

9fbØWΛ hYfi b[ 'bUWΛ '6Ui 'XYg  
: U\ fVU\ bhY]'Yfg']b 'A ØbghYf. 'K Ug'V`Y]Vh3

<YggYb 'A cV]'i bX'X]Y'GhUXh'@Ui VUWΛ 'VUi Yb'Y]bYb  
: U\ fVU\ bhY]'Yf"'5bk c\bYf'nk Y]ZY'b'Ub'XYf'K ]f\_i b[ 'Ui ZX]Y  
J Yf\_Y\fgg]WΛ Yf\Y]h"

⊕'XYf'\_Y]bYb'; Ya Y]bXY'A ØbghYf']a 'GhUXhhY]'@Ui VUWΛ 'ghY\Yb  
X]Y'6Yk c\bYf'j cf': fU[ Yb'ni f'bYi Yb'G]WΛ Yf\Y]hgY]b]WΛ hi b[ ž'X]Y  
]b': cfa 'Y]bYg': U\ fVU\ bhY]'Yfg'[ YgWΛ UZZYb'k i fXY"'8]YgYf'HY]'Yfž  
]bghU''Yfh'Ub'XYf'@UbXghfU» Y '@ ( , %ž'gc`hY'XUni 'VY]hfU[ Ybž'b]WΛ h  
bi f'X]Y'; YgWΛ k ]bX][ \_Y]hYb'XYf': U\ fnYi [ Y'ni 'fYXi n]YfYbž  
gcbXYfb'Ui WΛ 'XYb'J Yf\_Y\fg'Àfa 'ni 'j Yff]b[ Yfb"'8cWΛ 'bUWΛ 'XYf  
l a gYhni b[ 'g]bX'X]Y'9fk Ufhi b[ Yb'Ui ZY]bY'\UfhY'DfcVY'[ YghY`h  
k cfXYb"

8]Y'`c\_U'Y'6Yj Ò\_Yfi b[ '\UhhY'[ fc» Y'<cZZbi b[ Yb']b'XUg'Dfc'Y\_h  
[ YgYhnh"⊕Zcfa Uh]cbYb'ni Zc`[ Y'k Uf'Y]bY'VfY]hYfY'J Yf\_Y\fg]bgY`  
a ]hY]bYf'6fY]hY'j cb'ZØbZA YhYfb'Ub[ YXUWΛ hž'i a 'XYb'J Yf\_Y\f'ni  
j Yf'Ub[ gUa Yb'ni bX'X]Y'G]WΛ Yf\Y]h'XYf': i » [ Àb[ Yf'ni 'Yf\Ò\Yb"'6Y]  
Y]bYf'6Yg]WΛ h][ i b[ 'XYg'ZYfh][ [ YghY`hYb'6Ui k Yf\_g'Xi fWΛ 'XYb  
C fhgVY]fUh'k i fXY'YXcWΛ 'gWΛ bY''XYi h]WΛ ž'XUgg'X]Y'FYU']hÅ'h'b]WΛ h  
XYb'9fk Ufhi b[ Yb'Ybhgd fUWΛ "'@Ui h'c fhg] cfghY\Yf'?`Ui g'8]YhYf  
GWΛ a ]h'\_ØbbhY'XYf': U\ fVU\ bhY]'Yf'U`g' ⊕gY`WΛ Yb  
a Ò[ ' ]WΛ Yfk Y]gY'bi f'[ Yf]b[ ZØ[ ][ 'ni f  
; YgWΛ k ]bX][ \_Y]hg] Yff]b[ Yfi b[ 'Ui ZXYf'8i fWΛ [ Ub[ gghfU» Y  
VY]hfU[ Yb"

l a gYhni b[ 'Xi fWΛ '< YggYb 'A cV]`

8]Y'; fØbXY'ZØf'X]YgY'fYXi n]YfhY'J Yfg]cb'XYg': U\ fVU\ bhY]'Yfg'g]bX  
j ]Y'ZÀ'h][ "'6Ui Ua hg'Y]hYf'A Ufh]b'6ci XU'Yf\_`ÀfhYž'XUgg'< YggYb

