

Ni fØW\_ 'bUWÅ 'A ØbghYf. ' ? i bghk Yf\_ '\_ ÒbbhY  
ni f'K Y]\ bUWÅ hgnY]h'YfghfU\ `Yb

8]Y'F ØW\_\_Y\ f'XYf' <]a a Y`g`Y]hYf'bUWÅ 'A ØbghYf'Ua 'Hi fa 'XYf  
@Ua VYfh]\_]fWÅY'\_ÒbbhY'ni a 'K Y]\ bUWÅ hga Uf\_h'&\$&( YfZc`[ Yb"

J YfÒZZYbh]WÅ h': fY]hU[ ž&' "\$, "&\$&( '\$) .( \$

≠'A ØbghYf' [ ]Vh'Yg'dcg]h] Y'B Yi ][\_Y]hYb'ZØf' ? i bgh]YV\ UVYf. '8 Ug  
ZUgn]b]YfYbXY' ? i bghk Yf\_ ' <]a a Y`g`Y]hYf'\_ ÒbbhY'a Ò[ `]WÅ Yfk Y]gY  
ni a 'K Y]\ bUWÅ hga Uf\_h'k ]YXYf'Ua 'Hi fa 'XYf'@Ua VYfh]\_]fWÅ Y  
YfghfU\ `Yb" '8]Y'K ]YbYf' ? ØbghYf]b'6]`]'H\ UbbYf'i bX'X]Y  
ÒghYffY]WÅ ]gWÅ Y' ? i bgha ÅnYb]b' l fgi `U'G]a UW\_ž'k Y`WÅ Y'X]Y'@Y]hYf  
VYg]hnhž` \ UVYb'\_UfY'J c fghY`'i b[ Yb'ØVYf'Y]bY'F ØW\_\_Y\ f'X]YgYg  
VYY]bXfi W\_YbXYb'K Yf\_Yg" H\ UbbYf'\ Uh]'f'≠hYfYggY'VY\_i bXYhž  
X]Y'@Y]hYf'ZØf'X]Y'\_ca a YbXYb'j ]Yf'V]g'ZØbZ'Å\ fY'U'g'@Y]\ [ UVY  
bUWÅ 'A ØbghYf'ni 'Vf]b[ Ybž'c\ bY'XUZØf'Y]b' < cbcfUf'ni 'j Yf'Ub[ Yb"

A ]h'X]YgYf' [ fc» nØ[ ] [ Yb'; YghY'k ØfXYb'Ui gbU\ a g`cg'bi f'X]Y  
A cbhU[ Y\_cghYb'Ui Z'X]Y'GhUXh'ni \_ca a Yb" '8]Y'F ØW\_\_Y\ f'X]YgYf  
Y]bn][ Ufh][ Yb' ? i bgh]bghU`Uh]cb'\_ÒbbhY'XYb'HfUX]h]cbYb'XYg  
K Y]\ bUWÅ hga Uf\_hYg'bcWÅ 'a Y\ f'; `Ubn'j Yf'Y]\ Yb'i bX'6Ygi WÅ Yf  
Ubn]Y\ Yb" '5i Z'X]YgY'K Y]gY'k ]fX' ? i bgh'b]WÅ h'bi f'U'g'XY\_c fUh]j Yg  
9`Ya Ybh'k U\ f[ Ybca a Ybž'gcbXYfb'Ui WÅ 'U'g'k ]WÅ h][ Y'\_i 'hi fY`Y  
6YfY]WÅ Yfi b[ 'ZØf'X]Y'F Y[ ]cb"

8]g\_i gg]cbYb' ]b'XYf'@Ua VYfh]!DZUffY]

