

9]bY 'Ui g[YghfYW_hY ' < UbX 'ZØf '5a Yf]_U.
5i Z'XYa 'K Y['ni f 'J YfgØ\bi b['i bX
9]b\Y]h

⊕ 'XYa '5fh]_Y` / ei ch/5a Yf]_U`VfUi W'h'b]W'h'X]Y '[YVU`hY
: Ui ghž'gcbXYfb`X]Y 'Ui g[YghfYW_hY ' < UbX/ ei ch/'k]fX`X]Y
Xf]b[YbXY`Bchk YbX][[_Y]h'Y]bYf'j YfgØ\ bYbXYb
: Ø\fi b[gdYfgcb`X]g_i h]Yfhž'i a `X]Y '[YgdU`hYbY`i bX
ZY]bX`]W'Y`B Uh]cb`XYf`J YfY]b][hYb`GhUUhYb`j cb`5a Yf]_U
k]YXYf`ni `j YfY]bYb`"9g`k]fX`Ui g[YZØ\fhž`k]Y`X]Y`nj]`g]YfhY
6Yk Å`h][i b[`j cb`A Y]bi b[gj YfgW]YXYb\Y]hYb`ØVYf`X]Y
Ni _i bZh`XYg`@UbXYg`YbhgW]Y]XYbX`]ghž'i a
VØf[Yf_f]Y[gÅ\`b`]W]Y`GnYbUf]Yb`ni `j Yf\]bXYfb`"8Yf`5fh]_Y`
VY`Yi W'hYh`Ui W`X]Y`F c`Y`j cb`Dc`]h]_Yfb`k]Y`æY`6]XYb`i bX
8cbU`X`Hfi a d`]b`X]YgYa `Ni gUa a Yb\Ub[`i bX`\]bhYfZfU[h
XYfYb`J YfUbhk cfhi b[`ZØf`XYb`VYi bfi \][YbXYb`Ni ghUbX`XYf
B Uh]cb`"9g`V`Y]Vh`UVni k UfhYbž`cV`Hfi a d`hUhgÅW`]W`ni f
9]b\Y]h`XYf`B Uh]cb`VY]hfU[Yb`k]fX`" @YgYb`G]Y`XYb`5fh]_Y`ž
i a `a Y\f`ØVYf`X]Y`< cZbi b[Yb`i bX`< YfUi gZcfXYfi b[Yb`ZØf
5a Yf]_U`ni `YfZU\fyb`"6Yf`]b`"



5i Zfi Z'ni f'J YfgÒ\bi b[. '5a Yf]_U'VfUi W\h
Y]bYb'BYi UbZUb[

5a Yf]_U'VYZ]bXYh'g]W\Ub'Y]bYa'K YbXYdi b_hž'Ub'XYa'Y]b
J YfgÒ\byf'Xf]b[YbX'[YVfUi W\h'k]fX''9]bY'DYfgcb'j cb'dc`h]gW\Ya
; Yk]W\hi bX'; 'Ui Vk ØfX][_Y]hž'X]Y'Y]bY'BUh]cbž'X]Y'b]W\h'bi f
[YgdU'hYbž'gcbXYfb'fY[Y'fYW'h]j YfZY]bXYh]ghž'XUni'Vf]b[hž'g]W\
X]Y'<UbX'ni'fY]W\Yb'i bX'Y]bYb'Y\`f]W\Yb'BYi ghUfh'ni'k U[Yb''9g
[Y\h'i a'X]Y'@Øgi b['XYf'bUhØf'W\Yb'A Y]bi b[gj YfgW\]YXYb\Y]hYb
ØVYf'X]Y'Ni _i bZi'XYg'@UbXYg'Ui Z'n]j]]g]YfhY'i bX'ZU]fY'K Y]gY"