A cV]`VY]`XYf`D`Ubi b[ `bi f`k Yb][ `Gd]Y`fUi a ``]Y» `i bX`\Y]\_`Y  
9]b[ f]ZZY`]b`X]Y`[ YfUXY`GhfYW\_Y`a`Ò[ `]W`ghj`Yfa`Y]XYb`k`c``hY`  
5i Z[ fi bX`XYf`; Yc[ fUZ]Y`i bX`XYf`D`Uhmj`Yf`À`hb]ggY`Z]Y``X]Y  
9bhgW`Y]Xi b[ ž`XUg`Dfc`Y`\_h]b`X]YgYf`:`cfa`Xi fW`ni ZØ`fYb``9]bY  
U`hYfbUhj] Y`@Øgi b[ ž`k`]Y`Y]bY`Y]bgY]h][ Y`J`YfgW`k`Yb`\_i b[ ž`ghY``hY  
g]W`U`g`i`bni`fY]W`YbX`\`YfUi`g`i`bX`k`i`fXY`UV[ Y`Y`b`h`

6Øf[ Yfa`Y]ghYf`A`Uhh`]Ug`A`YmYf`j`YfXYi`h]W`hYž`XUgg`X]Y`K`U`\`  
nk`]gW`Yb`X]YgYa`\_`Y]bYfYb`HY]`Yf`cXYf`[ Uf`\_Y]bYf`A`U»`bU`a`Y`  
VYghUbX``8]Y`GhUXhigY`Vgh`\`À`hY`[ YfbY`a`Y`\f`]bj`Ygh]YfYb`k`c``Ybž  
XcW`X`Yf`NY]hXfi`W`ž`VYX]b[ h`Xi`fW`X]Y`VYj`c`fghY`\`YbXYb`5`fVY]hYb  
Ui`Z`XYf`@UbXYggfU»`Yž`]Y»`\_Y]bYb`F`Ui`a`ZØf`[ fØ»`YfY`D`Ubi`b[ Yb`  
I`bYfk`UfhYh`\_Ø`bbhY`g]W`X]YgY`9bhgW`Y]Xi b[ `Ui`W`d`cg]h]j`Ui`Z`X]Y  
<`Ui`g`U`hg`c`ghYb`Ui`gk`]f`\_Yb.`GhUhh`XYf`i`fgdfØb[ `]W`  
j`YfUb`gW`U[ hYb`%,`\$`\$`\$`\$`9i`fc`\_c`ghY`h`X]Y`A`U»`bU`a`Y`bi`b`YX][ `]W`  
)`&`\$`\$`\$`9i`fc`

Hfchn`XYf`XYi`h]W`Yb`9]bgdUfi`b[ Yb`[ `]Vh`Yg`:`fU[ Yb`ni`f`  
K`]f`\_gUa`\_Y]h`XYf`A`U»`bU`a`Y``J]Y`Y`5bk`c`\`bYf`g]bX`g`\_Ydh]gW`ž`cV  
XYf`bYi`Y`:`U`\fVU`\`bhY]`Yf`]b`XYf`[ Yk`Ø`bgW`hYb`K`Y]gY`Ui`Z`XYb  
J`Yf`\_Y`\f`k`]f`\_Yb`\_Ubb``J`cf`U``Ya`X]Y`i`bni`fY]W`YbXY`6`fY]hY`ghY``h  
Y]bYb`nYbhfU`Yb`?`f]h]\_di`b`\_h`XUf``G`W`cb`Y`hnh`k`]fX`X]Y`A`Ò[ `]W`\_Y]h  
]b`6`YhfUW`h`[ Ync[ Ybž`Xi`fW`6`YdZ`Ubni`b[ Yb`Ub`XYf`J`Yf`\_Y`\fg]bgY`  
Y]bYb`[ Yk`]ggYb`9`ZY`\_h`ni`Yfn]Y`Ybž`i`a`XUg`9`fgW`Y]bi`b[ gV]`X`i`bX  
a`Ò[ `]W`Yfk`Y]gY`Ui`W`X]Y`J`Yf`\_Y`\fgZØ`fi`b[ `ni`j`YfVYggYfb`

