

J Yf\_Y\ fgi bZÄ`Y`i bX`J Yfa ]gghYbZÄ`Y.`9]b  
6`]W\_`Ui Z`F Yi h`]b[ Ybg`9fY][ b]ggY

J Yf\_Y\ fgi bZÄ`Y`ž`6fUbXgh]Zhi b[ Yb`i bX`8 ]YVghÄ`Y`]b  
F Yi h`]b[ Yb.`5\_hi Y`Y`Dc`]nY]!BYk g`i bX`k ]W h][ Y  
NYi [ YbUi Zfi ZY"

*F Yi h`]b[ Yb`fchgt*

5a`j Yf[ Ub[ YbYb`: fY]hU[ `k i fXY`XYf`GhUXh`F Yi h`]b[ Yb`Xi fW  
j YfgW ]YXYbY`J cfZÄ`Y`Y]b`Vi bhYf`GhfUi »`Ub`< YfUi gZcfXYfi b[ Yb  
dfÄgYbh]Yfhž`XYf`gck c`\`X]Y`Dc`]nY]`U`g`Ui W`X]Y`: Yi Yfk Y\ f  
VYgWÄZh][ hY`" ðg[ YgUa`h`g]bX`a Y\ fYfY`I bZU`!`i bX  
8]YVghU\`a Y`Xi b[ Yb`Y]b[ Y[ Ub[ Ybž`X]Y`j YfgW ]YXYbY`GhUXhhY`]Y  
i bX`Y]bY`J ]Y`nU\`j cb`6YhY]][ hYb`VYhfYZZYb"

I bhYfYbg]b[ Yb`k Uf`GW Ui d`Uhn`Y]bYg`j Yfa Y]XVUFYb  
: `ÄWYbVfUbXgž`XYf`a Ö[ `]WYfk Y]gY`Xi fW`6fUbXgh]Zhi b[  
j Yfi fgUW`h`k i fXY`"A Y\ fYfY`B chfi ZY`YffY]W`hYb`[ Y[ Yb`%+. &) `I \ f  
X]Y`: Yi Yfk Y\ fž`bUW`XYa`Y]bY`: `ÄWY`j cb`Yhk U`%) \$  
E i UXfUha`YhYfb`]b`: `Ua`a Yb`ghUbX`"8]Y`: Yi Yfk Y\ f`k Uf`gW`bY`  
j cf`C`fhi bX`\_cbbhY`XYb`6fUbX`fUgW`"ÖgW`Yb`"9]bY`k`Y]hYfY  
A Y`Xi b[ `ØVYf`Y]bYb`: `ÄWYbVfUbX`]b`XYf`BÄ`Y`Zc`[ hY`[ Y[ Yb  
&%.%\$`I \ fž`k c`YfbYi h`&\$`E i UXfUha`YhYf`VYhfc`ZZYb`k UfYb`"8]Y  
Dc`]nY]`\Uh`X]Y`9fa`]hhi b[ Yb`ØVYfbca`a Yb`i bX`gi W`h`bUW  
a Ö[ `]WYb`<]bk Y]gYbž`X]Y`ni f`9f[ fY]Zi b[ `XYf`HÄ`hYf`ZØ`fYb  
\_ÖbbhYb"

J Yf\_Y\ fgi bZÄ`Y`i bX`J Yf`Yhni b[ Yb

9]b`k`Y]hYfYf`J Yf\_Y\ fgi bZU`Y`fY][ bYhY`g]W`Ui ZXYa``6i f[ d`Uhnž`U`g  
Y]b`i bVY`\_UbbhYf`DYXY`YW: U\ fYf`[ Y[ Yb`% .) ) `I \ f`Y]bY`fchY

