

: U\ ffUXX]YVghU\`']b`5`hYbghUXh. `HÅhYf`
Ybhk YbXYb`nk Y]`\cWk Yfh][Y`F`ÅXYf`

I bVY_UbbhY`HÅhYf`Ybhk YbXYb`nk Y]`\cWk Yfh][Y`: U\ ffÅXYf`
Ui g`Y]bYa `A Y\ fZUa `]`Yb\Ui g`]b`5`hYbghUXh# B`"Dc`nY]
Yfa `]hhY`h"

⊕`5`hYbghUXh# B`_Ua `Yg`ni `Y]bYa `VYXYi hYbXYb`J cfZU`ž`XYf`XUg
G]WYf\Y]hg[YZØ`XYf`5bk c\ bYf`i bX`: U\ ffUXVYg]hnYf`YfgWk ØhhYfh
\Uh`Nk Y]`\cWk Yfh][Y`: U\ ffÅXYfž`XYfYb`K Yfh]g]Wk`Ui Z]bg[YgUa`h`
' &\$`\$`9i fc`VY`Ài`Zž`k`i`fXYb`Ui g`Y]bYa `A Y\ fZUa `]`Yb\Ui g`
Ybhk YbXYh`8Yf`8]YVghU\`YfY][bYhY`g]Wk`]b`Y]bYa `NY]hfU\`a`Yb`
j`ca`GUa`ghU[ž`XYb`%+`"5i [i ghž`V]g`A`cbhU[ž`XYb`%-`"5i [i gh`8]Y`
Dc`nY]`Yfa `]hhY`h`bi`b`i`bX`AXh`a`Ò[`]Wk`Y`NYi [Yb`Y]bž`g]Wk`ni`
a`Y`XYb`"

8]Y`HÅhYf`j`YfgWk`UZhYb`g]Wk`Ni [Ub[`ni`XYb`?Y`Yff`Ài`a`Yb`XYg`
K`c\`b[YV`Ài`XYg`]b`XYf`9fbgh!`fUi`g!GhfU»`Yž`k`c`X]Y`: U\ ffÅXYf`
UV[YghY`h`k`UfYb`"K`Ug`ni`b`ÅWk`gh`k`]Y`Y]b`[Yk`Ø\`b`]Wk`Yf`8]YVghU\`
Ui`gg]Y\`hž`_ØbbhY`YXcWk`Ui`ZY]bY`VYi`bfi`\[[YbXY`HYbXYbn`]b`XYf`
FY[]cb`\]bXYi`hYb`": U\ ffUXX]YVghU\`\Uhi]b`j`]Y`Yb`Gh`AXhYb`
ni [Ybca`a`Ybž`i`bX`XUg`6Yk`i`gghgY]b`ZØf`X]Y`G]Wk`Yf\Y]hj`cb`
dYfgØb`]Wk`Yb`6Yg]mhØa`Yfb`k`]fX`]a`a`Yf`k`]Wk]h[Yf"

8]Y`I`a`gh`Åb`XY`XYg`8]YVghU\`g`

@Ui`h`XYb`YfghYb`9fa`]h`i`b[Yb`XYf`Dc`nY]`VfUWk`Yb`X]Y`HÅhYf`Y]b`
: U\ ffUXgWk`cgg`Ui`Zž`i`a`X]Y`F`ÅXYf`ni`ghY\`Yb`"Gc`Wk`Y`
J`cf[Y\`Yb`gk`Y]gYb`g]b`X`b]Wk`h`b`Yi`ž`YXcWk`gWk`Y]b`h`X]Y`
Dfc`ZY`gg]cb`U]h`Åhž`a`]h`XYf`X]Y`gYf`8]YVghU\`Ui`g[YZØ`fh`k`i`fXYž`Ui`Z`
Y]b`Y`UbghY][YbXY`?`f]a`]b`U]h`Åhg`f`UhY`]b`Y]b[Yb`Gh`AXhYb`
\]bni`XYi`hYb`"8]Y`HUh`nY][hž`k`]Y`Y]Wk`h`Yg`ZØf`?`f]a`]b`Y`Y`

