

F ]b[ Yk YfZYb`\_Y\fh'ni fØW\_.`Hca !@i ]g  
GWX YZZ`Yf`Vf]b[ h`HfUX]h]cb`Ui Zg  
@UhYfbYbZYgh

Hca !@i ]g`GWX YZZYf`Vf]b[ h`XUg`hfUX]h]cbY`Y`F ]b[ Yk YfZYb  
ni fØW\_`bUW`<U`Y`VY]a`@UhYfbYbZYgh!\$&("9]b`bYi Yg  
?Ud]hY`ZØf`GWX Ui ghY`Yf`

<U`Y#N" `9g`[ ]Vh`\_Ui a`Yhk UgžXUg`X]Y`9f]bbYfi b[ Yb`Ub  
j Yf[ Ub[ YbY`đ\fa`Āf\_hY`gc`YVYbX][`Ā`h`k ]Y`X]Y`?`Ugg]\_Yf`i bhYf  
XYb`đ\fa`Uf\_hggd]Y`Yb"9]bYg`X]YgYf`Gd]Y`Yž`XUg`X]Y`A`YbgW`Yb  
gY]h;`YbYfUh]cbYb`VY[ Y]ghYfhž`]gh`XUg`F ]b[ Yk YfZYb"8 UVY]`UbXY`h  
Yg`g]W`i a`Y]bY`?ca`V]bUh]cb`Ui g;`YgW`]W`]W`\_Y]hi bX`Ui W  
Y]bYf`Df]gY;`ØW\_"5a`<U`YbgYf`@UhYfbYbZYgh`\_ca`a`h`XUg  
F ]b[ Yk YfZYb`bUW`Y]bYf`Ub[ Yb`Dui`gY`j`cb`&\$`đ\fyb`ni fØW\_`i bX  
k ]fX`j`cb`Hca !@i ]g`GWX YZZYfž`Y]bYa`↑ b[ Yb`GWX Ui ghY`Yfž  
Ub[ YVchYb"

GWX YZZYf`ghUa`a`h`Ui`g`A`UW`Yfbž`GUW`gYbž`i bX`]gh`k ]Y`j ]Y`Y`gY]bYf  
?c`Y[ Yb`]b`Y]bY`: Ua` ]]Y`j`cb`GWX Ui ghY`Yfb`\\]bY]b[ YVcfYb  
k`cfXYb"8 Ug`K`i`fZgdY`\_hU`\_Y`\\Uh`]b`gW`cb`U`g`?]bX`ZUgn]b]Yfhž`i bX  
bi b`k`U[ h`Yf`XYb`GW`f]hž`gY]b`Y][`YbYg`GhUbX`VY]a`@UhYfbYbZYgh  
&\$&(`]b`<U`Y`ni`YfØZbYb"GY]bY`J`cfZU`fYbž`XUfi`bhYf`VY`\_UbbhY  
BUa`Yb`k`jY`K`YVYfž`<Ufha`Ubb`i bX`j`cf`U`Ya`5Xc`ZBYi`hgW`ž  
\\UVYb`XUg`F ]b[ Yk YfZYb`Ui`ZXYb`<U`YbgYf`đ\fa`Āf\_hYb`dcdi`Āf  
[ Ya`UW`h`i`a`gc`VYa`Yf`\_Ybgk`YfhYf`]gh`Ygž`XUgg`GWX YZZYf`g]W  
YbhgW`cggYb`\\Uhž`X]YgY`HfUX]h]cb`k ]YXYfni`VY`YVYb"

9]b`GhØW\_`HfUX]h]cb`k ]fX`YVYbX][

8 Ug`F ]b[ Yk YfZYb`]gh`a`Y`f`U`g`bi`f`Y]b`Gd]Y`/`Yg`]gh`Y]b`HY`]`XYf  
?i`hi`f`XYg`đ\fa`Uf\_hYg"9g`ZcfXYfh;`YgW`]W`]W`\_Y]hj`cb`XYb

HY]bY\ a Yfbž'X]Y'F ]b[ Y'Ui Z'VYgh]a a hY'CV'Y\_hY'k YfZYb'a ØggYb"  
8Yf'FY]n''Y[ h'XUVY]'b]W'h'bi f'ja 'K YhhVYk YfVž'gcbXYfb'Ui W' ]b  
XYf'BcghU'[ ]Yž'X]Y'gY]h'š\ fYb'ZØf'J ]Y'Y'a ]h'X]YgYa 'Gd]Y'  
Y]b\Yf[ Y'h'"Hca !@ ]g'GW'YZZYf'a ØW'hY' ]b]W'h'bi f'XYb'<U''YbgYfb  
GdU» 'V]YhYbž'gcbXYfb'Ui W'X]Y'9f]bbYfi b[ Yb'Ub'X]Y'U'hYb  
š\fa Åf\_hY'k UW'\U'hYb"

