

9]bVfi W\ ']bg'F UghUhhYf'7 Ug]bc. 'HÄhYf ghY\`Yb'a Y\ fYfY'HUi gYbX'9i fc

9]bVfi W\ ']b'F UghUhhYf'7 Ug]bc. 'I bVY_UbbhY'HÄhYf'ghY\`Yb
; Y`X'Ui g'Gd]Y`Ui hca UhYb"Dc`nY]'Yfa]hhY'h'bUW\ 'GW\ÄXYb']b
<Ö\Y'a Y\ fYfYf'HUi gYbX'9i fc"

⊕`XYf'B UW\hj ca `&%''5i [i gh&\$&(ž`Y[Yb`&"&\$'I \fž`_Ua`Yg'ni
Y]bYa`i bYfZfYi`]W\Yb'J cfZU``]b'F UghUhhž`U`g'i bVY_UbbhY'HÄhYf']b
Y]b`Öfh]W\Yg'Gd]Y`WUg]bc`]b`XYf'K`Yf_ghfU»Y`Y]bVfUW\Yb""8Yf
GW\UXYbž`XYf'Xi fW\`XYb'9]bVfi W\ 'j Yfi fgUW\h'k i fXYž`VY`Äi Zhig]W\
Ui Z'a Y\ fYfY'HUi gYbX'9i fc""9g'gW\Y]bž`U`g`\ÄhhYb`X]Y`F Äi VYf
[Yn]Y'h'bUW\`6Uf[Y`X'[Ygi W\h'i b`X`XUVY]'nk Y]'Gd]Y`Ui hca UhYb
Ui Z[YVfcW\Ybž'i a`Ub`X]Y'; Y`X`UggYhhYb`ni`[Y`Ub[Yb"

8]Y'HÄhYf'gW\Y]bYb'[i hj cfVYfY]hYh'[Yk YgYb`ni`gY]b""G]Y
j Yfk YbXYhYb`Y]bY'a`]h[YVfUW\hY`@Y]hYfž'i a`ØVYf`Y]b
Y]b[YgW\`U[YbYg': YbghYf']b`X]Y'7 Ug]bc!F Äi a`]W\`_Y]hYb`ni
[Y`Ub[Yb""8]YgY`J cf[Y\Ybgk Y]gY`XYi hYh`XUfUi Z`\]bž`XUgg'g]Y`]a
J cfZY`X`[Yd`Ubh`\UhhYbž`k]Y`g]Y'i bVYa`Yf`_h']b`XUg'; YVÄi XY
Y]bXf]b[Yb`_ÖbbYb""C ZZYbg]W\h`W\`k UfYb`g]Y`ØVYfnYi [hž`XUgg'g]Y
i b[YghÖfh]\f`I bk YgYb`hfY]VYb`_ÖbbhYbž`k Ug`U`YfX]b[g`b]W\h`XYb
HUhgUW\Yb`YbhgdUW\ž`XU`X]Y`Dc`nY]'bi b`Yfa`]hhY`h"

8]Y'9fa]hh'i b[Yb`XYf`Dc`nY]

B UW\`XYa`J cfZU``\Uh`XUg`Dc`nY]fYj]Yf'F UghUhh`X]Y'9fa]hh'i b[Yb
i a [Y\YbX`Ui Z[Ybca`a`Yb""8]Y`6YUa`hYb`j`Yfgi W\Ybž`<]bk Y]gY
Ui ZX]Y`≠Ybh]hÄh`XYf'HÄhYf'gck]Y`Ui ZX]YfYb':`i W\hk Y[`ni`Z]bXYb"
6]g\Yf[]Vh`Yg`bcW\`_Y]bY`_cb`_fYhYb`5b`U`hgd`i b`_hYž`X]Y`ni`f
: YghbU\`a`Y`XYf'9]bVfYW\Yf`ZØ\Yb`_ÖbbhYb""9g`V`Y]Vh
UVni`k`UfhYbž`c`V`Yj`Ybhi`Y``',`VYfk`UW\i`b[g`_Ua`YfUg`]a`6YfY]W\`XYg