5a dY`a ]ggUW hYhY`i bX`XUVY`Y]b` !`Å\ f][ Yg`A`ÅXW`Yb`ghfY]ZhY`  
8 Ug`? ]bX`k`Uf`a` ]h`gY]bYb`9`hYfb`fYW`hnY]h][`Ub`XYf`[`fØbYb`  
: i » [ `Åb[`YfUa`dY`Ui`Z`X]Y`GhfU»Y`ØVYf[`Y[`Ub[`Yb`i`bX`nc[`g]W`VY]  
X]YgYa`J`cfZU`DfY`i`b[`Yb`i`bX`GW`ØfZk`i`bXYb`ni`"8]Y`Dc`nY]  
gi`W`h`bi`b`NYi`[`Yb`ž`X]Y`<]bk`Y]gY`ni`XYa`Z`ØW`h][`Yb`F`UXZU`fYf`  
[`YVYb`\_ØbbYbž`XYf`U`g`†`b[`Yf`A`Ubb`a`]h`Y]bYa`DZYfXYgW`k`Ubn`  
VYgW`f]YVYb`k`]fX`"

⊕`B`YW`\_UfhU]Z]b[`Yb`\_Ua`Yg`ni`Y]bYa`gW`k`YfYb`A`chc`ffUXi`bZU`ž`  
U`g`Y]b`(`&!`Å\ f][`Yf`:`U`fYf`[`Y[`Yb`&%`\$\$`I`f`j`cb`XYf`:`U`fVU`b`  
UV`\_Ua`i`bX`a`]h`Y]bYa`A`Ugh`gck`]Y`Y]bYf`5a`dY`\_c`X]YfhY`"8Yf`  
:`U`fYf`k`i`fXY`gW`k`Yf`j`Yf`Y`h`h`i`bX`]bg`?`fUb`\_Yb`U`i`g`[`YVfUW`h`:`Øf`  
X]Y`Dc`nY]Yf[`UV`g]W`a`Ni`[`Y`XYf`9fa`]h`i`b[`Yb`ž`XUgg`XYf`  
A`chc`ffUXZU`fYf`\_Y]bYb`:`Ø`fYfgW`Y]b`VYgU»`ž`k`Ug`X]Y`@U[`Y`k`Y]hYf`  
\_ca`d`n]YfhY`"

9]b`Y`Yf`\_i`f]cgYf`J`cfZU`YfY][`bYhY`g]W`Ua`i`fY]hU[`UVYbX`]b`  
6U`]b[`Yb`ž`k`c`Y]b`E`i`UXZU`fYf`VY]a`5VV]Y[`Yb`ØVYf`XUg`6Y]b`Y]bYg`  
&+!`Å\ f][`Yb`DUggUbhYb`fc`hY`"B]W`h`bi`f`ghY`hY`XYf`I`bZU`Y]bY`  
9fgW`k`Yfi`b[`ZØf`X]Y`6YhY`]h`b`XUfž`gc`bXYfb`Yg`\_Ua`Ui`W`ni`  
Y]bYf`b]W`h`i`bYf`YV`]W`Yb`GUW`VYgW`ÅX][`i`b[`"

## 9]bVfØW`Y`i`bX`8]YVghÅ`Y`

5a`i`:]XYfghUXh[`UV`Yg`Y]bYb`K`c`l`bi`b[`gY]bVfi`W`ž`XYf`nk`]gW`Yb`  
XYa`%"`i`bX`%-`"5i`[`i`gh`ZYgh[`YghY`h`k`i`fXY`"I`bVY`\_UbbhY`HÅ`hYf`  
[`Y`Ub[`hYb`]b`Y]bY`;`Ughgh`Å`hY`i`bX`X]Y`XUfØVYf`Y[`YbXY`K`c`l`bi`b[`ž`  
i`a`K`Yfh[`Y[`Ybgh`Å`bXY`]a`V]g`Yf`i`bVY`\_UbbhYb`K`Yf`h`ni`ghY`Yb`  
8]Y`Dc`nY]`U`h`9fa`]h`i`b[`Yb`Y]b[`Y`Y]hY`h`i`bX`V]hY`h`a`Ø[`]W`Y`  
NYi`[`Yb`i`a`A`]h`]ZY`"

