

# F Ài VYf`YbhV`Ò» Yb`A YfWXYg. `J ]Yf`F`ÀXYf` ]b`XYf`B UWX h`[ Yghc`\\`Yb`

I bVY\_UbbhY`Ybhk YbXYhYb`]b`Ghi`\\f`X]Y`F`ÀXYf`Y]bYg`  
A YfWXYg"6Y]`Y]bYa`l bZU``]b`5gYbXcfZ`k i fXYb`XfY]`  
DYfgcbYb`j`Yf`Yhnh"

⇒`XYf`B UWX h`j`cb`GcbbhU[`Ui`Z`A`cbhU[`\\UVYb`l`bVY\_UbbhY`]b`XYf`  
GWk`ÀV]gW!<U``GhfU»Y`]b`Ghi`\\f`U`Y`j`]Yf`F`ÀXYf`Y]bYg`A`YfWXYg`  
[`Yghc`\\`Yb`"8]Y`HÀhYf`\\cVYb`XUg: U`fnYi`[`a`]h`<c`n`\_`ÒhnYb`Ub`i`bX`  
a`cbh]YfhYb`UVž`Y`Y`g]Y`i`bYf\_UbbhYbh\_Ua`Yb`"8Yf`XUVY]`  
YbhghUbXYbY`GW`UXYb`VYhf`À[`h`a`]bXYghYbg`)`\$\$\$`9i`fc`"8]YgY`5fh`  
j`cb`8]YVghU`\\ž`VY]`XYa`i`[`Yn]Y`h: U`fnYi`[`hY]`Y`Ybhk`YbXYh`k`YfXYbž`  
]gh]b`XYf`F`Y[`]cb`Y]b`ni`bY`a`YbX`VYgc`f[`b]gYffY[`YbXYg`  
D`Àbca`Yb"

⇒`Y]bYf`UbXYfYb`9W\_Y`XYf`F`Y[`]cb`YfY][`bYhY`g]W`Ua`  
A`cbhU[`bUW`a`]hU[`Y]b`gWk`YfYf`J`Yf`\_Y`f`gi`bZU``]b`5gYbXcfZ`  
;`Y[`Yb`%\*`%)`l`\\f`k`c`h`Y`Y]b`" +!`À`\\f][`Yf: U`fYf`Y]bYg`D`k`j`cb`XYf`  
<c`Yba`ccfYf`GhfU»Y`Ui`g`X]Y`5`hY`<YfghfU»Y`ØVYfei`YfYbž`  
ØVYfgU`\\YXcW`Y]b`Ybh[`Y[`Yb`\_ca`a`YbXYg: U`fnYi`[`ž`XUg`j`cb`  
Y]bYf`)`&!`À`\\f][`Yb: fUi`i`[`YghYi`Yfh`k`i`fXY`"6Y]`XYa`Ni`gUa`a`YbdfU`  
ØVYfgW`i`[`g]W`XYf`K`U[`Yb`XYf: fUi`i`bX`UbXYhY`]a`i`Y]gVYhh`  
XYf`A`i`gYi`a`gVU`b`"8]Y: Yi`Yfk`Y`f`a`i`gghY`Y]b[`fY]ZYbž`i`a`X]Y`  
⇒`gUggYb`ni`VYžfY]Yb"

## J`Yf`YhnhY`VY]`J`Yf`\_Y`f`gi`bZU``

6Y]`XYa`l`bZU``k`i`fXYb`]bg[`YgUa`h`XfY]`DYfgcbYb`j`Yf`Yhnh`"8Yf`  
6Y]ZU`fYf`XYf`)`&!`À`\\f][`Yb`hfi`[`gWk`YfY`J`Yf`Yhni`b[`Yb`XUj`cbž`  
k`À`fYbX`X]Y: U`fYf]b`i`bX`Y]b`k`Y]hYfYf`A`]hZU`fYf`Y]W`hY`  
J`Yf`Yhni`b[`Yb`Yf`]hYb`"5`Y`XfY]`6Yhfc`ZYbYb`k`i`fXYb`i`a`[`Y`YbX`]b`