\Yi hni hU[Y'gY]b' _Ubbž']b'df]j UhY'6YfY]WXY'Y]bni Xf]b[Yb'i bX
K Yfh[Y[YbghÀbXY'a]hni bY\ a Yb"

8]Y'6Yhfc ZYbYb'g]bX'j YfghÀbX`]WXYfk Y]gY'VYgcf[hž'XYbb'X]Y
9bhk YbXi b['XYf': U\ffÀXYf']gh'b]WXYh'bi f'Y]b'Z]bUb'n]Y''Yf'J Yf'i gh'
: U\ffÀXYf'ghY''Yb'ZØf'j]Y'Y'A YbgWXYb'XUg'<Ui dhj Yf_Y\fga]hhY'
XUfž']bgVYgcbXYfY']b'i fVUbYb'; YV]YhYbž'k c'X]Y'Bi hni b[
ÖZYbh']WXYf'J Yf_Y\fga]hhY''cXYf'XUg': U\fyb'a]h'XYa '5i hc'cZh
i a ghÀbX`]WXY']gh''9]b': U\ffUX']gh'ZØf'j]Y'Y'XYf'GWX'ØggY''ni
A cV']hÀhž':]hbYgg'i bX': fY]\Y]h"

G]WXYf\Y]hg!A U» bU\ a Yb'i bX'DfÀj Ybh]cb

5b[Yg]WXYhg'X]YgYg'J cfZU'g'ghY''hg]WXY'X]Y': fU[Yž'k Y'WXY
A U» bU\ a Yb'X]Y'5bk c\ bYf'Yf[fY]ZYb' _ÖbbYbž'i a 'g]WXY'VYggYf'j cf
8]YVghU\`'ni 'gWXYØhnYb''9I dYfhYb'Ya dZY\`Ybž'\cWXYk Yfh[Y
: U\ffÀXYf'ghYhg']b' [Yg]WXYfhyb'6YfY]WXYb'UVni ghY''Yb'i bX
ni gÀh']WXY'GWX'ØggYf'ni 'j Yfk YbXYbž'i a 'XUg'F]g]_c'Y]bYg
8]YVghU\`g'ni 'a]b]a]YfYb''J]Y'Y': U\ffUXfUXZU\ fYf'gYhnYb'Ui WXY
Ui Z; DG!HfUW_Yfž'i a 'ja ': U''Y'Y]bYg'8]YVghU\`g']\fY'FÀXYf'ni
cfhYb"

8]Y'Dc`nY]\ Uh'Y]b'k UWXYgUa Yg'5i [Y'Ui ZX]Y'G]hi Uh]cb'i bX
Yfa i h][h'X]Y'6Øf[Yfž'j YfXÀWXYh][Y'5_h]j]hÀhYb'gcZcfh'ni 'a Y'XYb"
DfÀj Ybh]j Y'Dc`nY]UfVY]h'_Ubb'XUni 'VY]hfU[Ybž'gc`WXY'J cfZÀ''Y']b
XYf'Ni _i bZh'ni 'j Yf\]bXYfb'i bX'XUg'G]WXYf\Y]hg[YZØ\`XYf
² ZYbh']WXY_Y]h'ni 'ghÀf_Yb"

: U\ffUXX]YVghU\`]gh'b]WXYh'bi f'Y]bY''c_U'Y'5b[Y'Y[Yb\Y]h''9f
gd]Y[Y'h'Y]b' [fØ» YfYg'DfcV'Ya 'k]XYfž'XUg']b'j]Y'Yb'GhÀXhYb
9i fcdUg'ni b]a a h''8]Y'5bk c\ bYf'gY'Vgh'g]bX' [YZcfXYfh'U_h]j 'ni
k YfXYbž'i a ']\fY'l a [YVi b['g]WXYfYf'ni '[YghU'hYb'i bX'X]Y'HÀhYf
UVni gWXYfYW_Yb"