⊕`?`]fW`Y]a`i`bhYf`HYW`Yb`h`\_Ua`Y]b`)`%`!`Å\ f][`Yf`@\_k`!:`U`fYf`b]W`h`  
i`b[`YghfUZh`Ui`g`Y]bYa`8]YVghU`j`cfZU`Ub`Y]bYf`HUb`ghY`Y`  
K`Å`fYbX`Yf`gY]bYb`@\_k`VYhUb`hY`ž`k`i`fXY`Yf`UV[`Y`Yb`\_h`i`bX`nk`Y`  
HÅ`hYf`bi`h`hYb`X]Y`;`Y`Y[`Yb`Y]h`ž`i`a`gY]bYb`F`i`W`gUW`ni`  
Yb`hk`YbXYb`"8]Y`Dc`nY]`\_c`bbhY`Y]bYb`XYf`VY]XYb`8]YVY`  
ZYghb`Y`a`Yb`i`bX`XYb`F`i`W`gUW`fYW`j`Yf]b[`"

Ni gÀhn`jWk i fXYb`9fa ]h`i b[ Yb`[ Y[ Yb`Y]bYb`(!`À\`f)[ Yb`A Ubb  
]b`9gg`]b[ Yb`Y]b[ Y`Y]hYhž`XYf`]b`Y]bYa`Gi dYfa Uf`\_h`a Y\`fYfY  
: `UgWXYb`5`\_c`c`ghU\`"8Yf`j Yfa Y]b`h`jWXY`8]YV`gYhnhY`g]WXY`ni f  
K Y\`f`i bX`j Yf`YhnhY`Y]bYb`5b[ YghY`hYb`"; fc»Yg`; `ØW`\_`UhhY`X]Y  
`(!`À\`f)[ Y`5i hcZU\`fYf]bž`X]Y`VY]a`J Yf`i gh`j cb`N]Y[ Y`ghY]bYb`Ui Z  
XYf`6&+`b]WXYh`j Yf`Yhnh`k i fXYž`cV`k c\`"j\`f: U\`fnYi [ `Xi fW`X]Y  
\`Yfi bhYfZU`YbXYb`GhY]bY`VYgW`AX][`h`k i fXY"

S=bg[ YgUa`h`nY][`h`g]WXYž`XUgg`XYf: fY]hU[ `Y]b`YfY][`b]gfY]WXYf`HU[  
ZØf`X]Y`Dc`nY]i bX: Yi Yfk Y\`f]b`F`Yi h]b[ Yb`i bX`XYb  
i a`"jY[ YbXYb: YV]YhYb`k Uf`"B]WXYhg`]gh`YXcW`gc`VYXUi Yf`]WXY`k ]Y  
X]Y`J Yf`Yhni b[ Yb`j cb`i bgWXY`i`X][`Yb`J Yf`\_Y\`fghY]`bY\`a Yfbž`X]Y`cZh  
Ui g`XYa`i bUWXYhgUa`\_Y]h`fYgi`h]YfYb"S

## < Ài Z][ Y`i bZU`i fgUWXYb`i bX DfÀj Ybh]cbga U» bU\`a Yb

8]Y`ghY][`YbXY`5bnU\`"j cb`J Yf`\_Y\`fgi bZÀ`Ybž]bgVYgcbXYfY`a ]h  
DYfgcbYbgWXYbž`k ]fZh: fU[ Yb`Ui Zž`k Y`WXY: U`hc`fYb`XUni`ZØ\`fYb  
i bX`k ]Y`X]Y`G]WXYf\`Y]h]a`GhfU»Ybj Yf`\_Y\`f`j YfVYggYfh`k YfXYb  
\_Ubb"@Ui h`XYa`i`6i bXYga ]b]ghYf]i a`ZØf`J Yf`\_Y\`f`i bX`X][`]hU`Y  
=žfUghfi`\_hi`f`f`bA`J`≠`g]bX`5V`Yb`\_i b[ `VY]a`i: U\`fYbž  
; YgWXY`k ]bX][`\_Y]hgØVYfgWXYfY]hi b[ Yb`i bX`5`\_c`c`Ua`GhYi Yf`X]Y  
\`Ài Z][`ghYb`i fgUWXYb`ZØf`gc`WXY`i bZÀ`Y`"8]YgY`GhU]gh]\_Yb  
j YfXYi h]WXYb`X]Y`B`chk YbX][`\_Y]h`j cb`5i Z`Àfi b[ g`Ua`dU[`bYb  
gck ]Y`j cb`ghfYb[ Yb`?`cb`hfc`Yb`]a`GhfU»Ybj Yf`\_Y\`f`"