B UW\XYa'5hhYbhUh'Ui Z'8cbU'X'Hfi a dž'XUg'bi f'_bUdd'b]W\h
hØX`]W\YbXYhYž'ghY\h'5a Yf]_U'Ub'Y]bYa'GW\Y]XYk Y[ž'XYggYb
6YXYi hi b['b]W\hi bhYfgW\Åmh'k YfXYb'_Ubb''8]Y'Gi dYfa UW\h
_Ubb'Yb'k YXYf'k Y]hYf\]b'XYb'j cb'FYdi V`]UbYfb'i bX
8Ya c_fUhYb'Ui g[Y\YbXYb'DZUX'XYf'[Y[YbgY]h][Yb'J YfhYi ZY'i b[
VYgW\fy]hYb'cXYf'X]Y'ZØ\fybXYb'? ØdZY'VY]XYf'@U[Yf'Z]bXYb
[Ya Y]bgUa'ni fØW'ni'Y]bYf'GdfUW\Yž'X]Y'Ui Z'8Åa cb]g]Yfi b['i bX
9bha YbgW`]W\i b['j Yfn]W\hYh''9g']gh'Ub'XYf'NY]h'_Ufni ghY''Ybž
XUgg'ib'dc`h]gW\Yb'5i gY]bUbXYfgYhni b[Yb' VU``chg'fK U\`nYhhY'Ł
i bX'b]W\h' Vi ``Yhg'f] Yk Y\`f_i [Y'bŁ'XUg'Y]bn][Y'A]hhY''gY]b
XØfZYb"

æY'6]XYb'\Uh'a]h'Ub[Ya YggYbYb'Yi » Yfi b[Yb'bUW\XYb
GW\ØggYb'Ui Z'gY]bYb'? cbhfU\YbhYb'XYb'5bZUb['[Ya UW\h''GY]bY
_UfY'5V'Y\bi b['XYf'; Yk U'h'U'g'A]hhY''dc`h]gW\Yf
5i gY]bUbXYfgYhni b['i bX'gY]bY': cfXYfi b[ž'X]Y' HYa dYfUhi f']b
5a Yf]_U'ni'gYb_Ybž'k UfYb'f]W\h]["

8YbbcW\k ÅfY'Yg'Ui Zf]W\h][Yf'[Yk YgYbž'k Ybb'6]XYb'XYb'HY]
gY]bYf'Y][YbYb'J YfUbhk cfhi b['UbYf_Ubb'h'\ÅhhY''K Yf'gY]bYb
; Y[bYf'dYfa UbYbh'U'g'X]Y' [fØ» hY'; YZU\`f'ZØf'X]Y'Ua Yf]_Ub]gW\Y
8Ya c_fUh]Y'VYnY]W\byhž'gh'b]W\hi bgW\i'X]['Ub'XYf'U_hi Y''Yb
@U[Y''8Ug' []'hi a gc'a Y\`f'ZØf'8cbU'X'Hfi a d"

⇒ XYb'j Yf[Ub[YbYb'Δ\fyb'\Uh'5a Yf]_U'i bhYf'Hfi a dž'Ui W\

VY [Øbgh] [hXi fW X] Y'8 fYW_gW X'Yi XYfY]'b'gcn] U'Yb'A YX] Ybž
j Yf'Yfbhž'A Y] bi b [gj YfgW X] YXYb\Y] hYb'c\ bY': Y] bXgW UZh
Ui gni hfU [Yb" GhUhhXYggYb'gc`hY'a Ub'XYb'Yk Y]'g'UbXYfYb'U`g
@UbXga Ub bž'B UW VUfb'i bX'A]hVØf [Yf'gY\Ybž'XYf'Y] bZUW X'UbXYfg
XYb_h" 5`g'5a Yf]_UbYf'YVYb"

8] Y': Ø\fi b [gdYfgØb`] W_X] hYb'VY] XYf'DUfhY] Yb']b'XYf'< Ui dhghUXh
\UVYb'k YgYb'h] W XUni 'VY] [YhfU [Yb" K Ybb'YXYf'GhfY] h'ni 'Y] bYf
YI]ghYbn] Y`Yb': fU [Y'Ui Z [YVUi gW h'k]fX'i bX'a Ub'b] W h'a Y\ f
c\ bY'6Y [f]ZY'k]Y' 5dc_U`mdgY 'i bX' 5fa U [YXXcb 'Ui g_ca a hž
i a 'X] Y'a Ø [`] W Yb': c [Yb'dc`] h]gW Yf'9bhgW X] Xi b [Yb'ni
VYgW fY] VYbž' [Y\Yb'X] Y'Y] [Ybh] W Yb'5f [i a YbhY'j Yf'cfYb"