8]Y'² ZYbh']WXY_Y]h']gh'Yhnh' [YZcfXYfh' »XYf'gc`hY'k UWXYgUa 'gY]b
i bX'U_h]j 'a]hXYb_Yb''K Ybb'a Ub'gY'Vgh'_Y]bY'dYfgØb`]WXYb
9fZU\fi b[Yb'a]h'8]YVghU\` [Ya UWXYh'\Uhž'g]bX'Yg'cZh'X]Y
BUWXYVUfb'cXYf': fYi bXYž'X]Y'VYhfc ZYb'g]bX'' »XY' »Zcfa Uh]cb

_ÖbbhY`]\`ZfY]W\`gY]bž'i a`X]Y`9fa`]h'i b[Yb`XYf`Dc`]nY]
j`cfUbni`hfY]VYb`i bX`a Ö[`\]W\Yfk`Y]gY`k`Y]hYfY`J`cfZÄ`Y`ni
j`Yf\]bXYfb"

DZYfXY`XYf`G]W\Yf\Y]h

5VgW\`]Y»YbX`Äggh`g]W\`ZYgh\U`hYbž`XUgg`X]YgYf`J`cfZU`]\b
5`hYbghUXh`Y]b`NY]W\Yb`ZÖf`X]Y`B`chk`YbX][`_Y]h`]ghž`g]W\`]bhYbg]j`Yf
a`]h`XYb`Y][`YbYb`G]W\Yfi`b[`ga`U»bU\`a`Yb`ni`VYZUggYb`"»XYf
:`U\ffUXVYg]hnYf`]gh`ZÖf`XYb`G\W`i`hn`gY]bYg`9][`Ybhi`a`g`gY`Vgh
j`YfUbhk`cfh`]W\ž`Ui`W\`k`Ybb`XYf`C`fhž`Ub`XYa`X]Y`:`U\ffÄXYf
UV[`YghY`h`k`YfXYbž`U`g`g]W\Yf`[`]`h`"8]Y`G]W\Yf\Y]hg`UbXgW\UZh
ÄbXYfh`g]W\`ghÄbX][`/`XU\Yf`]gh`Yg`i`a`gc`k`]W\h][`Yfž`k`UW\gUa`ni
V`Y]VYb`i`bX`g]W\`_Y]bY`ZU`gW\Y`G]W\Yf\Y]hj`cfni`a`UW\Yb"

8YhU]`g`ni`a`:`U\ffUXX]YVghU\`:]b`5`hYbghUXh

8Yf`8]YVghU\`YfY][`bYhY`g]W\`]b`Y]bYa`K`c\`b[`YVÄi`XYž`k`Ug`Ui`Z
X]Y`ni`bY\`a`YbXY`J`Yfk`i`bXVUf`_Y]h`gc`W\Yf`G]hi`Uh]cbYb`\]bk`Y]gh"
8]Y`HÄhYf`gW\Y]bYb`[`Yn]Y`h`j`cf[`Y[`Ub[`Yb`ni`gY]bž`]bXYa`g]Y`X]Y
?Y`YffÄi`a`Y`XYg`A`Y\`fZUa`]`]Yb\`Ui`gYg`Ui`Zgi`W\hYbž`i`a`X]Y
\`cW\k`Yfh][`Yb`:`U\ffÄXYfž`X]Y`ZÖf`j`]Y`Y`A`YbgW\Yb`b]W\h`bi`f`Y]b
:`cfhVYk`Y[`i`b[`ga`]hY`ž`gcbXYfb`Ui`W\`Y]bY`k`Yfhj`c`Y`æ]j`Ygh]h]cb
XUfghY`Ybž`ni`ghY\`Yb`"8]Yg`k`]fZi`:`fU[`Yb`ni`f`G]W\Yf\Y]hj`cb
5i`ZVYk`U\`fi`b[`gcfhYb`ZÖf`:`U\ffÄXYf`Ui`Z"

8]Y`VYhfcZZYbYb`:`U\ffÄXYf`k`UfYb`b]W\h`bi`f`a`cbYhÄf`k`Yfhj`c`ž
gcbXYfb`_ÖbbhYb`Ui`W\`Y]bY`Ya`ch]cbU`Y`6YXYi`hi`b[`ZÖf`X]Y
9][`YbhØa`Yf`[`Y\UVh`\UVYb`":`U\ffÄXYf`k`YfXYb`c`Zi`]bX]j`]Xi`Y`
Ub[`YdUgghi`bX`_ÖbbYb`ZÖf`j`]Y`Y`6Yg]hnYf`Y]bY`5fh`dYfgÖb`]W\Yb
5i`gXfi`W`XUfghY`Yb"