GY]b'GhUbX'k ]fX'j cfUi gg]W'h]W'h'j ]Y'Y'6Ygi W'Yf'Ubn]Y\Ybž'X]Y  
Yfgh\_'Ugg][ Y'K i fZ\_ØbghY'XYa cbghf]YfYb'i bX'g]W' [ 'Y]W'nY]h][ 'Ub  
X]Y'Y][ YbYb'9f'YVb]ggY'Ui g'?]bXYfhU[ Yb'Yf]bbYfb'\_ØbbYb'"8Ug  
7ca YVUW\_XYg'F ]b[ Yk YfZYbg'Ui Z'XYa '@UhYfbYbZYgh'\_ØbbhY'gca ]h  
b]W'h'bi f'Y]bY'k ]fhgW'UZh]W'Y'7\UbW'ZØf'XYb'↑ b[ Yb  
GW'Ui ghY''Yf'XUfghY''Ybž'gcbXYfb'Ui W'Y]bY'\_i 'hi fY''Y  
K ]YXYfVY'YVi b[ 'ZØf'<U''Y'VYXYi hYb"

## 8]Y'6YXYi hi b[ 'XYg'Gd]Y'Y'Ya YbhYg

8Yf'9fZc'[ 'XYg'F ]b[ Yk YfZYbg'\Åb[ hij cb'j YfgW']YXYbYb': U\_hcfYb  
UV''BYVYb'XYa ' ; YgW']W'\_]W'\_Y]hgY'Ya Ybh'gd]Y'h'Ui W'X]Y'gcn]U'Y  
≠hYfU\_h]cb'Y]bY' [ fc» Y'F c''Y''8]Y'5ha cgd\ÅfY'Y]bYg'š\fa Uf\_hYg  
]gh[ YdfÅ[ hij cb '@UW'Ybž'GW'fY]Yb'i bX'XYa 'VY'YVhYb'HfY]VYb'j cb  
A YbgW'Yb'YXYb'5'hYfgž'X]Y'g]W' ]b'XUg'Gd]Y'ghØfnYb'' ; 'Y]W'nY]h][  
X]Ybh'Yg'U'g'Y]bY'5fh[ Ya Y]bgUa Yf'5\_h]j ]hÅž'X]Y' ; YbYfUh]cbYb  
j YfV]bXYh'GW'YZZYf'Yf'\_Ybbh'X]YgYb'K Yfhi bX'a ØW'hY' ]\b'ja  
F U\ a Yb'gY]bYg'GhUbXYg'Ui Z'X]Y'bÅW'ghY' ; YbYfUh]cb'ØVYfhfU[ Yb"

≠'Y]bYf'NY]hž']b'XYf'X][ ]hU'Y'i bhYf\U'hi b[ 'cZi'XYb'J cffUb[ '\Uhž']gh  
X]Y'F ØW'\_Y\ f'\_Ugg]gW'Yf'Gd]Y'Y'k ]Y'XUg'F ]b[ Yk YfZYb'Y]bY'Zf]gW'Y  
5Vk YW'g'i b[ ''8Ug' : Ygh'ja 'bÅW'ghYb'š\fa' [ ]Vh'XYf'GhUXh'X]Y  
A Ø[ ' ]W'\_Y]hž'XUg' ; Ya Y]bgW'UZh]g[ YZØ'\ 'ni 'ghÅf'\_Yb'i bX'U'hY  
HfUX]h]cbYb'ni 'VYk U\ fYb'' : Øf'j ]Y'Y'Y'hYfY' ]gh'Yg'Y]bY  
k ]'\_ca a YbY' ; Y'Y[ Yb\Y]hž']b'X]Y'J Yf[ Ub[ Yb\Y]h'ni 'fY]gYb'i bX  
X]Y'i bVYgW'k YfhY' : fYi XY'XYf'š [ YbX'bcW'Y]ba U''ni 'Yf'VYVYb"

Ni gUa a Yb[ YZUggh'\UbXY'hYg'g]W'VY]a 'F ]b[ Yk YfZYb'b]W'h'bi f  
i a 'Y]b'fY]bYg' : fY]nY]hj Yf[ bØ[ Yb''9g'gd]Y'h'Y]bY'k YgYbh]W'Y'F c''Y  
]b'XYf'HfUX]h]cb'i bX'?i 'hi f'j cb'š\fa Åf\_hYb'"Hca !@ ]g'GW'YZZYf  
\Uh'XUg'DchYbn]U'ž'a ]h'gY]bYa 'GhUbX'Y]bYb'bYi Yb'5bZUb[ 'ZØf'XUg

