HfU[ÒX]Y`]a `A]hhY`a YYf. `I fgUW\ Yb `ZØf
XYb `I bhYf[ Ub[ `XYf`MUW\ h`6UmYg]Ub

9]b`XYi hgW\Yf`G_]ddYf`UbU`mg]Yfh`X]Y`I fgUW\ Yb`XYg`MUW\ h!
I b[`ØW\_g`j cf`G]n`]Yb`i bX`_f]h]g]Yfh`X]Y`6Ui k Y]gY`XYf
Gi dYfmUW\ h`6UmYg]Ub "

J cf`XYf`a U`Yf]gW\Yb`?ØghY`G]n`]Ybg`U`h`Y]b`hfU[]gW\Yg`I b[ `ØW_
Ui ZXYf`@ I i gmUW\ h`6UmYg]Ub `nU\`fY]W\Y`: fU[ Yb`Ui Z[Yk cfZYb"
8Yf`J cfZU``[YgW\U\`k À\fybX`Y]bYg`\YZh[ Yb`I bk YhhYfgž`VY]`XYa
X]Y`MUW\hž`bi f`k Yb][ Y`A YhYf`j cb`XYf`?ØghY`YbhZYfbhž`gUb`_`I bhYf
XYb`C dZYfb`VYZUbX`g]W\`XYf`Vf]h]gW\Y`A]`UfXÀf`A]_Y`@mbW\ž
XYggYb`@Y]W\ bUa`Ui g`XYa`K fUW_[YVcf[Yb`k i fXY`5i W\`gY]bY
HcW\hYf`< UbbU\`k]fX`j cfUi gg]W\h]W\`U`g`j Yfa]ggh[Ya Y`XYh"
K À\fybX`X]Y [ YbUi Yb`I a ghÀbXY`XYg`I b[`ØW\_g`bcW\`i b`_Uf`g]bXž
Ài »Yfb`g]W\`9I dYfhYb`ØVYf`a Ò[`]W\Y`I fgUW\Yb`i bX`_f]h]g]YfYb`X]Y
9bhgW\Y]Xi b[Ybž`X]Y`ni `X]YgYf`HfU[ÒX]Y`ZØ\fhYb"

8Yf`YfZU\fybY`G_]ddYf`A]W\UY``GW\`YW\h`\Uh`VYfY]hg`Y]b][Y
9]bgW\Àhni b[Yb`ni f`G]hi Uh]cb`UV[Y[YVYb`` ÆW`gY[ `Y`gY]hj ]Y`Yb
»\fyb`i bX`\UVY`Ui W\`gW\cb`X]Y`K Y`hi a fi bXYh`8]Y`HfUW_]b[!
8UhYb`nY][ Yb`Y]bXYi h][ž`XUgg`XUg`GW\]Z`ni `X]YgYa`NY]hdi b`h
bÀ\Yf`U`g`Y]bY`\U`VY`GYa Y]Y`j ca`I ZYf`YbhZYfbh`k Uf`žYf`_`ÀfhY
GW\`YW\h`9f`VYfi Zh]g]W\`Ui Z`bZcfa Uh]cbYb`j cb`a Uf]bYhfUZZ]WW`ca
i bX`UbU`mg]Yfh`X]Y`6Yk Y[i b[Yb`XYf`MUW\hj cf`]fYa`I bhYf[Ub["
8]YgY`8 UhYb`g]bX`YbhgW\Y]XYbX`ZØf`XUg`J YfghÀbXb]g`XYg
hfU[]gW\Yb`< Yf[Ub[g"

A Ò[`]W\Y`I fgUW\ Yb `ZØf`XUg`I b[ `ØW_

GW\`YW\h`j Yfa i hYhž`XUgg`XYf`?Ud]hÀb`XYf`6UmYg]Ub`VY]`XYf
K U\`XYg`5b`\_Yfd`UhnYg`nk Uf`f]W\h][`I [ Y\UbXY`h`\UVYž`XcW\`Ài »Yfy