8]Y'@Ua VYfh]!DZUffY]'ghY\h'XYa 'J c f gWÅ`U[ 'Y]bYf'F ØW\_\_Y\ f'XYf  
<]a a Y`g`Y]hYf'cZZYb'[ Y[ Yb'ØVYf'"DZUffYf' < Ubg!6YfbX' ? ÒddYb  
VYhcbh'YXcWÅ ž'XUgg']bbYf\ U'V'XYf'; Ya Y]bXY'i bhYfgWÅ ]YX`]WÅ Y

A Y]bi b[ Yb'ni 'X]YgYa 'H\Ya U'VYghY\Yb''9]b'?cbZ]\_hž'VYgcbXYfg  
]b'6Yni [ 'Ui ZX]Y'j cf\Yf][ Y'5i gghY''i b[ 'XYf'@Y]hYfž'gc''i bVYX]b[ h  
j Yfa ]YXYb'k YfXYb''8]Yg'nY][ h'XUg'gYbg]V'Y'J cf[ Y\Ybž'XUg']b'XYf  
; Ya Y]bXY'Ub'XYb'HU[ ' [ Y'Y[ h'k ]fXž'k Ybb'Yg'i a 'gc'VYXYi hYbXY  
?i bghdfc'Y\_hY' [ Y'h"

C VYfVØf[ Yfa Y]ghYf'A Uf\_i g'@Yk Y'\Uh'Ub[ Y\_ØbX][ hž'XUgg']b'bU\Yf  
Ni \_i bZh'Y]b'HfYZYb'XYg'?i bghVY]fUhg'ghUhhZ]bXYb'k ]fX''9f'gY'Vgh  
nY][ h'g]W\ 'cdh]a ]gh]gW\ 'i bX'\_ØbbhY'g]W\ '[ i h'j cfghY''Ybž'XUgg'X]Y  
<]a a Y'g'Y]hYf'ZØf'Y]bYb''Àb[ YfYb'NY]hfUi a 'Ub'XYf  
@Ja VYfh\_]fW\ Y'\Àb[ Yb'k ]fX''8]YgYg'dcg]h'j Y'G][ bU'XYf  
GhUXh'j Yfk U'hi b[ '\_ØbbhY'Y]b'Yb'hgW\ Y]XYbXYf'GW\ f]hh']b'F ]W\ hi b[  
Y]bYf'9]b][ i b[ 'nk ]gW\ Yb'XYb'6YhY']][ hYb'gY]b"

## 9]b'? i bghk Yf\_'a ]h'; YgW\ ]W\ hY

8]Y'<]a a Y'g'Y]hYf']gh'b]W\ h'bi f'Y]b'?i bghk Yf\_ž'gcbXYfb'Ui W\ 'Y]b  
Gma Vc''ZØf'\_i 'hi fY''Y'XYbh]hÀhi bX'; Ya Y]bgW\ UZh''G]Y'k ]fX  
U\_hi Y''V]g'9bXY'GYdhYa VYf']b'XYf'?]fW\ Y'Gh''9i ghUW\ Y']b'DUf]g  
Ui g[ YghY''hž'VYj cf'g]Y'a Ø[ ' ]W\ Yfk Y]gY']\fYb'bYi Yb'D'Uhn']b  
A ØbghYf'Y]bb]a a h''8]YgYg'?i bghk Yf\_'n]Y\h'b]W\ h'bi f'6Ygi W\ Yf  
Ubž'gcbXYfb'ZØfXYfh'Ui W\ 'XYb'8]U'c[ 'ØVYf'?i bgh'i bX'XYggYb  
9]bZi gg'Ui ZX]Y'; YgY''gW\ UZh"