7Ug]bcg'cXYf']b'XYf'I a [YVi b['5i ZnY]W'bi b[Yb'[Ya UW'h'\UVYbž
X]Y'VY]'XYf'Gi W'Y'bUW'XYb'HÀhYfb'\]'ZfY]W'gY]b'_ÒbbhYb"

9]bVfi W'X]YVghÀ\Y']b'; 'ØW_ggd]Y`ghÀhhYb'g]bX'b]W'hg'B Yi Ygž'i bX
X]YgYf'J cfZU``k]fZi: fU[Yb'Ui Z'VYnØ[']W'XYf'G]W'Yf\Y]h'gc`W'Yf
9]bf]W'hi b[Yb"'7Ug]bcg'g]bX']b'XYf'F Y[Y``[i h[Yg]W'Yfhž'XcW
]a a Yf'k]YXYf'gW'UZYb'Yg'?f]a]bY``Yž'G]W'Yf\Y]hgj cf_Y\fi b[Yb
ni 'i a [Y\Yb"'8]Y'6YhfY]VYf'XYg'F UghUhhYf'7Ug]bcg'ghUbXYb'Ua
HU['bUW'XYa 'J cfZU``i bhYf'GW'cW_ž'XU'g]Y'X]Y'5i gk]f_i b[Yb'XYg
9]bVfi W'g'bcW'b]W'hj c`ghÀbX]['UVgW'ÀhnYb'_cbbhYb"

8]Y'6YXYi hi b['j c b 'G]W'Yf\Y]hga U» bU\ a Yb

8]YgY'9fY][b]ggY'Yf]bbYfb'b]W'h'bi f'X]Y'6YhfY]VYf'j cb
Gd]Y'WUg]bcgž'gcbXYfb'Ui W'X]Y'^2 ZYbh]W'_Y]h'Ub'X]Y
Bch'k YbX]['_Y]hj YfghÀf_hYf'G]W'Yf\Y]hga U» bU\ a Yb"'8]Y
?ca V]bUh]cb'Ui g', VYfk UW'i b[ghYW'b]_ž'G]W'Yf\Y]hgdYfgcbU''i bX
BchZU``a U» bU\ a Yb'gd]Y'h'Y]bY'YbhgW'Y]XYbXY'F c``Yž'i a
dchYbn]Y``Y'9]bVfYW'Yf'UVni gW'fYW_Yb"' ð'NY]hYbž']b'XYbYb'X]Y
8]YVghU\ 'fUhY']b'j]Y'Yb'GhÀXhYb'UbghY][[hž']gh'Yg'i a gc'k]W'h][Yfž
XUgg'6YhfY]VYf'j cb': fY]nY]h'i bX'I bhYf\U'hi b[gY]bf]W'hi b[Yb
dfcU_h]j '\UbXY'bž'i a '\fY'?i bXYb'i bX']\f'9][Ybhi a 'ni 'gW'ØhnYb"

8]YgYf'9]bVfi W']b'F UghUhh']gh'Y]b'5`Ufa nY]W'Yb'i bX'_ÒbbhY'XUni
ZØ\ fYbž'XUgg'À\b']W'Y'9]bf]W'hi b[Yb']\fY'G]W'Yf\Y]hg_cbnYdhY
ØVYfXYb_Yb"'>XYg'7Ug]bc'gc``hY'g]W'ZfU[Ybž'cV'Yg'Ui gfY]W'YbX
J cf_Y\fi b[Yb'hf]Zž'i a 'gck c\`a UhYf]Y``Y'K YfhY'U'g'Ui W'X]Y
G]W'Yf\Y]h'XYf'; ÀghY'ni '[Yk À\ fY]ghYb"'8]Y'F Y'Yj Un'gc`W'Yf
: fU[Yb'k]fX'g]W'b]W'h'bi f']b'F UghUhhž'gcbXYfb']b' [Un
8Yi hgW'UbX'ZcfhgYhnYbž'gc`Ub[Y'X]Y'6YXfc\i b['Xi fW
9]bVfYW'Yf'VYgh\h"