Y]b`?fUb\_Yb\Ui g`Y]b[ Y`]YZYfh"K Å\fybX`XYf`I bZU`Ui ZbU\ a Y  
a i gghY`X]Y`6i bXYgghfU»Y`nY]hk Y]gY`[ Ubni`[ YgdYffh`k YfXYbž`k Ug  
ni`Yf\YV`]WXYb`J Yf\_Y\fgVY\]bXYfi b[ Yb`]b`XYf`I a [ YVi b[ `ZØ\fhY"

≠`Gi`]b[ Yb`\_Ua`Yg]b`XYf`BUW`hini a`A`cbhU[ `ni`Y]bYa`k Y]hYfYb  
J`cfZU``9]b`I bVY`UbbhYf`VYgW`ÅX][`hY`Y]bYb`dUf`\_YbXYb`J`K` ; c`Z  
]a` : ]`YfXUa` a`i`bX`Yb`h`\_Ua` `XUbUW`ž`c`b`Y`gY]bY`DZ]W`hYb`ni  
YfZØ`Yb`"8Yf`GW`UXYb`k`]fX`Ui`Z`Yhk`U`" \$\$\$`9i`fc`[`YgW`Å`hnh`Gc`W`Y  
J`Yf`\_Y\fgi`bZU`Zi`W`hYb`g]bX`Y]b`\`Åi`Z[`Yg`DfcV`Ya`ž`XU`X]Y  
j`YfUb`hk`cfh]WXYb` : U\fyf`c`Zh`b]W`hini`f`FYW`YbgW`UZh[`Ync[`Yb  
k`YfXYb`"

5b`Y]bYa`k Y]hYfYb`C`fhž]b`8]Yd`c`nž`YfY][`bYhY`g]W`\_Ua  
A`cbhU[`a`cf[`Yb`Y]b`I`bZU`ž`U`g`XYf` : U\fyf`Y]bYg` ; UVY`ghUd`Yfg`Ub  
XYf`?`fYi`ni`b[` ; fUZh`U[`Y`]b`X]Y`GhfU»Y`≠`XYf`<`YffY`UVV]Y[`Yb  
k`c`hY`"8UVY]`ØVYfgU\`Yf`XUg` : U\fnYi`[`Y]bYf`(`&!`Å\`f][`Yb` : fUi`ž  
k`Ug`ni`Y]bYf`?`c``]g]cb`ZØ\fhY`"8]Y` : U\fyf]b`k`i`fXY`Y]W`hj`Yf`Y`hnhž  
i`bX`XYf` ; YgUa`hgW`UXYb`VY`Åi`Zh]g]W`\_Ui`Z`WU`"+) \$\$\$`9i`fc`"Gc`W`Y  
J`cfZÅ`Y`j`YfXYi`h]WXYb`X]Y` ; YZU\fybž`X]Y`VY]`XYf`≠`hYfU`\_h]cb  
nk`]gWXYb`j`YfgW`]YXYbYb` : U\fnYi`[`hmdYb`]a`GhfU»Ybj`Yf`\_Y\`f  
Ui`ZhYhYb`\_`ÖbbYb`"

## 8Yfa`U`k`Å\fybX`X]Y`Dc`]nY]`Yfa`]hhY`h

8]Y`Dc`]nY]`K`Ym\Y`\Uh`X]Y`9fa`]hh`i`b[`Yb`]a` : U``XYg`F`UX!  
8]YVghU\`g`Ui`Z[`Ybca`a`Yb`i`bX`V]hhYh`i`a`<]bk`Y]gY`Ui`g`XYf  
6Yj`Ö`\_Yfi`b[``5i`W`]b`XYb`UbXYfYb` : Å`Yb`g]bX`X]Y`Yk`Y][`Yb  
Dc`]nY]]bgdY`\_h]cbYb`\_U`\_hj`ž`i`a`X]Y`J`Yfi`fgUW`Yf`ni`Z]bXYb`"NYi`[`Yb  
k`YfXYb`[`YVYhYbž`g]W`\_ni`a`Y`XYb`i`bX`YXk`YXY`6Yc`VUW`hi`b[`Yb  
ni`hY]Ybž`X]Y`ni`f`5i`Z`Åfi`b[`XYf`J`cfZÅ`Y`VY]hfU[`Yb`\_`ÖbbhYb`"