G]W\Yf\Y]hga`U»bU\`a`Yb`i`bX`DfÄj`Yb]cb

I`a`gc`W\Y`J`cfZÄ`Y`]b`Ni`_i`bZi`ni`j`Yf\]bXYfbž`]gh`Yg`k`]W\h][`ž
Y]b][`Y`G]W\Yf\Y]hga`U»bU\`a`Yb`ni`VYUW\hYb`"9][`YbhØa`Yf`gc`hYb
\`cW\k`Yfh][`Y`G\W`ÖggYf`j`Yfk`YbXYbž`X]Y`gdYn]Y`ZÖf`:`U\ffÄXYf`

Ybhk]W_Y`h:k i fXYb"8]YgY`GW`ÖggYf'g]bX`cZh'fcVi ghYf'i bX`V]YhYb
Y]bYb`VYggYfYb`GW`i hn`[Y[Yb`8]YVghU\`"8UfØVYf`\]bUi`g`_ÖbbYb
: U\ffUXVYg]hnYf`XUfØVYf`bUW`XYb_Ybž`\fY`F`ÀXYf`]b`Y]bYf`[i h
VY`Yi W`hYhYb`i bX`ZfYei Ybh]YfhYb`l a [YVi b[`ni`dUf_Yb"

: Øf`K`c`b`Ub`U[Yb`_ÖbbhYb`ni`g`Ähn`]W`Y`G]W`Y`f`Y]hYbžk`jY
j`]X`Y`c`Ø`V`Y`f`k`U`W`h`Y`9]b[`Äb[Y`ni`?`Y`Y`f`Äi`a`Yb`c`X`Y`f`5`U`f`a`U`b`U[Ybž
]b`6`Y`h`f`U`W`h`[Ync[Yb`k`Y`f`X`Y`b`"8`j`]Y`Y`b`G`h`Ä`X`h`Y`b`[]V`h`Y`g
a`]h`h`Y`f`k`Y`]Y`U`i`W`5`d`d`g`c`X`Y`f`f`Y`[]g`h`f`]Y`f`h`Y`C`b`]b`Y!8]Y`b`g`h`Y`ž`X]Y`X`Y`b
9][Yb`h`Ø`a`Y`f`b`\`Y`Z`Y`b`ž`\fY`: U\ff`Ä`X`Y`f`]a` : U`Y`Y]b`Y`g`8]Y`V`g`h`U`\`g`ni
`c`_U`]g]Y`f`Y`b"

< Äi`Z][_Y]h`j`c`b` : U\ff`U`X`X]Y`V`g`h`Ä`\`Y`b`]b
8`Y`i`h`g`W`\`U`b`X`

8]Y`?`f]a`]b`U`gh`U`h]g`h]_`n`Y][hž`X`U`g`g` : U\ff`U`X`X]Y`V`g`h`Ä`\`Y`]b
8`Y`i`h`g`W`\`U`b`X`\`Äi`Z][`j`c`f`_`ca`a`Y`b`"8`a` : U\`f`&`\$`&`%`k`i`f`X`Y`b`U`i`h`X`Y`f
d`c`]n`Y`]W`Y`b`?`f]a`]b`U`gh`U`h]g`h]_`Ø`V`Y`f`&)`\$`\$`\$`\$` : U\ff`U`X`X]Y`V`g`h`Ä`\`Y`
[Ya`Y`X`Y`h"8]Y`g`j`Y`f`X`Y`i`h]W`h`Y]b`U`b`\`U`h`Y`b`X`Y`g`D`f`c`V`Ya`ž`X`U`g`b]W`h
b`i`f`]b`g`h`Ä`X`h]g`W`Y`b` : Y`V]Y`h`Y`b`ž`g`c`b`X`Y`f`b`U`i`W`]b`Ä`b`X`]W`Y`f`Y`b
F`Y`[]c`b`Y`b`ž`k`jY`5`h`Y`b`g`h`U`X`hž`j`c`f`_`ca`a`h"