8]Y'XYŽ'Y]b'gc'W\ Yg'K Yf\_'bUW\ 'A ØbghYf'ni fØW'\_ni Vf]b[ Ybž'nY][ h  
XUg'6Ya Ø\Yb'i a '\_i 'hi fY''Y'J ]Y'ZU'hi bX'XYfYb'K YfhgW\ Àhni b[ "  
?i bghZØfXYfi b[ ' ]gh'Y]b''YVYbX][ Yg'6Y]gd]Y''XUZØfž'k ]Y'g]W\  
\_fYUh]j Y'?ØdZY'i bX'Yb[ U[ ]YfhY'DYfgcbYb'ni gUa a YbZ]bXYb  
\_ØbbYbž'i a 'X]Y'\_i 'hi fY''Y'@UbXgW\ UZh'Y]bYf'GhUXh'bUW\ \U'h][ 'ni  
[ YghU'hYb''9]bY'F ØW\_\_Y\ f'XYf'<]a a Y'g'Y]hYf'\_ØbbhY'gca ]h'b]W\ h  
bi f'X]Y'\_ØbghYf]gW\ Y'K U\fbY\ a i b[ ' ]b'A ØbghYf'bUW\ \U'h][  
dfÀ[ Ybž'gcbXYfb'Ui W\ 'Y]b'NY]W\ Yb'gYhnYb'ZØf'X]Y'6YXYi hi b[ 'j cb  
?i bgh']b'XYf'; Ya Y]bgW\ UZh"

J cb'XYb'U\_hi Y''Yb'8]g\_i gg]cbYb'i a 'X]Y'<]a a Y'g'Y]hYf'\_ØbbhY'Yg  
i bhYf'l a ghÀbXYb'Ui W\ 'Y]bY'VfY]hYfY'8]g\_i gg]cb'ØVYf  
?i bghZØfXYfi b[ 'i bX'dfÀgYbhUh]cb']b'ghÀXh]gW\ Yb'F Ài a Yb  
Ubghc» Yb''K ]Y'j ]Y''F Ui a 'gc''hYb'gc'W\ Y']a d'cgUbhYb

ϕghU`Uh]cbYb`ja`GhUXhV]X`Yf\U`hYb`i bX`k ]Y`\_ÖbbYb`g]Y`]b`XUg  
ÖZYbh]WXY`@YVYb`]bhY[ f]Yfh`k YfXYb3`8]YgY` : fU[ Yb`XØfZhYb`]b`XYb  
bÅWghYb`K cWYb`gck c\`]b`XYf`@Ja` VYfh]!DZUffY]`U`g`Ui`W`]b`XYf`  
GhUXhj`Yfk`U`hi`b[ `]bhYbg]j`VY`U`bXY`h`k`YfXYb`"

## Ni`\_i`bZh`XYf`<]a`a`Y`g`Y]hYf`

K`Ug`Ui`W`]a`a`Yf`XUg`9f[ YVb]g`XYf`\_ca`a`YbXYb` ; YgdfÅWY`gY]b  
a`U[ ž`X]Y`F`ØW`\_Y`f`XYf`<]a`a`Y`g`Y]hYf`\Uh`VYfY]hg`Y`hnhj`]Y`Y  
6Øf[ Yf`A`ØbghYfg`]b`]\fYb`6Ubb`[ Ync[ Yb``8]Y`8]g\_i`gg]cb`fi`bX`i`a  
X]YgYg`?i`bghk`Yf`\_i`bhYfghfY]W`hž`k`]Y`k`]W`h][`Y]bY`YVYbX][`Y  
?i`bghgnYbY`i`bX`XYfYb`gcn]U`Y`5i`gk`]f`\_i`b[ Yb`ZØf`Y]bY`GhUXh]g]bX`"