8]Y`Dc`]nY]]bgdY`\_h]cb`8]Yd`c`n`Zc`fXYfh`X]Y`6Øf[`Yf`Ui`Zž`k`UW`gUa  
ni`gY]b`i`bX`j`YfXÅW`h][`Y`5`\_hj`]hÅhYb`ni`a`Y`XYb`"9g`]gh`k`]W`h][`ž  
X]Y`G]W`Yf\Y]h]a`GhfU»Ybj`Yf`\_Y\`f`i`bX`X]Y`I`bj`YfgY\fh\Y]h]j`cb  
 : U\fnYi`[`Yb`ni`[`Yk`Å\`f`Y]ghYbž]bgVYgcbXYfY`]b`Y]bYf`NY]hž]b`XYf  
gc`W`Y`8Y`\_`hY`UbgW`Y]bYbX`ni`bY`a`Yb`"

8]Y`[`Ygh]Y[`YbYb`NU\`Yb`j`cb` : U\fnYi`[`X]YVghÅ\`Yb`i`bX

J Yf\_Y\fgi bZÄ`Yb`]b`XYf`FY[ ]cb`nY][ Ybž`k ]Y`k ]W h][  
\_cbh]bi ]Yf`]WY`DfÄj Ybh]cbga U» bU\ a Yb`i bX`Yb[ a UgW][ Y  
, VYfk UW i b[ `Xi fW`X]Y`Dc`nY][g]bX`8]Y`5bk c\ bYf`g]bX  
Ui Z[ YZcfXYfhž`VY]j YfXÄW h][ Yb`5\_h]j ]hÄhYb`gcZcfh`X]Y`6Y\ÖfXYb  
ni`]bZcfa ]YfYb`i bX`]\fY` : U\fnYi [ Y`g]WYf`UVni gW`Y» Yb`"

8]Y`J cfZÄ`Y`]b`Ghi` \fž`5gYbXcfZ`Gi` ]b[ Yb`i bX`8]Yd`c`n`i`]i ghf]YfYb  
X]Y`U\_hi Y`Yb` < YfUi gZcfXYfi b[ Ybž`a ]h`XYbYb`X]Y`Dc`nY][i bX`X]Y  
; Ya Y]bgW UZi`\_cbZfcbh]Yfh]g]bX`8]Y`ghÄbX][ Y`K UW gUa`\_Y]h`XYf  
6Øf[ Yf`\_Ubb`YbhgW Y]XYbX`XUni`VY]hfU[ Ybž`X]Y`?f]a ]bU`hÄh`]b`XYf  
FY[ ]cb`ni`gYb`\_Yb`i bX`g]WYfY`GhfU» Yb`ZØf`U`Y`ni`gW UZYb`"

< Äi Z][ Y`8 Y`]\_hgUfhYb`]b`8]Yd`c`n`

⊕`XYf`FY[ ]cb`8]Yd`c`n`g]bX`VYgh]a`a`hY`8Y`]\_hgUfhYb`ni bY\ a YbX  
ni`VYcVUW hYb`"6YgcbXYfg`8]YVghÄ`Yž`k ]Y`XYf`\_Øfn`]W  
[ Ya Y`XYhY`F`ÄXYfX]YVghU\`ž`ghY`Yb`Y]b`Yfbgh\ UZhYg`DfcV`Ya`XUf`  
@Ui h`XYf`Dc`nY][]W Yb`?f]a ]bU`ghUh]gh]\_`&\$&&[ UV`Yg]a`@UbX`fY]g  
8]Yd`c`n`Y]bYb`5bgh]Y[ ]cb`9][ Ybhi`a`gXY`]\_hYb`i`a` ) ž) `i` ]a  
J Yf[ `Y]W`ni`a`J cf`U`f`"8]YgY`HYbXYbn`nY][[ hž`XUgg`b]W h`bi`f  
: U\ffUXX]YVghÄ`Yž`gcbXYfb`Ui`W`D\_k`!8]YVghÄ`Y`i bX`9]bVfØW Y  
ni [ Ybca`a`Yb`\UVYbž`k Ug]b`XYf`² ZYbh]W`\_Y]h`6Ygcf[ b]g  
Ui`g`Øgh`"

