

# HYi fYg'F Y]gY[ YdÄW\_.'8Yf': fi gh'ØVYf 8]YVghU\`'i bX'6YgWÄX][ i b[

9fZU\ fYb'G]Yž'k Ufi a`hYi fY'? cZZYf'c Zh'b]WÄh'bc h k YbX][`g]bX  
i bX'k Y'WY'5`hYfbUh]j Yb'ÄbYb'VY]'F Y]gYb'cdh]a U`Yb'GW i hn  
V]YhYb"

?Ui a`Yhk Ug]gh'Zfi ghf]YfYbXYfž'U`g'bUWÄ`Y]bYf'F Y]gY'ZYghni ghY`Ybž  
XUgg'XYf'bYi`[ Y\_Ui ZhY'? cZZYf'VYgWÄX][ h]gh'cXYf'gc[ Uf  
[ Yghc\`Yb'k i fXY" F Y]gYbXY'bY][ Yb'XUni ž'h]YZ]b'X]Y`HUgWÄY`ni  
[ fY]ZYbž']b'XYf'<cZbi b[ ž'g]WÄ`Y]b'ghUV]'Yg'i bX`Ub[`YV][ Yg  
; YdÄW\_ghØW\_`ni ni`Y[ Yb'"C Zh'g]bX'X]Y`hYi YfghYb'? cZZYfa Uf\_Yb'k ]Y  
F]a`ck Už'A`cbhV`UbWcXYf'@ci ]g'J i ]hcb'X]Y`YfghY`K U\`"8cWÄ`X]Y  
'?cghYb'ZØf'gc`WÄY'5fh]\_Y`\_ÖbbYb'gWÄbY`"a Y\ fYfY`\i bXYfh'V]g  
hUi gYbX'9i fc`VYhfU[ Yb"

C Zh'k ]fX'ØVYfgY\Ybž'XUgg'gc`WÄY`@ I i ga Uf\_Yb'b]WÄh'bi f'ZØf']\fY  
E i U`]hÄh'VY\_Ubbh'g]bX'/g]Y`n]Y\Yb'Ui WÄ'8]YVY`Ub"8]YgY  
'?f]a ]bY`Yb'g]bX'[ i h'XUf]bž'X]Y`@[ cg'Ui Z'? cZZYfb'ni`Yf\_YbbYbž  
i bX'k ]ggYb'gcZc fhž'k ]Y'j ]Y`'; Y`X'XYf'6Yg]hnYf'VYfY]h'k Uf  
Ui gni [ YVYb"8]Yg']gh'Y]b'U`Ufa ]YfYbXYg'GnYbUf]cž'VYgcbXYfg'Ub  
C fhYbž'Ub'XYbYb'A YbgWÄYb'c Zh'i bUi Za Yf\_gUa`g]bXž'k ]Y`ni a  
6Y]gd]Y`Ua`': i [ \UZybž']a`Ni [ `cXYf'gc[ Uf]a`<chY`"

## 8]Y'; YZU\ fYb'hYi fYf'? cZZYf

8]YVghÄ\`Y'g]bX'YXcWÄ'b]WÄh'XUg'Y]bn][ Y`F ]g]\_cž'k Ybb'a Ub'Ui Z  
hYi fY'? cZZYf'gYhnh"J ]Y`Y`F Y]gYbXY`Yf'YVYb'Ui WÄž'XUgg']\f  
k Yfhj`c`Yf'? cZZYf'k Ä\ fYbX'XYg'F Y]gYdfcnYggYg'VYgWÄX][ h'k ]fX"  
C V`VY]a`9]bWÄYW\_Ybž'VY]a`J Yf'UXYb']b'XUg': i [ nYi [ `cXYf'VY]a  
5i ZghY`Yb'Ui ZXYa`'; YdÄW\_VUbX`'Yg[ ]Vh'j ]Y`Y'; Y`Y[ Yb\Y]hYbž  
VY]'XYbYb'XUg'; YdÄW\_`Ui ZX]Y`DfcVY'[ YghY`h'k ]fX"