DfÀj Ybh]cbga U» bU\`a Yb`k ]Y: YgWXY`k ]bX][`\_Y]hga`Yggi b[ Ybž  
j YfghÀf`hY`Dc`nY]\_cb`hfc`Yb`i bX`X]Y: ØfXYfi b[ `j cb  
J Yf`\_Y\`fgg]WXYf\`Y]hgd`fc[`fUa`a`Yb`]b`GWXY`i`Yb`g]bX`YggYbn]Y`"  
Ni XYa`i`g]bX`≠]h]Uh]j Yb`ni f: ØfXYfi b[ `U`hYfbUh]j Yf  
J Yf`\_Y\`fga ]hY`ž`k ]Y`DYXY`YWg`i bX: U\`ff`ÀXYfž`b`chk YbX][`ž`i a`X]Y  
GhfU»Yb`j cb`5i hc`g`ni`Yb`h`UghYb`i bX`[ `Y]WXY`nY]h][`X]Y`G]WXYf\`Y]h  
U`Yf`J Yf`\_Y\`fghY]`bY\`a Yf`ni`Yf`Ø\`Yb`"5i ZXYb`K`YVgY]hYb`XYf`  
**J Yf`\_Y\`fgk UWXY`h`i bX`XYf`5857`Z]bXYb`g]WXY`nU\`fY]WXY`  
F`Yggci`fWXY`bž`X]Y`g]WXY`a ]h`J Yf`\_Y\`fgg]WXYf\`Y]h`i bX`DfÀj Ybh]cb  
VY`ZUggYb`"**

HYWk bc`c [ ]gWk Y`9b hk ]W\_`i b [ Yb`ni f  
9f\ Ò\i b [ `XYf`J Yf\_Y\fgg]Wk Yf\Y]h

A ]h`XYa `: cfhgWk f]hh`XYf`HYWk bc`c [ ]Y`k YfXYb`]a a Yf`a Y\ f  
]bbc j Uh]j Y`@Ògi b [ Yb`Yb hk ]W\_Y`h`i a `X]Y`J Yf\_Y\fgg]Wk Yf\Y]h`ni  
Yf\ Ò\Yb``: U\ fYfUgg]ghYbngmghYa Y`ž`k ]Y`Yhk U  
B chVfYa gUgg]ghYbhYb`ž`Gdi f\U`hYUgg]ghYbhYb`i bX`UXUdh]j Y  
HYa dca UhYb`ž`gd]Y`Yb`Y]bY`YbhgWk Y]XYbXY`F c``Y``8 ]YgY`GmghYa Y  
i bhYfghØhnYb`XYb`: U\ fYf`XUVY]ž`\_f]h]gWk Y`G]hi Uh]cbYb`VYggYf`ni  
Yf\_YbbYb`i bX`gWk bY``ni `fYU[ ]YfYb``

8 ]Y`9]bZØ\fi b [ `j cb`]bhY``[ YbhYb`J Yf\_Y\fggmghYa Yb`f#HGL`n]Y`h  
XUfUi Z`UVž`XYb`J Yf\_Y\fgZi gg`ni `cdh]a ]YfYb`i bX`I bZ`Y`ni  
a ]b]a ]YfYb``8 ]YgY`GmghYa Y`Z b\_]cb]YfYb`Xi fWk`X]Y`J YfbYhni b [ ]  
j cb`: U\ fnYi [ Yb`i bX`#ZfUghfi \_hi f`ž`k Ug`9Wk hnY]h! #Zcfa Uh]cbYb  
ØVYf`J Yf\_Y\fgg]hi Uh]cbYb`Yfa Ò[ `]Wk h``9]bY`i a ZUggYbXY  
I bhYfgi Wk i b [ `ni `X]YgYb`HYWk bc`c [ ]Yb`[ ]Vh`Yg`VY]a `.  
**6i bXYga ]b]ghYf]i a `ZØf`J Yf\_Y\f`i bX`X][ ]hU`Y`#ZfUghfi \_hi f`**  
..