Ni`gÄh`]W`XUni`]gh`Yg`k ]W h][ ž`ØVYf`J Yf\_Y\fgi bZÄ`Y`]a`@UbX`fY]g  
ni`]bZcfa ]YfYb`"8]Y`J Yf\_Y\fgi bZU`ghUh]gh]\_`nY][[ hž`XUgg`X]Y`NU\`  
XYf`J Yf`YhnhYb`]b`YhnhYa``U`f`i`a``%\$`i` ] [ Ygh]Y[ Yb`]gh`": U`hc`fYb  
k ]Y`UV`Yb`\_Yb`XYg`i: U`fYb`i`bX`i; YgW`k ]bX][[\_Y]hgØVYfgW`fY]hi`b[ Yb  
k YfXYb`\Äi Z][ `U`g`i; fØbXY`ZØf`X]Y`Ni`bU\ a Y`]XYbh]Z]n]Yfh`"8]YgY  
9bhk ]W`i`b[ Yb`YfZcfXYfb`Y]bY`gcf[ ZÄ`h][ Y`6YhfUW`hi`b[ `XYf  
G]W Yf`Y]hga U» bU\ a Yb`i bX`dfÄj Ybh]j Yb`GhfUhY[ ]Yb`Xi fW`X]Y  
`c`\_U`Yb`6Y\ÖfXYb`i bX`X]Y`Dc`nY]"

G]W Yf`Y]hga U» bU\ a Yb`i bX`

DfÄj Ybh]c b gghfUhY[ ]Yb`

8]Y`Dc`nY][]bgdY`\_h]cb`8]Yd`c`n`\Uh]j YfgW ]YXYbY`A U» bU\ a Yb`

Y]b[ YZØ\fhž'i a 'X]Y'G]WXYf\Y]h]b'XYb'VYhfcZZYbYb'; YV]YhYb'ni  
Yf\Ø\Yb''8Uni '[ Y\ØfYb'j YfghÅf\_hY'Dc`]nY]dfÅgYbnž'j cf'U''Ya ']b  
?f]a ]bU']hÅhggWk Yfdi b\_hYbž'i bX'X]Y'8i fWZØ\fi b[ 'j cb  
DfÅj Ybh]cbgdfc[ fUa a Ybž'X]Y'XUfUi Z'UVn]Y'Ybž'X]Y'6Yj Ø'\_Yfi b[  
ØVYf'8]YVghU\`dfÅj Ybh]cb'Ui Zni \_`ÅfYb''

8UfØVYf'\]bUi g'k YfXYb'j Yfa Y\fh'5i Z\_`Åfi b[ g\_Ua dU[ bYb'ØVYf  
J Yf\_Y\fgg]WXYf\Y]h'Xi fW [ YZØ\fh''8]Y'Dc`]nY]'UfVY]hYhYb[ 'a ]h  
GWXi 'Yb'i bX' Cf [ Ub]gUh]cbYb'ni gUa a Ybž'i a '† b[ Y': U\fyf'ØVYf  
X]Y'; YZU\fyb'j cb'f]g\_UbhYa ': U\ fj Yf\U'hYb'ni 'j]bZcfa ]YfYb''8Yf  
9]bgUhn'j cb'a cXYfbYf'HYWbc`c[ ]Yž'k ]Y'a cV]'Yb'6`]hn[ YfÅhYb'i bX  
J Yf\_Y\fgØVYfk UWXi b[ gUb`U[ Ybž'\Uh'YVYbZU`g'ni [ Ybca a Ybž'i a  
; YgWk ]bX][ \_Y]hgØVYfhfYhi b[ Yb'i bX'UbXYfY'J Yf\_Y\fgXY']\_hY'ni  
U\ bXYb''