GhY`Yb`G]Y`g]W`j cfz`G]Y`\_ca`a`Yb`bUW`Y]bYa`Ub[ Yb`:`i [ `Ub  
=>fYa`N]Y`Ub`i`bX`Yb`hXYW`Yb`Y]bYb`[ fc»Yb`F]gg]b`=>fYa`?c`ZZYf"  
8Yf`:`fi`gh`]gh`bUW`j`c`n]Y`VUfz`VYgcbXYfg`k`Yb`b`a`Ub`g]W`VYk`i`ggh  
Z0f`Y]b`hYi`fYg`A`cXY`Yb`hgW`]YXYb`U`h`9]b`\_`Y]b`Yf`H]dd`zi`a  
gc`W`Y`G`W`A`XYb`ni`j`Yfa`Y]XYb.`@UggYb`G]Y`=>fYb`?c`ZZYf`j`cf`XYf  
;`Yd`A`W`\_`Ui`Z[UVY`]b`:`c`]Y`Y]bk`]W`\_`Y`b`"8]Yg`\_`Ubb`Y`ZYb`z`?fUhnYf  
i`bX`Ub`XYfY`5Vbi`hni`b[ gYfgW`Y]bi`b[ Yb`ni`fYXi`n]YfYb"

8Ug`J`Yf`hf`Ui`Yb`]b`hYi`fY`A`Uf`\_`Yb`]gh`U`gc`b]W`h`i`b`VYX]b[ h  
[ YfYW`hZYfh][ h`9]bY`l`bhYfgi`W`i`b[ `j`cb`Gh]Zhi`b[ `K`UfYbhYgh`Ui`g  
XYa``&`\$`%`&`\$`%`nY][ hz`XUgg[ `0bgh][ YfY`A`cXY`Y`Xi`fW`Ui`g`a`]h`XYb  
`c`W`d`fY]g][ Yb`?c`ZZYfb`a`]h`U`hYb`\_`0bbYb`"8]Yg`\_`0bbhY`Y]bY  
C`VYfZ`A`W`Yb]XYb`h]h`h`Y`b`h`Ufj`Yb`z`X]Y`j`]Y`Y`Z0f`gY`V`ghj`Yf`gh`A`b`X`]W  
`U`hYb.`8Yf`DfY]g`Y]bYg`?c`ZZYfg`ghY`h`b]W`h`nk`Ub[ g`A`i`Z[ `Z0f`gY]bY  
E`i`U`]h`h`c`XYf`@Ub[ `YV][ `Y]h"

## 5`hYfbUh]j`Y`C`dh]c`bYb

≠`5bVYhfUW`h`XYf`H`UhgUW`Y`z`XUgg[ `0bgh][ YfY`?c`ZZYf`A`b`]W`Y  
@Y]ghi`b[ Yb`V]YhYb`z`gc`h`Yb`F`Y]gYb`XY`Y]bY`gc`f[ Z`A`h][ Y`5i`gk`U`  
hfY`ZYb`i`bX`X]Y`j`YfgW`]YXYbYb`C`dh]c`bYb`UVk`A[ Yb`"9g[ `]Vh`Y]bY  
J]Y`n`U`j`cb`A`Uf`\_`Yb`i`bX`A`cXY`Yb`Ui`Z`XYa`A`Uf`\_`h`z`X]Y`g`ck`c`  
Z`b`\_`h]c`bU`U`g`Ui`W`gh]j`c`g]bX`z`UVYf`b]W`h`X]Y`6Ub`\_`gd`fYb[ Yb"

K`Yb`b`Y`g`i`a`X]Y`5bgW`U`Z]b[ `j`cb`F`Y]gY[ Yd`A`W`\_`[ Y`h`z`]gh`Y`g  
fUhgUa`z`b]W`h`bi`f`XYb`DfY]g`z`gcbXYfb`Ui`W`Ub`XYfY`:`U`\_`hc`fYb`k`]Y  
;`Yk`]W`h`z`:`f0»Y`i`bX`X]Y`5fh`XYf`J`Yfk`Yb`Xi`b[ `ni`VYf0W`g]W`h][ Yb"  
C`V`Z0f`Y]bYb`\_`i`fnnY]h][ Yb`G`h`A`X`h`Y`hf]d`c`XYf`Y]bYb`A`b[ YfYb`l`f`Ui`V  
`Y`g[ `]Vh`Z0f`Y`XYb`6YXUfZ`X]Y`d`UggYb`XY`@0gi`b[ "