: c`\_i`g`Ui`Z`J`Yf`\_Y`\fgg]W`Yf`\Y]h

Hfchn`XYf`9bh`h`Ai`gW`i`b[ Yb`VY`hcb`h`X]Y`GhUXh]`Yfk`U`hi`b[ ž`XUgg`X]Y  
A`U»`bU`a`Y`HY]`Y]bYg`[ fØ»`YfYb`D`Ubg`]ghž`i`a`X]Y`@`VYbgei`U`]h`h`h  
XYf`5bk`c`\`bYf`ni`Yf`\`Ø`Yb``5V`\_`l`bi`Uf`k`]fX`@`Ui`VUW`Ø`VYf`Y]b  
Y][ Ybgh`h`bX][ Yg`C`fXbi`b[ gUa`h]j`YfZØ[ Ybž`XUg`i`bhYf`UbXYfYa  
a`cV]`Y`6`]h`nYf`Y]bgW`Y]Y»`h``8]YgY`A`U»`bU`a`Yb`\`UVYb`XUg`N]Y`ž`X]Y  
J`Yf`\_Y`\fgg]hi`Uh]cb`Ø`VYf`X]Y`9`f`\`Ø`i`b[ `XYf`?`cb`h`f`c``Yb`\]b`Ui`g`ni  
Yfa`Ò[ `]W`Yb``8]Y`G]hi`Uh]cb`a`i`gg`j`YfVYggYfh`k`YfXYbž`gU[ hY  
6Øf[ Yfa`Y]ghYf`A`YmYf`i`bX`i`bhYfghf]W`XUg`9b[ U[ Ya`Ybh`XYf`  
J`Yfk`U`hi`b[ `ZØf`Y]bY`bUW`\`U`h][ Y`J`YfVYggYfi`b[ `XYf`  
J`Yf`\_Y`\fgVYX]b[ i`b[ Yb`

8]Y'5bk c\ bYf' \_0bbYb' ^XcW\ XYfnY]h'bi f' \cZZYbž'XUgg'X]Y  
[ Yd'UbhYb' A U» bU\ a Yb' i bX'XYf' bYi' Yff]W\ hYhY': U\ fVU\ bhY]'Yf  
hUhgÀW\ `]W\ ni' Y]bYf'gdØfVUFYb' F YXi n]Yfi b[ 'XYf'; YgW\ k ]bX][ \_Y]h  
i bX'XUa ]h'ni' a Y\ f'G]W\ Yf\ Y]h'ZØ\ fYb" 8 Yf' C fhgVY]fUh'cVhY'nk Uf  
X]Y'nØ[ ] [ Y'8i fW\ ZØ\ fi b[ 'XYf'5fVY]hYbž'V'Y]Vh' ^XcW\ ]b'6Yni [ 'Ui Z  
X]Y'K ]f\_gUa \_Y]h'XYf' A U» bU\ a Y'ni fØW\ U'hYbX"

## 9]b' \_ca d`YI Yg'Ni gUa a Ybgd]Y`

8]Y'G]hi Uh]cb' ]b' A ØbghYf' ]gh'Y]b'6Y]gd]Y`XUZØfž'k ]Y  
J Yf\_ Y\fgd`Ubi b[ 'cZi]b'Y]bYa' GdUbbi b[ gZY'X'nk ]gW\ Yb'XYb  
6YXØfZb]ggYb'XYf'5bk c\ bYfž'XYb' J cf[ UVYb' j cb'6Y\ ØfXYb' i bX  
XYb'fYU'Yb'; Y[ YVYb\ Y]hYb'XYg'D`UhmYg'ghY\ h" 8]Y'9bhgW\ Y]Xi b[  
j cb' < YggYb' A cV]ž' \_Y]bYb'g][ b]Z]\_UbhYb'9]b[ f]Z]b'X]Y' [ YfUXY  
GhfYW\_ Y' j cfni bY\ a Ybž'gd]Y[ Y'h'X]Y' < YfUi gZcfXYfi b[ Yb'k ]XYfž  
a ]h'XYbYb' ?ca a i bYb' \_cbZfcbh]Yfh'g]bX"

8 Ug'9b[ U[ Ya Ybh'ZØf'Y]bY'fi \][ Y'i bX'g]W\ YfY' J Yf\_ Y\fgZØ\ fi b[ ' ]b  
@Ui VUW\ V'Y]Vh' ^XcW\ j cf\ UbXYb" 8]Y' < cZZbi b[ 'Ui ZY]bYb  
'Ub[ Zf]gh][ Yb'9fZc` [ 'XYf' A U» bU\ a Y' V'Y]Vh'VYghY\ Ybž'Ui W\ k Ybb  
XYf'YfghY'GW\ f]hh'b]W\ h[ Ubn'XUg'Yfk UfhYhY'9f[ YVb]g[ Y' ]YZYfh'\Uh"  
8]Y'Ub\ U'hYbXY'8]g\_i gg]cb'ØVYf'X]Y' J Yf\_ Y\fgg]hi Uh]cb' ]gh'ZØf'X]Y  
; Ya Y]bXY'Y]b' \_UfYf' < ]bk Y]g'XUfUi Zž'XUgg'`Ub[ Zf]gh][ Y' @Øgi b[ Yb  
ghYhg' [ Ya Y]bgUa' i bX' ]b'Yb[ Yf' ?ccdYfUh]cb'Yb'k ]W\_ Y'h'k YfXYb  
a ØggYbž'i a' X]Y'VYgha Ø[ `]W\ Yb'9f[ YVb]ggY'ni' Yfn]Y'Yb"