8]Y'6Øf[ Yf'g]bX'ni XYa 'Ui Z[ YZcfXYfhž'j YfXÅW h][ Y'5\_hj] ]hÅhYb'ni  
a Y'XYb'i bX'g]W'U\_hj' Ub'XYf'G]WXYfi b[ ']\fyf'B UW VUfgW UZhYb  
ni 'VYhY']][ Yb''8]Y'9]bf]W hi b[ 'j cb' B UW VUfgW UZh'gk UW Yb'\_Ubb  
XUni 'VY]hfU[ Ybž'XUg'G]WXYf\Y]hg[ YZØ\`']b'XYf'; Ya Y]bgW UZh'ni  
ghÅf\_Yb'i bX'XUg'F]g]\_c'j cb'9]bVfØWYb'i bX'UbXYfYb'GhfUZhUHyb  
ni 'j Yff]b[ Yfb''

## ⇒bZfUghfi \_hi f'i bX'J Yf\_Y\fgg]WXYf\Y]h

8]Y'J Yf\_Y\fg]bZfUghfi \_hi f'ib'8]Yd\c'n'gd]Y'h'Y]bY'YbhgWY]XYbXY  
Fc''Y'j b'XYf'DfÅj Ybh]cb'j cb'J Yf\_Y\fgi bZÅ''Yb''8]Y  
GhfU» YbZØ\fi b[ Yb'i bX'5a dY'Ub`U[ Yb'g]bX'bUW' bYi YghYb  
GhUbXUfXg'[ YghU'hYhž'YXcW '[ ]Vh'Yg'a a Yf'k ]YXYf'6YXUf'Z'Ub  
J YfVYggYfi b[ Yb''5b'[ YZÅ\fXYhYb'?fYi ni b[ Ybž'k ]Y'XYf'5'hYb  
<YYfghfU» Yž'gc`hYb'ni gÅhn`]WXY'J Yf\_Y\fggW]'XYf'cXYf  
5a dY'Ub`U[ Yb'j]b'9fk Å[ i b[ '[ Ync[ Yb'k YfXYbž'i a 'X]Y  
G]W hVUf\_Y]h'ni 'j YfVYggYfb'i bX'i bZÅ''Y'ni 'fYXi n]YfYb''

@Ui h'XYb'Øb[ ghYb'8UhYb'XYf'J Yf\_Y\fgi bZU``\_ca a ]gg]cb']gh'Y]bY  
g][ b]Z]\_UbhY'5bnU\`'j cb'J Yf\_Y\fgi bZÅ''Yb'Ui Zi b[ YbØ[ YbXY  
G]W hY Yf\Å'hb]ggY'ni fØW\_ni ZØ\fyb''8U\Yf'k ]fX'Ya dZc`\Ybž'XUgg  
X]Y'GhUXhY Yfk U'hi b[ 'fY[ Y'a Å»][ 'X]Y'J Yf\_Y\fgg]hi Uh]cb'Ub  
\_f]h]gWYb'GhY''Yb'ØVYfd fØZhi bX'[ Y[ YVYbYbZU`g'A U» bU\ a Yb'ni f

J YfVYggYfi b[ 'XYf'J Yf\_Y\fgg]W\Yf\Y]h'Yf[ fY]Zh" '8 ]Y'9]b\U'hi b[ 'XYf  
J Yf\_Y\fgj cfgW\f]ZhYb 'Xi fW 'U''Y 'J Yf\_Y\fghY]'bY\ a Yf'V'Y]Vh  
i bYf`Àgg`]W ži a 'X]Y'NU\''XYf'I bZ`''Y''Ub[ Zf]gh][ 'ni 'fYXi n]YfYb"

8YhU]`g

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