: U_hc fYb`XUni`VY][YhfU[Yb`UVYb`_ÖbbhYbž`XUgg`XUg`GWk]ZZ]b
GWk`Yf][ \_Y]hYb`[Yf]Yh" `8]Y`9bhgWY]Xi`b[ ž`b]W`h]b`XYf`@Y[ Yfk`U`
ni`Ub`_Yfbž`k`Uf`\_i`[ž`i`a`b]W`h`[ Y[ Yb`X]Y`K`Y`Yb`j`ca`c`ZYbYb
A`Yf`[YXf`Äb`[h`ni`k`YfXYbž`Yf`\_`ÄfhY`GW`Y`W`h" `8`c`W`X]Y
K`Y`hYfVYX]b`[ i`b`[ Yb`k`UfYb`Yi`hfYa`i`b`X`\_`ÖbbhYb`ZU`U`Y`:`c`[Yb
[Y`UVh`UVYb" `b`Y]bYf`i`bj`cf`Yf`[ YgY`YbYb`K`Y`hYf`U`[ Y`_`Ubb
XYf`K`]b`X`gc`ghUf`_`k`YfXYbž`XUgg`gY`Vgh`X]Y`ghUV]`ghY`MUW`h`ni`a
?YbhYfb`[ YVfUW`h`k`]fX`ž`k`UfbhY`XYf`YfZU`fYbY`GY`Ya`Ubb"

9]b`nYbhU`Yf`Di`b`\_`h]b`GW`Y`W`hg`5b`U`mgY`]gh`XYf`j`Uf]UV`Y`?`]Y`XYf
MUW`h" `8`Yf`@]Zh]b`[ `?`Y`Y`\_`Ubb`Ui`Z`nk`Y`]j`YfgW`]YXYbY`H]YZYb
Y]b`[ YghY`h`k`YfXYb.`Ui`g`[ YZU`fYb`n`Y`b`A`Y`hYfž`Y]b`[Ync`[ Yb`j`]Yf
A`Y`hYf" `8`]YgY`:`Yi`]V]`]h`Ä`h`\_`Ubb`i`bhYf`VYgh]a`a`hYb`i`a`gh`Ä`b`XYb`ni`a
DfcV`Ya`k`YfXYb" `b`X]YgYa`:`U`Y`U`h`X`Yf`?`Ud]h`Ä`b`j`Yfa`i`h]W`X`Yb
?`]Y`ni`f`ØW`\_`[Ync`[ Ybž`i`a`k`Ä`fYbX`XYg`5b`\_`Yf`]Y`[Ybg`X]Y`GhUV]`]h`Ä`h
XYg`GWk]Zg`ni`Yf`_`Ø`Yb" `8`c`W`VY]`Yi`hfYa`Yb`K`]b`XVYX]b`[ i`b`[Yb
_`ÖbbhY`XUg`8fi`W`\_`Ui`Z`XYb`A`Ugh`YfnYi`[h`UVYbž`k`cXi`fW`X]Y
MUW`h`gh`Ä`f`\_`Yf`\_]ddh`ž`Yf`Ä`i`hYfhY`Yf`k`Y]hYf"

? f]h]_`Ub`XYf`G]W`Yf`Y`h`i`b`X`6Ui`k`Y]gY`j`cb
Gi`dYfmUW`hYb

Y`b`]W`Y`6YXYb`\_Yb`Äi`»`YfhY`:`]cj`Ubb]`7cghUbh]bcž`XYf`79C`XYf
hU]Ub`GYU`:`fci`dž`ZØf`X]Y`X]Y`6UmYg]Ub`\_`cbghfi`]Yfh`k`i`fXY" `9f
f]h]g]YfhY`Y]bY``Ub`[Y`F`Y]`Y`j`cb`:`Y`UVfb`ž`X]Y`ni`X]YgYf`HfU`[ØX]Y
[YZØ`f`h`UVYb" `7cghUbh]bc`ghY`h`ZYghž`XUgg`Yg`i`bYf`Ägg`]W`]ghž
k`Ä`fYbX`XYg`5b`\_`Yf`]Y`[Ybg`]a`a`Yf`Y]bY`K`UW`Y`Ui`Z`XYa`GWk]ZZ`ni
UVYb" `<`Ä`hY`Yg`Y]bY`K`UW`Y`[ Y`YVYbž`k`Ä`fY`XYf`g]W
UbVU`bYbXY`Ghi`fa`fYW`h`mY]h][`Yf`_`Ubb`h`k`cfXYb`ž`gU`h`Yf`i`bX
Yf`[ Ä`bnhž`XUgg`DUggU`[ ]YfY`j`cf`Y]bYa`gc`W`Yb`i`bk`Y`hYf`_`Ä`hYb
[Yk`Ufb`h`k`YfXYb`a`ØggYb" `GhUhh`XYggYb`XfUb`[`K`UggYf`]b`XUg`GWk]ZZ
Y]b`i`b`X`X]Y`DUggU`[]YfY`k`UfYb`]b`]`fYb`?`UV]bYb`[YZUb`[ Ybž`k`Ug
X]Y`G]h`i`Uh]cb`k`Y]hYf`Yg`\_`U]YfhY"