## 8 Yf'6YfY]W\ 'J Yf\_ Y\ fgg]W\ Yf\ Y]h' ]b

### 8 Yi hgW\ `UbX

8]Y' J Yf\_ Y\fgg]W\ Yf\ Y]h' ]gh' ]b'8Yi hgW\ `UbX'Y]b' nYbhfU'Yg'H\Ya Už  
]bgVYgcbXYfY' ]b' i fVUbYb'; YV]YhYb" B UW\ '5b[ UVYb'XYg  
GhUh]gh]gW\ Yb'6i bXYgUa hYg'k i fXYb' ]a' \f' &\$&' ØVYf' &ž  
A ]` ]cbYb' J Yf\_ Y\fgi bZÀ`Y'fY[ ]ghf]Yfhž' j cb'XYbYb'Yhk U'&") \* \$  
hØX` ]W\ YbXYhYb" 8]Y' a d`Ya Ybh]Yfi b[ ] j cb  
J Yf\_ Y\fgVYfi \][ i b[ ga U» bU\ a Ybž'k ]Y': U\ fVU\ bhY]'Yf'cXYf  
J Yf\_ Y\fg]bgY'bž'n]Y'h'XUfUi Z'UVž']bgVYgcbXYfY'X]Y'G]W\ Yf\ Y]h' j cb  
: i » [ Àb[ Yfb' i bX' F UXZU\ fYfb'ni' Yf\ Ø\ Yb" 8]YgY' A U» bU\ a Yb

gc`Yb`Ui W`XUni`VY]hfU[ Ybž`X]Y`J Yf\_Y\fg[ YgWk ]bX][ \_Y]h`ni  
fYXi n]YfYb`i bX`XUa ]h`XUg`l bZU`f]g]\_c`ni`gYb\_Yb"

8]Y`a Y]ghYb`Gh`XhY`ghY\Yb`XUVY]`j cf`XYf`<YfUi gZcfXYfi b[ ž`XYb  
J Yf\_Y\f`ni`YbhgW`Yi b][ Ybž`c`bY`X]Y`i b\_h]cbU`]h`h`XYf`GhfU» Yb  
ni`VYY]bhf`W`h][ Yb" <`Ài Z][`ghY\Yb`GhUXhj Yfk U`hi b[ Yb`]b`XYf  
5i gY]bUbXYfgYhni b[ `a ]h`XYb`5bgdf`W`Yb`XYf`A cV]`]h`h`Y]bYfgY]hg  
i bX`XYf`G]W`Yf\Y]h`XYf`5bk c`bYf`UbXYfYfgY]hg" 8]Yg`j YfXYi h`]W`hž  
k Ufi a`]b`@Ui VUW`X]Y`9bhgW`Y]Xi b[ `Z`f`Y]bYb`\_`Y]bYfYb  
: U\fvU\bhY]Yf`[ Yhfc`ZYb`k i fXY"