@YhnhYbX`]W`\_`0bbhY`X]Y`9bhgW`Y]Xi`b[ z`Y]bYb`k`Yb][ Yf`hYi`fYb  
?c`ZZYf`ni`k`A`Y`b`z`b]W`h`bi`f`X]Y`];`Y`X`V`0fgY`g`W`cb`Yb`z`gc`b`XYfb  
Ui`W`X]Y`G`cf[ Yb`i`a`8]YVghU`i`bX`6YgW`A`X][ i`b[ `j`Yff]b[ Yfb`"9g  
]gh`k`]W`h][ z`X]Y`Y][ YbYb`Df]c`f]h`h`Y`b`ni`\_`A`fYb`i`bX`g]W`j`cb`XYf  
=>`i`g]c`b`XYg`G`h`U`h`g`g`m`a`V`c`g`ni`V`Y`Z`fY]Yb`z`XUg`hYi`fYg`;`Yd`A`W`\_`c`Z`h  
a`]h`g]W`V`f]b[ h"

## K`Yf`hj`c`Y`,`VYf`Y[ i`b[ Yb`VY]`XYf

? c ZZY fUi gk U\`

8]Y`9bhgWXYXi b[ `Z0f`Y]bYb`? c ZZYfž`cV`[ Øbgh][ `cXYf`hYi Yfž`gc``hY  
[ i h`ØVYf`Y[ h`gY]b``5bghUhh`g]W\`j cb`XYf`A Uf`\_Y``Y]hYb`ni ``UggYbž  
[ ]h`Ygž`dfU`\_h]gWXY`, VYf`Y[ i b[ Yb`]b`XYb`J cfXYf[ fi bX`ni `ghY``Yb`"  
@Yhh]W\`]gh`Yg`≠f`F Y]gYf`YVb]gž`XUg`]a `A ]hhY`di b`\_highY\`Yb  
gc``hYž`i bX`b]W\`h`X]Y`A Uf`\_Yž`X]Y`G]Y`a ]h`g]W\`Z0\`fYb`"

8]Y`6fUbWXY`U`h`j ]Y``ni `V]YhYbž`i bX`a ]h`Yhk Ug`: cfgW\`i b[ `i bX  
D`Ubi b[ ` \_Ubb`YXYf`F Y]gYbXY`XUg`dUggYbXY` ; YdÄW\_g`h`ØW`\_Z]bXYbž  
XUg`gck c`\`Z` b`\_h]cbU``]gh`U`g`Ui W\`XYb`]bX]j ]Xi Y``Yb`Gh`  
i bhYfghfY]W\`hž`c`b`Y`Y]b`J Yfa Ø[ Yb`Ui gni [ YVYb``8Yb`\_Yb`G]Y  
XUfUbž`XUgg`X]Y`VYghY`K U\`c`Z`h`b]W\`h`X]Y`hYi YfghY`]gh`"

9]b`k Y]hYfYf`k ]W\`h][ Yf`5gdY`\_h`VY]a `F Y]gYb`]gh`X]Y`K U\`XYg  
dUggYbXYb` ; YdÄW\_g`]b`6Yni [ `Ui Z`X]Y`]bX]j ]Xi Y``Yb`6YXØfZb]ggY`"  
I bhYfgW\`]YX`]W\`Y`F Y]gYgh`Yž`gY]Yg`6UW`\_dUW`\_]b[ ž` ; YgW\`ÄZhgfY]gYb  
cXYf` : Ua ]Y]Ybi f`Ui Vž`YfZc`fXYfb`j YfgW\`]YXYbY`5fhYb`j cb` ; YdÄW`\_`  
9]b`7]hm`Hf]d`\_ØbbhY`Y]bYb``Y]W\`h[ Yk ]W\`h][ Yb`Hfc``Ym  
VY[ Øbgh][ Ybž`k Ä\`fYbX`Z0f`Y]bY`Äb[ YfY`F Y]gY`Y]b`fcVi ghYf  
< UfhgW\`U`Yb`\_c ZZYf`YfZc`fXYf`]W\`gY]b`\_ØbbhYž`XYf`Ui W\`VY]  
gW\`YW\`hYa `K YhhYf`ghUbX\`Ä`h`"