8]Y`5bg]W`hYb`XUfØVYfž`k`]Y`?i`bgh]a`\_ÖZYbh]W`Yb`F`Ui`a  
dfÅgYbh]Yfh`k`YfXYb`gc`hYž`g]bX`j`]Y`ZÅ`h][`i`bX`cZh`Ya`ch]cbU`  
Ui`Z[ Y`UXYb``8`cW`X]Y`F`ØW`\_Y`f`XYf`<]a`a`Y`g`Y]hYf`\_ÖbbhY`j`]Y`Y  
dcg]h]j`Y`DYfgdY`\_h]j`Yb`YfÖZbYb`i`bX`X]Y`A`YbgW`Yb`X`Uni`Ub`fY[ Ybž  
ØVYf`XYb`K`Yfh]j`cb`?i`bgh`bUW`ni`XYb`\_Ybž`k`Å`fYbX`g]Y  
[`Y]W`nY]h][`X]Y`GhUXhj`YfgW`ÖbYfb``J`]Y`Y]W`h`gY`Yb`k`]f`gW`cb  
VU`X`X]Y`<]a`a`Y`g`Y]hYf`k`]YXYf`]a`<YfnYb`j`cb`A`ØbghYf`Yi`W`hYbž  
Y]b`@]W`hV`]W`\_]b`XYf`\_U`hYb`ϕ\`fYgnY]h`"

## 8]Y`6YXYi`hi`b[`XYf`?i`bgh]a`\_ÖZYbh]W`Yb` F`Ui`a`

?i`bgh]a`\_ÖZYbh]W`Yb`F`Ui`a`gd]Y`h`Y]bY`Yb`hgW`Y]XYbXY`F`c`Y`]b  
XYf` : ØfXYfi`b[`XYf` ; Ya`Y]bgW`UZh`i`bX`]a`\_i`hi`fY`Yb`5i`ghUi`gW`"  
G]Y`gW`UZh`b]W`h`bi`f`Y]bYb`Ågh`Yh]gW`Yb`A`Y`fk`Yfhž`gcbXYfb`fY[`h  
Ui`W`ni`8]g\_i`gg]cbYb`Ub`i`bX`\_Ubb`]bhY[ fUh]j`k`]f`\_Yb``8]Y`@Y]hYf`  
j`cb`6]``]H`UbbYf`]gh`Y]b`[`i`hYg`6Y]gd]Y`XUZØfž`k`]Y`\_ÖZYbh]W`Y  
?i`bghk`Yf`\_Y`9a`ch]cbYb`k`YW`Yb`i`bX`X]Y`K`U`fbY`a`i`b[`Y]bYg  
C`fhYg`j`Yf`ÅbXYfb`\_ÖbbYb``ϕ`A`ØbghYf`k`i`fXY`X]Y`@Y]hYf`VYfY]hg`U`g  
ØVYfUi`g`dcg]h]j`Yg`9`Ya`Ybh`k`U`f[ Ybca`a`Ybž`XUg`gck`c\`  
9]b`Y]a`]gW`Y`U`g`Ui`W`Hci`f]ghYb`Ub[ Ync[ Yb`\Uh`"

2`ZYbh]W`Y`?i`bgh]gh`cZh`Y]b`Gd]Y[ Y`V]`X`XYf`[ YgY`gW`UZh]W`Yb  
K`YfhY`i`bX`Yb[ ghY``K`Ybb`a`Ub`X]Y`F`YU`\_h]cbYb`Ui`Z`X]Y`@Y]hYf`

VYhfUW hYhž'nY][ h'g]W ž'XUgg'?'i bgh'U'g'D'UhhZcfa 'X]YbYb'\_Ubbž'i a  
ØVYf'H\Ya Yb'k ]Y'?'i 'hi fž'XYbh]hÅh'i bX'; Ya Y]bgW UZh'ini  
fYZY\_h]YfYb''6Øf[ Yfa Y]ghYf'A Uf\_i g'@Yk Y'i bX'X]Y'@Ua VYfh!  
DZUffY]'Yf\_YbbYb'X]Yg'Ub'i bX'X]g\_i h]YfYb'X]Y'F ØW\_\_Y\ f'XYf  
@Y]hYfž'i a 'X]YgY'?'i bghZcfa 'ja '9]b'\_Ub[ 'a ]h'XYf'GhUXh'i bX']\fYb  
6Ygi WYfb'ni 'ZØfXYfb"