; Yd`UbhY`ni`\_`ØbZh][ Y`A U» bU`a Yb`]b  
@Ui VUW

8]Y`GhUXh`@Ui VUW`d`Ubhž`bYVYb`XYa`U`\_hi Y`Yb` : U\fvU\bhY]Yf  
k Y]hYfY`A U» bU`a Yb`ni f`J YfVYggYfi b[ `XYf`J Yf\_Y\fgg]hi Uh]cb  
Y]bni Z`f`Yb" 5V`>]bi Uf`&\$&) `k ]fX`Y]b`Øfh`]W`Yg`C`fXbi b[ gUa`h  
Y]b[ Yf]W`hYhž`XUg`b]W`h`bi f`Z`f`X]Y`9]b`U`hi b[ `j`cb  
; YgWk ]bX][ \_Y]hg`]a ]hgž`gcbXYfb`Ui W`Z`f`X]Y`U`[ Ya`Y]bY  
J Yf\_Y\fg`ØVYfk UW`i b[ `j`YfUbhk`cfh`]W`gY]b`k ]fX" 6Øf[ Yfa`Y]ghYf  
A Uhh`]Ug`A YmYf`\Uh`VYfY]hg`Ub[ Y`\_ØbX][ hž`XUgg`Y]b`a`cV]Yf`6`]h`Yf  
]b`A`ØbghYf`ni`a`9]bgUhn`\_ca`a`Yb`k ]fXž`i`a`X]Y`9]b`U`hi b[ `XYf  
; YgWk ]bX][ \_Y]hg]c`fgW`f]ZhYb`ni`\_`cb`hfc`YfYb`i`bX`X]Y`G]W`Yf\Y]h  
XYf`5bk c`bYf`ni`Yf\`Ø`Yb"

8 Uf`ØVYf`\]bUi g`d`Ubh`X]Y`GhUXhž`8i fW`ZU`f`hghfU» Yb`a ]h  
ni`g`h`h`]W`Yb`J Yf\_Y\fggW`]XYfb`i`bX`<]bk Y]gYb`\Yf]c`fni`YVYbž  
i`a`5i`hcZU`fYf`Ub`X]Y`[ Y`hYbXYb` ; YgWk ]bX][ \_Y]hgVY[ fYbni b[ Yb  
ni`Yf]bbYfb" 8]YgY`A U» bU`a Yb`g]bX`HY]`Y]bYg`i`a`ZUggYbXYfYb  
5bgUhnYg`ni`f`J YfVYggYfi b[ `XYf`@YVYbgei`U`]h`h`]b`XYf` ; Ya`Y]bXY"

2 ZZYbh`]W`Y`F`YU`\_h]cbYb`i`bX`A`Y]bi`b[`Yb

8]Y`F`YU`\_h]cbYb`XYf`5bk c`bYf`Ui`Z`X]Y`bYi`Yb`A`U» bU`a`Yb`g]bX  
[ Ya`]gW`h"K`À`fYbX`Y]b][ Y`6Øf[ Yf`XYb`bYi`Yb` : U\fvU\bhY]Yf`U`g  
b`ch`YbX][ `YfUW`hYbž`i`a`X]Y`G]W`Yf\Y]h`ni`Yf\`Ø`Ybž`Ài`» Yfb  
UbXYfY`]\`fY`G`\_Y`dg]g" J ]Y`Y`VYnk`Y]Z`bž`XUgg`X]Y`U`\_hi`Y`Y`J`Uf]UbhY

XYg: U\fvU\bhY]`Yfg`hUhgÅW`jW`ni`Y]bYf  
; YgWk ]bX][ \_Y]hgFYXi \_h]cb`ZØ\FYb`k ]fX"" 9g`k ÅFY`VYggYf  
[ Yk YgYbž`a Y\f`D`Uhn`ZØf`Y]bYb`k ]f\_`W`k ]f\_gUa Yb`HY]`Yf`ni  
gWUZZYb ž`Ài » YfhY`Y]b`5bk c\bYfž`XYf`Ubcbma `V`Y]VYb`a ÒW`hY"

9]bY`i a ZFU[ Yž`X]Y`]a `NY]hfUi a `j cb`5i [ i gh`&\$&` `V]g`GYdhYa VYf  
&\$&` `i bhYf`XYb`6Yk c\bYfb`j cb`A ØbghYf`Xi fW [ YZØ`fh`k i fXYž  
Yf[ UVž`XUgg`\*) `i `XYf`6YZFU[ hYb`XYf`A Y]bi b [ `g]bXž`XUgg`[ fØ» YfY  
A U» bU`a Yb`bchk YbX][ `k ÅFYbž`i a `X]Y`J Yf`\_Y`f`gg]W`Yf`Y]h`ni  
[ Yk Å`f`Y]ghYb" J ]Y`Y`VYZØfk cfhYhYb`gdYn]Z]gW`Y`F`Y`Z`c`f`a Ybž`k ]Y  
Yhk U`X]Y`9]bZØ`fi b [ `j cb`HYa dc!` \$!NcbYb`]b`VYgcbXYfg  
[ YZÅ`f`XYhYb`6YfY]W`Yb"

8YhU]`g

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