8]Y`8]g`_i`gg]cb`ØVYf`a`Ø`[ `]W`Y`?`cbghfi`_h]cbgZY`Yf`k`]fX
]bhYbg]j`Yf" `GW`Y`W`h`UVh`Yfj`cfž`XUgg`X]Y`6Ui`k`Y]gY`XYf
Gi`dYfmUW`h`ZØf`XYb`<`Yf`[ Ub`[`Yb`hgWY]XYbX`[ Yk`YgYb`gY]b`_`ÖbbhY"
8]Y`Yi`hfYa`\_`c`Y`b`A`UghYb`a`UbW`Yf`MUW`hYb`YfZc`fXYfb`Y]bY

ghÅbX][Y`C dh]a ]Yfi b[ `ni f` ; YgWk]bX][_Y]hgghY][Yfi b[" ð
gc`WYb` : Å`Yb`k YfXYb`cZi` ; fYbnYb`ØVYfgWf]hYbž`k Ug`b]W`h`bi f
X]Y`G]WYf\Y]h`XYf`6YgU`ni b[` [ YZÅ`fXYhž`gcbXYfb`]b`X]YgYa
hfU[]gWYb` : U``Ui W`ni `HcXYgcdZYfb`ZØ`fhY` ž`ZØ[hY`GW`Y`W`h
\]bni " `9f`gY`Vgh`Uh`Ui Z[ fi bX`gY]bYf`9fZU`fi b[Yb`VY]`gY]bYa
Y][YbYb`GY[ Y`Vcch`5bdUggi b[ Yb`j cf[Ybca`a`Ybž`i`a`X]Y
G]WYf\Y]h`ni`Yf\Ø`Yb"

8]Y`6YXYb`_Yb`ni`f`G]WYf\Y]h`i`bX`?`cbghfi`_h]cbgk`Y]gY`j`cb
Gi`dYfmUW`hYb`g]bX`bi`b`U`\_hi`Y``Yf`XYbb`Y`"K`Å`fYbX`X]Y`6Y`Å`fXYb
X]Y`9fa`]h`i`b[Yb`ni`XYf`?`UhUghfc`d`Y`k`Y]hYfZØ`fYbž`V`Y]Vh`X]Y
: fU[Yž`k`Y`W`Y`@Y`fYb`Ui`g`X]YgYa`i`b[ `ØW`\_`[Ync[Yb`k`YfXYb
_ØbbYb`" ð`Y]bYf`6fUbW`Yž`]b`XYf`DfYgh][ Y`i`bX` ; YgWk]bX][_Y]h
cZi`ØVYf`G]WYf\Y]h`[ YghY`h`k`YfXYbž`k`]fX`Yg`i`bYf`Ågg`]W`gY]bž`X]Y
GhUbXUfXg`ni` \]bhYfZfU[Yb`"8]Y`6UmYg]Ub`a`U[`bi`b`Ui`Z`XYa
; fi`bX`XYg`A`]hY`a`YYfg`Y]Y[ Ybž`XcW`X]Y`9f`\_Yb`hb]ggYž`X]Y`Ui`g
X]YgYf`HfU[ ØX]Y`[Yk`cbbYb`k`YfXYbž`_ØbbhYb`Ni`_ØbZi][Yg`d`f`Å[ Yb`"

9]b`5`d`d`Y``ni`f`J`YfVYggYfi`b[`XYf` G]WYf\Y]hgghUbXUfXg

9g`k`]fX`ni`bY`a`YbX`YfZc`fXYf`]W`ž`XUgg`]b`XYf`MUW`h` ð`Xi`ghf]Y
G]WYf\Y]hgghUbXUfXg`ØVYf`U``Yg`UbXYfY`[YghY`h`k`YfXYb`"
5b[Yg]W`hg`XYf`XfUa`Uh]gWYb`9fY][ [ b]ggY`j`cf`G]n`]Yb`]gh`Yg
YbhgWY]XYbXž`XUgg`g]W`gck`c`\`<`YfghY`Yf`U`g`Ui`W`G\_]`ddYf
]bhYbg]j`Yf`a`]h`XYb`Ghf`Øa`i`b[Yb`i`bX`K`]hYfi`b[ gVYX]b[ i`b[Ybž`X]Y
ni`gc`WYb`J`cfZÅ`Yb`ZØ`fYb`_ØbbYbž`Ui`gY]bUbXYfgYhnYb`"
ðbcj`Uh]cb`gc`hY`b]W`h`Ui`Z`?`cghYb`XYf`G]WYf\Y]h`j`cfUb[Yhf]YVYb
k`YfXYb`"9]b`i`a`XYb`_Yb`]gh`b`ch`k`YbX][ [ ž`i`a`g]WYfni`ghY`Ybž`XUgg
g]W`Å`b`]WY`HfU[ØX]Yb`]b`Ni`\_i`bZi`b]W`h`k`]YXYf\c`Yb`"