## ? i 'hi fZØfXYfi b[ 'i bX'Gh]Zhi b[ gk YgYb

8]Y'Fc''Y'j cb'?'i bgha ÅnYbYbž'k ]Y'I fgi 'U'G]a UW\_ž]gh'j cb'[ fc»Yf  
6YXYi hi b[ ž'k Ybb'Yg'XUfi a '[ Y\hž'\_i 'hi fY''Y'÷h]Uh]j Yb'ni  
i bhYfghØhnYb''?'i bghZØfXYfi b[ 'Xi fW'df]j UhY'Gh]Zhi b[ Yb'hfÅ[ h  
k YgYbh]W'XUni 'VY]ž'Dfc'Y\_hY'ni 'Z]bUb'n]YfYbž'X]Y'Ub'gc'bgYb  
a Ò[ ' ]WYfk Y]gY'b]W'h'fYU'g]Yfh'k YfXYb'\_ØbbhYb''÷'j ]Y'Yb  
GhÅXhYb'[ ]Vh'Yg'DUf'hbYfgW UZhYb'nk ]gWYb'? ØbghYfbž'A ÅnYbYb  
i bX'ØZYbh]WYb'9]bf]W'h'i b[ Ybž'X]Y'XYb'Ni [ Ub[ 'ni f'?'i bgh'i bX  
?'i 'hi f'Yfk Y]hYfb"

÷'X]YgYa '?'cbhYI h]gh'Yg'k ]W'h][ 'ni 'Yfk Å\ bYbž'XUgg'X]Y'U\_hi Y''Yb  
HfYbXg]'b'XYf'?'i 'hi fZØfXYfi b[ 'ni bY\ a YbX'Ui W'Ui Z  
B UW\U'h][ \_Y]hi bX'[ YgY''gW UZh]WYb'8]U'c[ 'n]Y'Yb''÷h]Uh]j Ybž  
X]Y'Ui Z'Ni gUa a YbUfVY]hi bX''Ub[ Zf]gh][ Y'@Y]\ [ UVYb'gYhnYbž'k ]Y  
]a ': U''XYf'@Y]hYf'']b'A ØbghYfž'\_ØbbYb'XUni 'VY]hfU[ Ybž'XUgg'?'i bgh  
b]W'h'bi f'hYa dc fÅfž'gcbXYfb'XUi Yf\UZh'HY]'XYg'GhUXhV]'XYg'k ]fX"

## 2 ZZYbh]WY'F YU\_h]cbYb'i bX'l a ZfU[ Yb'ni f ? i bgh

I a 'X]Y'ØZYbh]WY'K U\fbY\ a i b[ 'XYf'?'i bgh]bghU''Uh]cb'VYggYf'ni  
j YfghY\Ybž'g]bX'l a ZfU[ Yb'Y]b'bØhn]WYg'K Yf\_nYi [ ''÷'Y]bYf  
U\_hi Y''Yb'Ghi X]Y'j cb'?'i bghk ]ggYbgW UZhYfb'k i fXY'ZYgh[ YghY''hž  
XUgg'ØVYf'+\$i 'XYf'6YZfU[ hYb'[ 'Ui VYbž'XUgg'?'i bgh]a  
ØZYbh]WYb'FUi a 'XUg'@VYbg[ YZØ\ 'i bX'X]Y'XYbh]hÅh'Y]bYf  
GhUXh'ghÅf\_h''÷gVYgcbXYfY']b'A ØbghYf'k i fXY'XYf'K i bgW'bUW  
a Y\ f'?'i bgh]a '5''hU[ '[ YÅi » Yfh'Gc'WY'8UhYb'\_ØbbYb'XYb  
9bhgWY]Xi b[ ghfÅ[ Yfb']b'XYf'GhUXh'k Yfhj c''Y'9]bV']W\_Y'[ VVYbž  
k ]Y'?'i bghdfc'Y\_hY']b'XYf'Ni \_i bZi[ YghU'hYh'k YfXYb'gc''hYb"