Ni gÄhn`]W\`gd]Y`h`Ui W\`X]Y`5i ZhY`]i b[ `XYg` ; YdÄW\_g`Y]bY`F c``Y`"  
? c ZZYf`a ]h`a Y\`fYfYb` : ÄW\`Yfb`cXYf`ni gÄhn`]W\`Yb`HUgW\`Yb  
Yf`Y]W\`hYfb`XUg`C f[ Ub]g]YfYb`XYf`dYfgØb`]W\`Yb` ; Y[ YbghÄbXY`i bX  
\`Y`ZYbž`XYb` , VYfV`]W`\_ni `VY\`U`hYb``C Zha U`g`\_Ubb`VYfY]hg`XUg  
f]W\`h][ Y`DUW`\_Yb`i bX`C f[ Ub]g]YfYb`XYf`GUW\`Yb`Y]bYb`Yf\`YV`]W\`Yb  
9]bZi gg`Ui Z`X]Y` : fYi XY`Ua `F Y]gYb`\UVYbž`i bX`XUVY]`X]Y  
Bchk YbX][ \_Y]h]j Yff]b[ Yfbž`Ui ZhYi fYgž`fcVi ghYg` ; YdÄW`\_`  
ni fØW`\_ni [ fY]ZYb`"

### 8]Y`F c``Y`XYf`A Uf`\_Yb`VY]`F Y]gY[ YdÄW`\_`

A Uf`\_Yb`k ]Y`F ]a ck U`cXYf`@ci ]g`J i ]h`cb`ghY\`Yb`Z0f`@ I i g`i bX  
E i U`]hÄhž`Vf]b[ Yb`UVYf`Ui W\`Y]bYb`\c`Yb`DfY]g`a ]h`g]W\`ž`XYf`b]W\`h  
Z0f`YXYb`YfgW\`k ]b[ `]W\`]gh``8]Yg`Z0\`fh`ni `Y]bYf`]bhYfYggUbhYb  
9bhk ]W`\_i b[ `]a ` ; YdÄW`\_a Uf`\_h`J ]Y`Y`J YfVfUi W\`Yf`g]bX

ni bY\ a YbX VYfY]hž [ Øbgh][ YfY '5`hYfbUh] Yb` ]b`6YhfUW`h`ni  
n]Y\Ybž`]bgVYgcbXYfY`XU`X]Y`E i U`]h`h`j`cb`k`Yb][ Yf`VY`\_UbbhYb  
A Uf`\_Yb`c`Zh`a` ]h\U`hYb`\_Ubb"

9]bY`I`a`ZFU[ Y`j`cb`GhUh]ghU`nY][ hž`XUgg`i`a`X]Y`(`&`i`X`Yf`6Y`ZFU[ hYb  
]b`8Yi`hgW`\_UbX`Ub[ UVYbž`VY]a`?`Ui`Z`j`cb`F`Y]gY[ Yd`ÄW`\_  
\`Ui`dhg`ÄW`\_`]W`\_`Ui`ZXUg`DfY]g!`@Y]ghi`b[ g!`J`Yf`\`Ä`hb]g`ni`UW`hYb`"  
8U\Yf`]gh`Yg`b]W`h`ØVYffUgW`YbXž`XUgg`A`Uf`\_Ybž`X]Y`Y]bY`[ i`hY  
E`i`U`]h`h`ni`Y`]bYa`b`]YXf][ YfYb`DfY]g`UbV]YhYbž`Ub`6Y`]YVh\Y]h  
[ Yk`]bbYb`"A`Uf`\_Yb`k`]Y`GUa`gcb]hY`i`bX`9UghdU`\_`UVYb`g]W`XUfUi`Z  
gdYn]U`]g]Yfhž`?`i`bXYb`gck`c`\`Z`b`\_h]cbU`Yg`U`g`Ui`W`  
UbgdfYW`YbXYg`;`Yd`ÄW`\_`Ubni`V]YhYbž`c`\bY`XUVY]`XUg`6i`X[ Yh  
ØVYfa`Ä`»][ `ni`VY`UghYb`"

