ui`g[`Y[`]W`Y`b`]gh`"≠`g`V`Y`g`c`b`XY`f`Y]b`F`Y[`]cb`Y`b`
a`]h`g`h`U`f`_`Y`f`i`i`»`VU`h`f`UX]h]cb`k`]Y`C`g`h`Z`f]Y`g`U`b`X`ž`k`c`9`g`Y`bg`i`b`X`
@UffY`h`U`bg`À`gg][`g]b`X`ž`[`]V`h`Y`g`Y]b`Y`b`f`Y[`Y`b`5i`gh`Ui`g`W`j`cb`
Gd]Y`Y`f`b`nk`]gW`Y`b`XY`b`j`Y`f`Y]b`Y`b`ž`k`U`g`i`b`V`Y`f`Y`W`Y`b`V`U`f`_`Y]h`]b`X]Y`
Gd]Y`Y`V`f]b[`h`"

≠`6`Yni`[`]Ui`Z`@UffY`h`i`bX`9`g`Y`bg`]gh`Z`Y`gh`ni`gh`Y`Y`b`ž`X`U`gg`V`Y]X`Y`

J YfY]bY'i bhYfgW]YX`]WY`A Y`cX]Yb`XYg`9fZc`[g`i bX`A]ggYfZc`[g
Yf`YVYb``8]Y`ghfUH[]gWYb`9bhgWY]Xi b[Yb`XYf`YhnhYb`X\`fYžk]Y
HfU]bYfk YW gY`i bX`Gd]Y`YfhfUbgZYfgž`UVYb`X]YgY`9bhk]W`i b[Yb
a U» [YV`]W`VYY]bZi ggh``8 Ug`j c f`Y[YbXY`8i Y``]gh`gca]h`b]W`h
bi f`gdcfh]W`žgc bXYfb`Ui W`U`g`HY]`X]YgYf`_cbh]bi]Yf`]W`Yb
9bhk]W`i b[`XYf`@][U`fY`Yj Ubh"

5_hi Y`Y`GU]gcbghUh]gh]_Yb

8]Y`U_hi Y`Y`GU]gcb`j Yf`Ai Zh`gck c`Zøf`9gYbg`U`g`Ui W`Zøf`@UffY`h
i bhYfgW]YX`]W`"K A`fYbX`9gYbg`bUW`Y]bYa`gW`k UW`Yb`GhUfh
ni`Yhnh`Y]bYb`@W`hV`]W`[Y[Yb`K Yghf`Ui XYfZY`b`nY][Yb`_cbbhYž
ghY`h`@UffY`h`bcW`]ja a Yf`c`bY`Di b_hY`Ui Z`XYa`?c`bc``GhUh]gh]_Yb
VY`Y[Ybž`XUgg`X]Y`A UbbgW`UZh]b`XYb`YfghYb`XfY]`Gd]Y`Yb`XYf
GU]gcb`]bg[YgUa h`%&; Y[Ybhc`fY`_Ugg]YfhY`i bX`hfch`c`ZZYbg]j Yf
6Ya Ø`i b[Yb`b]W`h`X]Y`b`Øh][Y`8i fW`gW`U[g_fUZh`Y`bhk]W`Y`b
_cbbhY"

HYUa Gd]Y`Y G]Y[Y I bYbhgW B]YXYf`U HcfY ; Y[Ybh
`Y]XYb [Yb c fY

9gYbg	'	%	\$	&	()
@UffY`h	'	\$	\$	'	'	%&

8]YgY`GhUh]gh]_Yb`i bhYfghfY]W`Yb`X]Y`Xf`Ab[YbXY`B`chk YbX][_Y]h
Zøf`Y]bY`K YbXY`gY]hYbg`@UffY`hž`k A`fYbX`9gYbg`g]W`XUfUi Z
_c`bnYbhf]Yfhž`XYb`5i Zk A`fhghfYbX`Zc`fni gYhnYb``8]Y`_ca a YbXYb
DUfh]Yb`k YfXYb`YbhgW`Y]XYbX`gY]bž`i a`X]Y`F]W`hi b[`VY]XYf
HYUa g`ni`ZYgh][Yb"

8YhU]`g

6Ygi W`Yb`G]Y`i bg`Ui Z.`b!U["XY