Ni gÀhn`jW`nY][ h`Y]bY`6YZFU[ i b[ ž`XUgg`\*) i `XYf`6Øf[ Yf`X]Y  
F ØW`\_Y`f`XYf`@Y]hYf`VYZØfk cfhYb`k ØfXYbž`XU`g]Y`X]Y`\_i`hi`fY`Y  
J]Y`ZU`hi`bX`X]Y`J`Yfa`]h`i`b[ `j`cb`?`i`bgh`ZØfXYfb`"8]YgY`dcg]h]j`Yb  
F ØW`\_a`Y`Xi`b[ Yb`\_ØbbYb`Y]bY`YbhgW`Y]XYbXY`F`c`Y`]b`XYb  
8]g`\_i`gg]cbYb`]bbYf`U`V`XYf`@Ua`VYfh]!DZUffY]`i`bX`VY]`ni`\_ØbZh][ Yb  
9bhgW`Y]Xi`b[ Yb`XYf`GhUXhj`Yfk`U`hi`b[ `gd]Y`Yb`"

< ]ghc`f]gW`Y`DYfgdY`\_h]j`Yb`XYf`?`i`bgh`]a  
ØZZYb`h`]W`Yb`F`Ui`a`

≈a`@Ui`ZY`XYf`;`YgW`jW`hY`[`UV`Yg`nU`fY]W`Y`6Y]gd]Y`Yž`]b`XYbYb  
?`i`bgh`]a`ØZZYb`h`]W`Yb`F`Ui`a`]b]W`h`bi`f`Àgh`Y`h]gW`Y`ž`gcbXYfb`Ui`W`  
[`YgY`g`W`UZh`]W`Y`:`i`b`\_h]cbYb`YfZØ`h`h`U`h`9]b`VYa`Yf`Yb`gk`YfhYg  
6Y]gd]Y`]gh`X]Y`b`ghU`U]cb`j`cb`F`]W`UfX`GYffU`g`H]`hYX`5fW`]b  
BYk`Mcf`\_7]hmž`X]Y`5bZUb[ `XYf`%`-,`\$Yf`U`fY`ZØf`Y]bY`h`YZh][`Y  
ØZZYb`h`]W`Y`8YVUhhY`gcf[`hY`"Y`b`]W`k`]Y`X]Y`@Y]hYf`j`cb`H`UbbYf  
gdU`hYhY`Ui`W`GYffU`g`K`Yf`\_X]Y`A`Y]bi`b[ Yb`XYf`6Øf[`Yf`i`bX`ZØ`fhY  
ni`8]g`\_i`gg]cbYb`ØVYf`XYb`D`U`h`j`cb`?`i`bgh`]a`gh`X`h]gW`Yb`F`Ui`a`"

K`À`fYbX`GYffU`g`K`Yf`\_`Y`h`hYbX`]W`Y`b`h`Z`f`b`h`k`i`fXYž`nY][`h`XYf  
ØZZYb`h`]W`Y`8]g`\_i`fg`i`a`X]Y`@Y]hYf`]b`A`ØbghYfž`XUgg`Yg`Ui`W`]b`XYf  
h`Y`i`h][`Yb`NY]h`k`]W`h][`]ghž`X]Y`A`Y]bi`b[ Yb`i`bX`K`ØbgW`Y`XYf  
6Øf[`Yf`]b`gc`W`Y`9bhgW`Y]Xi`b[ Yb`Y]bni`VYn]Y`Yb`"?"`i`bgh`V`Y]V`h`Y]b  
XmbUa`]gW`Yf`i`bX`a`UbW`a`U`Ui`W`i`a`ghf]h`hYbYf`6YghU`b`X`hY`  
gh`X`h]gW`Yf`≈Yb`h]h`hYb`"

8YhU]`g

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