Ni`XYa`\_`UVYb`j`]Y`Y`5bV]YhYf`]\fY`DfcXi`\_`h`]b]Yb`X]j`Yfg]Z]n]Yfhž`i`a  
XYb`6YXØfZb]ggYb`XYf`F`Y]gYbXYb`[ YfYW`h`ni`k`YfXYb`"Gc`V]YhYb  
g]Y`a`]h`Yfk`Y]Y`Ui`W`b`UW`\U`h][ Y`5`hYfbUh] Yb`Ui`g`fYW`W`h`Yb  
A`UhYf]U`]Yb`Ubž`k`Ug`XYb`a`c`XYfYbYb`J`YfVfUi`W`Yf`ni`bY\`a`YbX  
Ubgdf]W`hž`XYf`K`Yfh`Ui`Z]`a`k`Y`hVYk`i`gghgY]b`Y`[`h`"

## 8 ]Y` ;` YZU\ fYb`j`cb`8 ]YVghU\`i`bX`J`Yf`i`gh`

8 ]YVghU\`ghY`h`ZØf`F`Y]gYbXY`Y]b`b]W`h`ni`i`bhYfgW`Ä`h`nYbXYg  
F]g]\_`c`XUf`"@Ui`h`Y]bYf`Ghi`X]Y`j`cb`5`÷`HfUj`Y`VYf]W`hYb`V]g`ni`&\$  
i`X`Yf`F`Y]gYbXYb`j`cb` ;`Yd`ÄW`\_`j`Yf`i`gh`c`XYf`!`X]YVghU\`k`Ä`fYbX  
]\fYg`I`f`Ui`Vg`"Hf`ch`X`Yf`G]W`Yfi`b[ ga`U`»`bU\`a`Yb`k`]Y  
?`ca`V]bUh]cbYb`i`bX`GW`\_`ØggYf`]gh`Yg`k`]W`h][ ž`j`cfg]W`h][ `ni`gY]b  
i`bX`k`Yfhj`c`Y` ;`Y[ Ybgh`Ä`bXY`]a`a`Yf`]a`5i`[ Y`ni`VY\U`hYb`"9g`]gh  
fUhgUa`ž`hYi`YfY`5fh]\_`Y`]a`<`UbX[ Yd`ÄW`\_`a`]hni`bY\`a`Yb`i`bX`ni  
j`Yfa`Y]XYbž`g]Y`]b`Ui`Z[ Y[ YVYbYa` ;`Yd`ÄW`\_`ni`U[ Yfb`"

⇒`i` :`U`Y`Y]bYg`8 ]YVghU\`g`c`XYf`J`Yf`i`ghYg`]gh`gW`bY`Yg`<`UbXY`b  
[ YZFU[ h`"8 ]Y`a`Y]ghYb` :`i` [ [ YgY`g`W`UZhYb`i`bX  
F`Y]gYhfUbgdcfhX]YbghY`V]YhYb`9bhgW`Ä`X][ i`b[ Ybž`U`YfX]b[ g`\_`Ubb  
X]Y`<`Ø`Y`gY`f`i`bhYfgW`]YX`]W`\_`Ui`gZU`Yb`i`bX`b]W`h`]a`a`Yf`XYb  
K`Yfh`XYg` ;`Y[ YbghUbXg`UVXYW`\_`Yb`"9]bY`[ i`hY`F`Y]gYj`Yfg]W`Yfi`b[  
\_`Ubb`\]Yf`Y]bY`g]bbj`c`Y`⊕`j`Ygh]h]cb`XUfghY`Ybž`i`a`g]W`\_`[ Y[ Yb  
gc`W`Y`9fY][ b]ggY`UVni`g]W`Yfb`"

⊖g[ YgUa h'gc`hYb`F Y]gYbXY`X]Y`j YfgWλ]YXYbYb`5gdY\_hY`XYg  
F Y]gY[ YdÀW\_g`gcf[ ZÀ`h][ `UVk À[ Yb`i bX`XUVY]`gck c\`X]Y  
: i b\_h]cbU`]hÀh`U`g`Ui Wλ`X]Y`G]WλYf\Y]h`j\ fYf`< UVgY`][ \_Y]hYb`]a  
6`]W\_`VY\U`hYb``Gc`V`Y]Vh`XYf`F Y]gY[ Ybi gg`i b[ YhfØVh"

8YhU]`g

6Ygi WλYb`G]Y`i bg`Ui Z.`b!U[ "XY