8]Y`a`Y]g`h`Y`b`[Y`g`h`c`\`Y`b`Y`b` : U\ff`Ä`X`Y`f`g`h`U`a`a`Y`b`c`Z`h`b]W`h`j`c`b
V`Y`g`c`b`X`Y`f`g`k`c`\`U`V`Y`b`X`Y`b`6`Y`g]h`n`Y`f`b`ž`g`c`b`X`Y`f`b`g]b`X
@`U`b[n`Y]h]b]Y`g`h]h]c`b`Y`b`Z`Ø`f`A`Y`b`g`W`Y`b`ž`X]Y`U`i`Z` : U\ff`Ä`X`Y`f`U`g
i`a`k`Y`h`Z`f`Y`i`b`X`]W`Y`g` : c`f`h`V`Y`k`Y`[i`b[ga`]h`h`Y`U`b[Y`k`]Y`g`Y`b`g]b`X"8]Y`g
a`U`W`h`Y]b`Y`f`Y`f`\`Ø`h`Y`K`U`W`g`U`a`_Y]h`i`b`X`]b`b`c`j`U`h]j`Y
G]W`Y`f`Y]h`g`Ö`g`i`b[Y`b`X`f]b[Y`b`X`Y`f`Z`c`f`X`Y`f`]W`"

?`c`b`g`Y`e`i`Y`b`n`Y`b`Z`Ø`f`X]Y` ; Ya`Y]b`g`W`U`Z`h`

8]Y`\`Äi`Z][Y`b` : U\ff`U`X`X]Y`V`g`h`Ä`\`Y`\`U`V`Y`b`b]W`h`i`b`i`f`5`i`g`k`]f`_`i`b[Y`b
U`i`Z`X]Y`X]Y`f`Y`_`h`Y`b`C`d`Z`Y`f`ž`g`c`b`X`Y`f`b`U`i`W`U`i`Z`X]Y` ; Ya`Y]b`g`W`U`Z`h"9]b
J`Y`f`i`g`h`j`c`b` : U\ff`Ä`X`Y`f`b`_`U`b`b`X`U`g`J`Y`f`h`f`U`i`Y`b`]b`X]Y`G]W`Y`f`Y]h
Ö`Z`Y`b`h]W`Y`f`i`b`X`[Ya`Y]b`g`W`U`Z`h]W`Y`f`Z`f`U`g`h`f`i`_`h`i`f`Y`b`i`b`h`Y`f[f`U`V`Y`b
i`b`X`X]Y`B`i`h`n`i`b[`i`a`k`Y`h`Z`f`Y`i`b`X`]W`Y`f`H`f`U`b`g`d`c`f`h`a`]h`h`Y`j`Y`f`f]b[Y`f`b`
K`Y`b`b`X]Y`A`Y`b`g`W`Y`b`V`Y`Z`Ø`f`W`h`Y`b`ž`X`U`g`g`\fY` : U\ff`Ä`X`Y`f`[Y`g`h`c`\`Y`b`

k YfXYb`_ÖbbhYbž'n]Y\Yb'g]Y'a Ö[`]WXYfk Y]gY'UbXYfY
J Yf_Y\fga]hhY`j cf"

8 UfØVYf`\]bUi g`_ÖbbYb`B UWXVUfgWX UZhkg UWX Yb`i bX
![Ya Y]bgWX UZhYbž`X]Y`g]WX`ZØf`a Y`f`G]WXYf\Y]h`Y]bgYhnYbž
[YghÅf`h`k YfXYbž`i a`X]YgYb`DfcV`Ya Yb`[Ya Y]bgUa
Ybh[Y[Ybni k]f_Yb``Gc`WX Y`#]h]Uh]j Yb`_ÖbbYb`XUg
; Ya Y]bgWX UZhg[YZØ\`ZØfXYfb`i bX`XUg`6Yk i gghgY]b`ZØf
G]WXYf\Y]hgdfU_h]_Yb`Yf\Ö\Yb"

8 YhU]`g

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