F]b[ Yk YfZYb`]b`<U`Y`Y]bni`Y]hYb`i bX`[ `Y]W\ nY]h][ `X]Y  
6Y[ Y]ghYfi b[ `ZØf`X]YgYg; YgW\ ]W\_`]W\ \_Y]hggd]Y`VY]`XYb`A YbgW\ Yb  
ni`YbhZUW\ Yb"

## 9]b`6`]W\_`]b`X]Y`Ni`\_i bZh`XYg`>U\ fa Uf\_hg

8 Ug`@UhYfbYbZYgh`&\$&( `k ]fX`c\ bY`Nk Y]ZY`Y]b`HYgh`ZØf`XUg  
9b[ U[ Ya Ybhi bX`X]Y` : Å\][ \_Y]hYb`j cb`Hca`!@ ]g`GW\ YZZYf`gY]b"  
K ]Y`k ]fX`XUg`Di`V`]\_i a`Ui`Z`XUg`7ca`YVUW\_`X]YgYg`Gd]Y`Yg  
fYU[ ]YfYb3`K`YfXYb`X]Y`<U`YbgYf`X]Y`B`cghU`[ ]Y`i bX`XYb`GdU» ž  
XYb`XUg`F]b[ Yk YfZYb`V]YhYhž`UbbY\ a`Yb`i bX`j ]Y`Y]W`h`gc[ Uf  
XUfUb`hY]`bY\ a`Yb`3`GW\ YZZYf`gW\ Y]bh`VYfY]h`ni`gY]bž`X]Y  
<YfUi`gZcfXYfi b[ `Ubni`bY\ a`Ybž`i bX`Yg`V`Y]Vh`gdUbbYbX`ni  
VYcVUW\ hYbž`k ]Y`g]W\ `X]Y`F`ØW\_`Y\ f`X]Yg`F]b[ Yk YfZYbg`Ui`Z`XUg  
>U\ fa Uf\_h[ YgW\ Y\ Yb`]b`Ni`\_i bZh`Ui`gk ]f`\_Yb`k ]fX"

## B`c`ghU`[ ]Y`i bX`HfUX]h]c`b

8 Ug`F]b[ Yk YfZYb`]gh`b]W\ h`bi`f`Y]b`Gd]Y`ž`gcbXYfb`Ui`W\ `Y]b`HY]`  
XYf`gcn]U`Yb`i bX`\_i`hi`fY`Yb`>Yb]h]h`h`nU\`fY]W\ Yf`>U\ fa Åf\_hY`]b  
8 Yi hgW\ `UbX`"9g`n]Y\`h`A`YbgW\ Yb`U`Y`f`5`hYfg[ fi`ddYb`Ub`i bX  
V]YhYhigck`c\`GUa`a`Yfb`j`cb`DfY]gYb`U`g`Ui`W\`HY]`bY\ a`Yfb`Y]bY  
A`Ö[ `]W\ \_Y]hž`\fY; YgW\ ]W\_`]W\ \_Y]h`ni`nY][ Yb`"8Yf`Ya`ch]cbU`Y  
K`Yfh`gc`W\ Yf`>U\ fa Uf\_hgUhhfU\_h]cbYb`k ]fX`]b`Y]bYa`ni`bY\ a`YbX  
X][ ]hU`]g]YfhYb`5`hU[ `c`Zh`ØVYfgY\ Yb`"Gc`nYi [ Yb`j ]Y`Y`HfUX]h]cbYbž  
Y]bgW\ `Y»`]W\ `XYg`F]b[ Yk YfZYbgž`j`cb`Y]bYf`U\ f\i`bXYfhY`Ub[ Yb  
DfUI ]g`XYg`A`]hY]bUbXYfg"

⊕`8 Yi hgW\ `UbX`[ UV`Yg`ØVYf`X]Y`>U\ fY`j ]Y`Y`i`a`VfØW\ Yž`X]Y`XUg  
>U\ fa Uf\_hg`YVYb`i bX`X]Y`XUa`]h] YfVi`bXYbYb`Gd]Y`Y  
VYY]bZi`gghYbž`gY]Yg`bUW\ `XYb`K`Y`h\_f]Y[ Yb`cXYf`k`Å\ fYbX  
k ]fhgW\ UZh]W\ Yf`?`f]gYb`"8 Ug`F]b[ Yk YfZYb`\ Uh`g]W\ `YXcW\ `U`g  
fcVi`ghYf`6YghUbXhY]`X]YgYf`HfUX]h]cb`Yfk ]YgYb`"8 ]Y`Y]b[ Ub[ g  
[ YbUbbhYb`GW\ Ui`ghY`Yf`k ]Y`5Xc`Z`BYi`hgW\ `UVYb`b]W\ h`bi`f`X]Y  
Gd]Y`k`Y]gY`ØVYf`Y]ZYfhž`gcbXYfb`Ui`W\ `XYb`gcn]U`Yb`?`cbhU\_h  
[ YZØfXYfhž`XYf`ZØf`X]Y`>U\ fa Åf\_hY`YggYbh]Y`"]gh"