ð'6Yni ['Ui Z'XYb'j cf']Y[YbXYb'J cfZU``]gh'Ui W'ni 'Yfk À\bYbž
XUgg'X]Y'Dc`]nY]'<]bk Y]gY'j cb'NYi [Yb'cXYf'5bk c\bYfb'gY\ f
gW'Àhnhž'X]Y'a Ò[']W'Yfk Y]gY'a Y\ f' ðZcfa Uh]cbYb'ni 'XYb'HÀhYfb
cXYf'ni f'HUhnY]h'\UVYb"'9g'V'Y]Vh'ni '\c ZYbž'XUgg'X]Y
9fa]hhi b[Yb'gW'bY``ni 'Y]bYa '9f[YVb]g'ZØ\ fYb'i bX'X]Y'HÀhYf
[YZUggh'k YfXYb'_ÒbbYb"'8Yf'J cfZU``\ Uh'VYfY]hg'XUg' ðhYfYggY'j cb

A YX]Yb`i bX`Ni gW\Ui Yfb`[Yk YW_hzi bX`X]Y` : fU[Yž`k]Y`g]W\Yf
Gd]Y`WUg]bcg`k]f_`]W\`g]bXž`k]fX`YfbYi hiUi Z[Yk cfZYb"

<]bhYf[fØbXY`ni `9]bVfØW\Yb`]b`Gd]Y`WUg]bcg

9]bVfØW\Y`]b`Gd]Y`WUg]bcg`g]bX`_Y]b`bYi Yg`D\`Àbca`Yb``Gc`W\Y
JcfZÀ``Y`g]bX`]b`XYb` ``YhnhYb` `š\`fYb`k`Y`hk`Y]h`Ub[Ygh]Y[Ybž`k`cVY]
X]Y`HÀhYf`c`Zi`Ui`Z`X]Y` \c`Yb`6Uf[Y`XVYgh`ÀbXY`]b`XYb`5i`hca`UhYb
i`bX`?`UggYb`UVn]Y`Yb``@Ui`hi`6Yf]W\hYb`XYg`6i`bXYg`_f]a`]bU`Ua`hg
fb?`5Ě`[UV`Yg`]b`8Yi`hgW`UbX`&\$&&`Y]bYb`5bgh]Y[`XYf
9]bVfi`W\g`_f]a`]bU`]h`À`hi`a` `+`i` `]a` `J`Yf[`Y]W\`ni`a` `J`cf`U`fž`k`cVY]
VYgcbXYfg`Gd]Y`gh`À`hYb`i`bX` ; Ughfcbca`]YVYhf]YVY`VYhf`c`ZYb
k`UfYb``8]Y` ; fØbXY`ZØf`X]YgY`Ni`bU`a`Y`_Øb`bYb`j`]Y`gW\]W\h][`gY]bž
XUfi`bhYf`k`]fhgW\UZh`]W\Y`l`bg]W\Yf`Y]hYb`i`bX`Y]b`5bgh]Y[`XYf
?`f]a`]bU`]h`À`h`8]Y`HUhgUW\Yž`XUgg`7Ug]bcg`c`Zi`ØVYf`Y]b`[Yf]b[YfYg
G]W\Yf`Y]hgb]j`YUi`j`YfZØ[Yb`U`g`6Ub`_Yb`cXYf
9]bnY`\UbXY`g[YgW\`À`ZhYž`a`UW\h`g]Y`ni`U`hfU`_h]j`Yb`N]Y`Yb"