8Yf`i`bhYf[Ub[`XYf`6UmYg]Ub` \Uh`b]W`h`bi`f`X]Y`A`YX]Yb`k`Y`hk`Y]h
VYgW`ÅZi][ hž`gcbXYfb`k`]fZi`Ui`W`[ fi`bX`Y[ YbXY` : fU[Yb`ni`f
G]WYf\Y]h`Ui`Z`GYY`i`bX`XYb`GhUbXUfXg`]b`XYf`MUW`h`V`Ui`]bXi`ghf]Y
Ui`Z` ð`XYb`Y`hnhYb` ð`Yb` \UVYb`g]W`hfU[]gWY`J`cfZÅ`Y`Ui`Z`XYa
K`UggYf`[Y`Åi`Zž`k`Ug`j`]Y`Y`X`Uni`j`YfUb`Uggh`Uhž`gck`c`\`X]Y
hYW`b]gWYb`U`g`Ui`W`X]Y`a`YbgW`]WYb` : U`hc`fYb` \]bhYf`gc`WYb
i`b[ `ØW`\_Yb`[Yb`Ui`Yf`ni`VYhfUW`hYb`"8]Y`VYXYi`hYbXghYb`

G]WYf\Y]hgUbZcfXYfi b[Yb'i bX'J cfgWf]ZhYb'a ØggYb'ghAbX][
ØVYfdfØZhi bX'U_hi U']g]Yfh'k YfXYbž'i a 'À\b`]WY'HfU[ÒX]Yb'ni
j Yfa Y]XYb"

9]b'[YgcbXYfhYf'6`]W\_Ui ZX]Y'ni bY\ a YbX'\_ca d`YI Yb'GmghYa Y']b
a cXYfbYb'MJW hYb'nY][hž'XUgg'hYW b]gWYf': cfhgWf]h'ink Uf'bYi Y
A Ò[`]W\_ Y]hYb'V]YhYhž'UVYf'Ui W'X]Y'?ca d`YI]hÀhi bX'X]Y'F]g]_Yb
Yf\Ò\h"8]Y'ghY][YbXY'5bnU\`j cb'Gi dYfmUW hYbž'X]Y'a]h
a cXYfbYb'Ui hca Uh]g]YfhYb'GmghYa Yb'i bX
<cW'Y]ghi b[ga UhYf]U`Yb'Ui g[ YghUhhYhg]bXž'ghY`h'Y]bY
<YfUi gZcfXYfi b['ZØf'X]Y'G]WYf\Y]h'XUf"' Æ'X]YgYa
Ni gUa a Yb\Ub['gh'Y]bY'fY[Y'a À»][Y'6Yk Yfhi b['XYf
?cbghfi _h]cbYb'i bX'5i gghUhi b[Yb'i bYf'Àgg`]Wž'i a 'dchYbn]Y`Y
; YZU\Yb'ni 'j]XYbh]Zn]YfYb'i bX'ni 'a]b]a]YfYb"

6YXYi hi b['XYf'GW]ZZgZØ\ fi b['i bX'XYf'7fYk

9]bY'YbhgWY]XYbXY'F c`Y'ZØf'X]Y'G]WYf\Y]h'Ui Z'GYY'gd]Y'Yb'X]Y
5i gV]'Xi b['i bX'XUg'HfU]b]b['XYf'7fYk "' Æ'Y]bYf'6fUbWYž'X]Y'cZh
U'g['Ua ci fÒg'k U\ f[Ybca a Yb'k]fXž'_Ubb'X]Y'6YXYi hi b['Y]bYf
[i h'Ui g[YV]'XYhYb'A UbbgW UZi]b'?f]gYbg]hi Uh]cbYb'b]W'h'\cW
[Ybi ['Y]b[YgW'Àmh'k YfXYb"'9fZU\ fi b[gVYf]W hY'Yfa i h][Yb
XUni ž'XUgg'7fYk a]h['YXYf'ghYhg'Ui Z'BchZÀ`Y'j c fVYfY]hYhgY]b
gc`hYb'i bX'fY[Y'a À»][Y'G]WYf\Y]hgØVi b[Yb'Xi fW'Ui Zy b
a ØggYb"'Gc`WY'dfU_h]gWYb'GW i 'i b[Yb'_ØbbYb']b
YbhgWY]XYbXYb'A ca YbhYb '@YVYb'fYhYb"