## 6 YXYi hi b [ 'ZØf'X]Y ``c\_U`Y ; Ya Y]bgWÅ UZh

: Øf`\_`Y]bY`GhÅXhY`k ]Y`<U``Y`]gh`XYf`Å\fa Uf\_h`b]WÅ`h`bi`f`Y]bY`  
h`ci`f]gh]gWÅY`5h`hfU\_h]c`b`ž`g`c`b`XYfb`Ui`WÅ`Y]b`k`]WÅ`h][`Yf`  
K`]f`hgWÅ`UZh`gZU`\_`hc`f`"@Ui`h`XYa``J`Y`f`V`U`b`X`i`8`Y`i`hgWÅ`Y`f`G`WÅ`U`i`ghY``Y`f`i`b`X`  
A`Uf`\_`h`\_`U`i`Z`Y`i`h`Y`h`f`Å`[`h`i`XYf`Å\fa`Uf`\_`h`a`U`»`[`Y`V`]WÅ`ni`f`c`\_`U`Y`b`  
K`]f`hgWÅ`UZh`i`V`Y]ž`]b`XYa``Y`f`5`f`V`Y]h`gd`Å`h`n`Y`g`WÅ`U`Z`h`i`b`X`i`c`\_`U`Y`  
I`b`h`Y`fb`Y`a`Y`b`i`b`h`Y`f`gh`Ø`h`h`"8`U`g`@`U`h`Y`fb`Y`b`Z`Y`gh`]b`<U``Y`n`]Y`h`  
Å`Å`f`]WÅ`H`U`i`g`Y`b`X`Y`j`c`b`6`Y`g`i`WÅ`Y`fb`U`b`ž`i`b`X`X`Y`h`f`U`X]h]c`b`Y``Y`b`  
G`d]Y`Y`k`]Y`X`U`g`F`]b`[`Y`k`Y`f`Z`Y`b`g`WÅ`U`Z`Y`b`Y`]b`Y`Z`Y`gh`]WÅ`Y`5`h`a`c`g`d`Å`f`Y`ž`  
X]Y`X`Y`Y`;`Ya`Y]bgWÅ`UZh`ni`g`U`a`a`Y`b`V`f]b`[`h`"

8`Y`g`K`Y`]h`Y`f`Y`b`V`]Y`h`Y`b`g`c`WÅ`Y`:`Y`gh`Y`Y`]b`Y`D`U`h`h`Z`c`f`a``Z`Ø`f`c`\_`U`Y`  
?`Ø`b`gh`Y`f`i`b`X`<`U`b`X`k`Y`f`\_`Y`f`ž`i`a``]\`f`Y`9`f`n`Y`i`[`b`]gg`Y`ni`d`f`Å`g`Y`b`h]Y`f`Y`b`"  
≠`X`]Y`g`Y`a``?`c`b`h`Y`i`h`gd]Y`h`H`c`a`!`@`]g`G`WÅ`Y`Z`Z`Y`f`Y`]b`Y`G`WÅ`Ø`gg`Y`f`c``Y`ž`  
]b`XYa``Y`f`b`]WÅ`h`bi`f`X`U`g`F`]b`[`Y`k`Y`f`Z`Y`b`k`]Y`X`Y`f`U`i`Z`X`Y`A`Å`f`\_`h`Y`  
V`f]b`[`h`ž`g`c`b`X`Y`fb`Ui`WÅ`X`U`g`K`]gg`Y`b`i`b`X`X`Y`?`i`h`i`f`ž`X`Y`a`]h`X`]Y`g`Y`b`  
H`f`U`X]h]c`b`Y`b`j`Y`f`Vi`b`X`Y`b`g]b`X`ž`k`Y`]h`Y`f`[`]V`h`9`g`]gh`k`]WÅ`h][`ž`X`U`gg`  
Ø`b`[`Y`f`Y`:`Y`b`Y`f`U`h]c`b`Y`b`k`]Y`Y`f`]b`X`Y`:`i`»`gh`U`d`Z`Y`b`]\`f`Y`f`J`c`f`Z`U`f`Y`b`  
h`f`Y`h`Y`b`ž`i`a``X`Y`H`f`U`X]h]c`b`Y`b`Y`V`Y`b`X][`ni``U`h`Y`b`"