#`XYf`9b hk ]W\_`i b [ `g]bX`Ui Wk`Ui hcbca Y`: U\ fnYi [ Y`ž`X]Y`Xi fWk  
\_ca d`YI Y`GYbgcf]\_`i bX`? =]b`XYf`@U[ Y`g]bXž`Y][ Ybgh`ÅbX][ `ni  
bUj ] [ ]YfYb`i bX`9bhgWk Y]Xi b [ Yb`ni `hfYZZYb``Hfcm`XYf  
j ]Y`j YfgdfYWk YbXYb`A Ò[ `]Wk \_Y]hYb`X]YgYf`HYWk bc`c [ ]Yb`ghY\Yb  
g]Y`YXcWk`bcWk`j cf`fYWk h]Wk Yb`i bX`Yh\]gWk Yb  
<YfUi gZcfXYfi b [ Yb`ž`X]Y`VYfØW\_g]Wk h][ h`k YfXYb`a ØggYb``

8 ]Y`F c``Y`XYf`Dc`]nY]`]b`XYf`I bZU``df`Åj Ybh]cb

8 ]Y`9]bgUhn\_f`ÅZhY`XYf`Dc`]nY]`gd]Y`Yb`Y]bY`nYbhU`Y`F c``Y`VY]`XYf  
5i ZfYWk hYf\U`hi b [ `XYf`J Yf\_Y\fgg]Wk Yf\Y]h``8i fWk`fY[ Y`a`Å»][ Y  
?cbhfc``Ybž`X]Y`8i fWk ZØ\fi b [ `j cb  
J Yf\_Y\fgg]Wk Yf\Y]hg\_Ua dU[ bYb`i bX`GWk i`i b [ Yb`hf`Å[ h`X]Y`Dc`]nY]  
U\_h]j`ni f`I bZU`j Yf\Øhi b [ `VY]``#j ]Y`Yb`FY[ ]cbYb`[ ]Vh`Yg  
gdYn]Y``Y`#ZchU[ Y`i bX`J YfUbgU`hi b [ Yb`ž`VY]`XYbYb`6Øf[ Yf`ØVYf  
g]Wk YfYg`: U\ fj Yf\U`hYb`Ui Z[ Y`\_`Åfh`k YfXYb``

8 Yg`K Y]hYfYb`Yf\YVYb`X]Y`Dc`nY]VY\ÖfXYb`fY[ Y`a`À»][`8 UhYb`ni  
J Yf\_Y`fgi bZÀ`Ybž`i a`F]g]\_c[ YV]YhY`ni`]XYbh]Z]n]YfYb`i bX`[ Yn]Y`hY  
A U» bU`a`Yb`ni`Yf[ fY]ZYb`"8]YgY`5bU`mgYb`\Y`ZYb`b]W`h`bi`f`XUVY]ž  
X]Y`² ZZYbh]W`\_Y]h`ni`gYbg]V`]g]YfYbž`gcbXYfb`Ui`W`ž`X]Y  
⇒ ZfUghfi`\_hi`f`ni`j`YfVYggYfbž`]bXYa`[ YZÀ`f`]W`Y`GhY`Yb`VY`cVYb  
k YfXYb`"8]Y`Dc`nY]`6UXYb`!K`ØfhhYa`VYf[`V]YhYh`i`a`ZUb[ fY]W`Y  
⇒ Zcfa`Uh]cbYb`ni`X]YgYb`A U» bU`a`Yb`i bX`Ybh`À`h`k`]W`h][ Y  
<]bk`Y]gY`ZØf`J`Yf\_Y`fghY`]bY`a`Yf`

8 YhU]`g

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