8]Y'MJW h'6UmYg]Ub 'k Uf'b]W'h'bi f'Y]b'hYW b]gWYg'A Y]ghYfk Yf_ž
gcbXYfb'Ui W'Y]b'Gma Vc`ZØf'XYb '@i i gž'XYf'cZh'a]h'XYa
6cchZU\Yb'j YfVi bXYb'j]gh"K Ug'YXcW'a UbW'a U'ØVYfgY\Yb
k]fXž']ghž'k]Y'k]W h]['Yg']ghž'XUgg'X]Y'G]WYf\Y]h'\ÒW ghY'Df]cf]hÀh
\Uh"; Ya À»'Y]bYa '6Yf]W'h'XYf'ÆhYfbUh]cbU'A Uf]h]a Y
Cf[Ub]nUh]cb'f'À C Ł'k YfXYb'À\ f`]W'<i bXYfhY'j cb'İ bZÀ`Yb
Xc_i a Ybh]Yfhž'X]Y'j]j]Y'Yb': À`Yb'Ui Za YbgW`]WYg'J YfgU[Yb
ni fØW_ni ZØ\Yb'g]bX"'9]bY'[fØbX`]WY'GW i 'i b['i bX'_UfY
?ca a i b]_Uh]cbgk Y[Y'g]bX'XU\Yf'i bYf'Àgg`]Wž'i a 'dchYbn]Y`Y
; YZU\Yb']b'XYf'a Uf]h]a Yb'İ a [YVi b['ni 'a]b]a]YfYb"

G]W\ Yf\ Y]hgj c f g W\ f]ZhYb`i b X`fY W\ h`]W\ Y
F U\ a Y b V Y X]b[i b[Y b

⊕ j]Y`Yb`@AbXYfb`[ ]Vh`Yg`i a ZUggYbXY`[YgYh`]W\ Y`J c f g W\ f]ZhYbž
X]Y`g]W\ `a]h`XYf`G]W\ Yf\ Y]hj cb`GYYZU\ fh`i bX`XYf`F Y[]ghf]Yfi b[
j cb`MUW\ hYb`VYZUggYb"⊕`9i fcdU`Yhk U`g]bX`j YfgW\]YXYbY
F]W\ h`]b]Yb`XYf`9i fcdA]gW\ Yb`l b]cb`gck ]Y`]bhYfbUh]cbU`Y
?cbj Ybh]cbYb`k ]Y`XUg`GC@5G!5V\_ca a Yb`fHbhYfbUh]cbU`
7cbj Ybh]cb`Zcf`h\Y`GUZYhmicZ`@ZY`Uh`GYUŁj cb`[ fc» Yf`6YXYi hi b["
Gc`W\ Y`J c f g W\ f]ZhYb`g]bX`XUfUi ZUi g[Y`Y[ hž`Y]b`c\Yg`A U» `Ub
G]W\ Yf\ Y]h`Ui Z`GY`ni`[Yk`A\`f`Y]ghYb`i bX`VYghY\YbXY`GhUbXUfXg
_cbh]bi]Yf`]W\ `ni`j YfVYggYfb"

8]Y`\_ VYfd fØZi b[ `i bX`9]b\U`hi b[`X]YgYf`G]W\ Yf\ Y]hgghUbXUfXg
g]bX`b]W\ h`bi f`ZØf`X]Y`J Yfa Y]Xi b[ `j cb`l bZ`Yb`YbhgW\ Y]XYbXž
gcbXYfb`Ui W\ `ZØf`XYb`GW\ i h`XYf`A YbgW\ Yb`Ub`6cfX"⊕`a` : U`Y`XYf
6UmYg]Ub`\_ÖbbhY`Y]bY`ghÅf\_YfY`9]b\U`hi b[ `X]YgYf`F ]W\ h`]b]Yb
a Ö[`]W\ Yfk Y]gY`ZUhU`Y`9bhk]W`\_i b[ Yb`j Yf\]bXYfh`\UVYb"9]bY
5bU`mgY`j cb`G]W\ Yf\ Y]hgj cf[ UVYb`k]fX`bi b`j cfUi gg]W\ h`]W\ `Y]bYb
_f]h]gW\ Yb`HY]`XYf`Ui ZYbXYb`9fa]hhi b[Yb`]b`X]YgYa`HfU[ÖX]Y!
l b[`ØW`_V]`XYb"

8 Y h U]`g

6 Y gi W\ Yb`G]Y`i bg`Ui Z.`X]Y!b U W\ f]W\ hYb"b Y h