## 5\_hi Y``Y`HfYbXg`i bX`< YfUi gZcfXYfi b [ Yb

Ni`g`Å`h`n`]WÅ`ni`X`Y`b`h`f`U`X]h]c`b`Y``Y`b`5`gd`Y`\_`h`Y`b`gh`Y`h`X`U`g`F`]b`[`Y`k`Y`f`Z`Y`b`ž`  
k`]Y`j`]Y`Y`U`b`X`Y`f`Y`5`h`hf`U`\_`h]c`b`Y`b`ž`j`c`f`<`Y`f`U`i`g`Z`c`f`X`Y`f`i`b`[`Y`b`"8`Y`f`  
X][`]h`U`Y`K`U`b`X`Y`i`b`X`X`U`g`j`Y`f`Å`b`X`Y`f`h`Y`:`f`Y`n`Y`]h`Y`f`U`h`Y`b`X`Y`f`  
?`c`b`g`i`a`Y`b`h`Y`b`Z`Ø`f`Y`b`X`U`ni`ž`X`U`gg`\_`U`gg]g`WÅ`Y`Å\fa`Uf`\_`h`gd]Y`Y`  
k`Y`b][`Y`f`Z`f`Y`e`i`Y`b`h]Y`f`h`k`Y`f`X`Y`b`"@Ui`h`Y`]b`Y`f`i`a`Z`f`U`[`Y`X`Y`g`  
A`Uf`\_`h`Z`c`f`g`WÅ`i`b`[`g]b`gh]h`hg`:`c`f`g`U`U`i`g`X`Y`a``Å\fa`f`&`\$`&`&`[`U`V`Y`b`)`i`  
X`Y`f`6`Y`Z`f`U`[`h`Y`b`U`b`ž`X`U`gg`g]Y`[`Y`Y`[`Y`b`h`]WÅ`Å\fa`Å`f`\_`h`Y`V`Y`g`i`WÅ`Y`b`ž`  
Y`X`c`W`j`Y`fa`]g`gh`Y`b`j`]Y`Y`X`Y`U`h`Y`:`U`a`Y`g`"B`Y`i`Y`X][`]h`U`Y`G`d]Y`Y`i`b`X`  
]a`a`Y`f`g]j`Y`9`f`Y`V`b]gg`Y`V`]Y`h`Y`b`gh`U`f`\_`Y`?`c`b`\_`i`f`f`Y`b`n`"

I`a`]a`K`Y`h`h`V`Y`k`Y`f`V`V`Y`gh`Y`Y`b`ni`\_`Ø`b`Y`b`ž`a`Ø`gg`Y`b`G`WÅ`U`i`gh`Y``Y`f`  
]b`b`c`j`U`h]j`Y`5`bg`Å`h`n`Y`Y`b`h`k`]W`\_`Y`b`ž`i`a``Ø`b`[`Y`f`Y`N`]Y`[`fi`d`d`Y`b`ni`  
Y`f`f`Y]WÅ`Y`b`"8`Y`f`9`]b`g`U`h`n`j`c`b`G`c`W]U`A`Y`X]U`ni`f`J`Y`fa`Uf`\_`h`i`b`[`]\`f`Y`f`  
G`h`Å`b`X`Y`i`b`X`Y`]b`Y`U`b`g`d`f`Y`WÅ`Y`b`X`Y`D`f`Å`g`Y`b`h`U`h]c`b`Ui`Z`Å\fa`Å`f`\_`h`Y`b`  
g]b`X`Y`gg`Y`b`n]Y``H`c`a`!`@`]g`G`WÅ`Y`Z`Z`Y`f`U`h`V`Y`f`Y]hg`U`b`[`Y`\_`Ø`b`X][`h`ž`

[ fc» Y`HY]`Y`gY]bYf`Df`gYb`hUh]cb`Ua`F]b[ Yk`YfZYb`]bhYfU\_h]j`ni  
[ YghU`hYb``Gc`W`Y`A`U» bU`a`Yb`\_`ObbhYb`XUni`VY]hfU[ Ybž`XUg  
⇒hYfYggY`XYf`Øb[ YfYb`; YbYfUh]cbYb`Ua`F]b[ Yk`YfZYb`i`bX  
À`b`]W`Yb`HfUX]h]cbYb`ni`k`YW`Yb`"

8YhU]`g

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