9]b`VYgcbXYfYg`5i` [Yba`Yf`_`[]`h`XYb`A`Yh`c`XYbž`X]Y`j`cb
9]bVfYW\Yfb`Ub[Yk`YbXYh`k`YfXYb```ǂ`j`]Y`Yb` : À``Yb`k`]fX`Y]bY
?`ca`V]bUh]cb`Ui`g`_ØfdYf`]W\Yf` ; Yk`U`hi`bX`[YgW\]W_hYf`D`Ubi`b[
j`Yfk`YbXYhzi`a`Ni`[Ub[`ni`XYb`F`À`i`a` `]W\`_Y]hYb`ni`Yf`U`hYb``8]Y
HÀhYf`UfVY]hYb` \`À`i`Z[`]b`HYUa`gži`a`X]Y`5`Ufa`Ub`U[Yb`ni
i`a`[Y`Yb`i`bX`a`Ø[`]W\Y`NYi`[Yb`UVni`gW`fYW`_Yb```ǂ`F`UghUhh`XØf`ZhY
X]Y`J`Yfk`YbXi`b[`Y]bYf`@Y]hYfž`k`]Y`]a` `U`_hi`Y``Yb` : U``VYgW\f]YVYbž
Y]bY`[Yd`Ub`hY`J`cf[Y`Yb`gk`Y]gY`[Yk`YgYb`gY]bž`i`a` `gW\`bY``i`bX
i`bUi`ZÀ``][`]b`XUg`7Ug]bc`ni`[`Y`Ub[Yb"

GhUh]gh]gW\Y`9b`hk`]W`_`i`b[Yb`i`bX`XYfYb

9]bZ`i`gg`Ui`Z`X]Y`G]W\Yf`Y]h

8]Y`G]W\Yf`Y]hg`U[Y`]b`XYi`hgW\Yb`Gd]Y`gh`À`hYb` \`Uh`]b`XYb` ``YhnhYb
š\`fYb`XUg`ǂ`hYfYggY`j`cb`G]W\Yf`Y]hgVY` \ØfXYb`i`bX
7Ug]bcVYhfY]VYfb`[Yk`YW`_h``@Ui`hi`XYa` `U`_hi`Y``Yb`@U[YVYf]W\h`XYg
6?`5`nY][`h`X]Y`GhUh]gh]_ž`XUgg`ØVYf`%` `i` `U``Yf`9]bVfØW\Y`]b`XYb
`YhnhYb`š\`fYb`]b`XYf` ; Ughfcbca`]Y`i`bX`]a` ` : fY]nY]hVYfY]W\
ghUhhZUbXYb``8]Yg`i`bhYfghfY]W\h`X]Y`6YXYi`hi`b[`j`cb`A`U`»`bU`a`Yb

ni f'J YfVYggYfi b['XYf'G]WXYf\Y]h'i]b'7Ug]bcg"<Ài Z['g]bX'Y]bZUWXY
G]WXYf\Y]hggmgHYa Y'k]Y'5`Ufa Ub`U[Yb'cXYf
, VYfk UWXi b[g_Ua YfUg'b]Wxh'Ui gfY]WXYbXž'i a 'X]Y`HÀhYf
UVni gWxfYW_Yb" `ϕ'j]Y`Yb : À`Yb'g]bX'Ui Wx'a YbgWx`]WXY
G]WXYf\Y]hg_fÀZhY`YfZc fXYf`]Wxž'i a 'X]Y`G]WXYf\Y]hj cf'C fhini
[Yk À\`f`Y]ghYb"

Ni gÀhn`]Wx'g]bX'X]Y`Z]bUbn]Y`Yb'J Yf'i ghYž'X]Y`Xi fWx'gc`WXY
9]bVfØWXY`YbhghY\Ybž'Yf\YV`]Wx" `æ' `ϕ\`fY`&\$&' `k i fXYb
[YgWx`ÀhY`%) `A]`]cbYb'9i fc`Ub'J Yf'i ghYb`Xi fWx
9]bVfi WxX]YVghÀ`Y`]b`Gd]Y`WUg]bcg`]b'8Yi hgWx`UbX`j YfnY]Wx.bYh"
8]Y`k]fhgWx`UZh`]WxYb'5i gk]f_i b[Yb'X]YgYf'8Y`_hY`VYhfYZZYb'b]Wx.h
bi f'X]Y`6YhfY]VYfž'gcbXYfb'Ui Wx'X]Y`5b[YghY`hYbž'X]Y
a Ò[`]WXYfk Y]gY`]\fY`5fVY]hgd`ÀhY`j Yf`]YfYbž'k Ybb'7Ug]bcg
[Ynk i b[Yb'g]bXž']\fY`?cghYb`ni ` _ØfnYb"

8YhU]`g

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