9g'V'Y] Vh'UVni k UfhYbž'cV'Hfi a dž'bUW X'gY] bYf'B U\hcX! 9fZU\fi b [ž
hUhgÅW X] W X'gY] bY'ZØf'XYb'DUfhY] hU [' [Yd'UbhY' YI hfYa '\UfhY
FXYX' [Y [Yb'X] Y'8Ya c_fUhYb'j Yfk YfZYb'k]fX'i bX'g] W
ghUhhXYggYb'ZØf'X] Y'9] b\Y] h'XYg'@UbXYg'Y] bgYhnh"

Hfi a d'] gh'VY_Ubbh'ZØf'HU_h]_i bX'@] ddYbVY_Ybbhb] ggY" 'GY] b
: Y\j Yf\U'hYb']gh'XYi h] W [fØ» Yf'U`g'XUg'j cb'xY'6] XYbž'XYf
b] Ya U`g'Ui Z'X] Y'XY' _Åa Yž'Y] bYb'dc`] h]gW Yb': Y [bYf'U`g
I b [Yn] YZYf'ni 'VYnY] W bYb" 6Y] a 'DUfhY] hU ['k]fX'g] W 'nY] [Ybž'cV
Ui g'XYf']_cb] gW Yb': Ui ghž'X] Y'Hfi a d'a]h'V'i hj YfgW a]YfhYa
; Yg] W h'vU`hYž'hUhgÅW X] W X] Y'Ui g [YghfYW_hY'< UbX'k]fXž'X] Y
5a Yf]_U`gc'Xf] b [YbX'VfUi W h"

9g'] gh'Ub'XYf'NY] hž'X] Y' [YVU`hY': Ui gh'Xi fW X] Y'Ui g [YghfYW_hY
< UbX'ni 'YfgYhnYb" Bi f'gc'_Ubb'5a Yf]_U'ni 'Y] bYa 'YW hYb
BYi UbZUb ['_ca a Yb'i bX'X] Y'B Uh]cb'k]YXYf'j YfY] bYb"

6Yf']b

H\Y'bYk 'Ufh] WY'ZcW gYg'cb'h\Y'i f [Ybh'bYX'Zcf'fYWc'bw]]Uh]cb']b
5a Yf] W UbX'h\Y']a dcfhUbW'cZ Z]bX] b ['U'bYk 'VY []bb] b ["' 4

Ya d\Ug]nYg'h\Y'fc`Y'cZ'U'fYWcbW]Yf!]b!W\]YZ'k \c'dcggYggYg'h\Y
dc`]h]WU`k Y][\h'UbX`WfYX]V]`]hmi'hc`Vf]b[`U'bUh]cb'h\Uh]g'bc'h'cb`m
X]j]XYX`Vi h'U'gc`ZYi X]b[`VUW`hc[Yh\Yf" H\Y`Ufh]WY`\][\`][\hg'h\Y
WU`Yb[Yg'cZ'Wj]`m'UbX`ZU]f`m'fYgc`j]b[`X]ZZYfYbW'g'cZ'cd]b]cb
UVci h'h\Y`Zi hi fY'cZ'h\Y`Wci bhfm"

h'UW_bck`YX[Yg`æY'6]XYb`g]b]h]U`YZZcfhg'hc`WcbXYa`b`j]c`YbW
Ug`U'dc`]h]WU`hcc`UbX`\]g`WU`Zcf`5a`Yf]WU`hc`ck`Yf`]hg
hYa`dYfUhi`fY"<ck`Yj`Yfž`]higi [[Yghg'h\Uh'6]XYb`g\ci`X`U'gc
UW_bck`YX[Y`\]g`ck`b`Wcbhf]Vi`h]cb`hc`h\Y`W`ffYb'h'ghUHY`cZ`UZZU]fgž
Ug`Wcbh]bi`ci`g`m`UVY`]b[\]g`cddcbYbh'Ug'h\Y` [fYUhYgh'h\YUh'hc
5a`Yf]WU`b`XYa`c`WfUWm`]g`bch]bbc`W`b`h" h'Zi`fh\Yf`bchYg'h\Uh
8cbU`X`Hfi`a`d`g`f\Y`hc]f]W\Ug`Wcbhf]Vi`hYX`hc`U`X]j]g]j`Y
Uha`cgd\YfY`UbX`\][\`][\hg'h\Y`bYYX`Zcf`YUXYfg`hc`fYfU]b`Zfca
XYa`cb]nUh]cb`UbX`XY\i`a`Ub]nUh]cb"

H\Y`Ufh]WY`i`bXYf`]bYg'h\Uh'5a`Yf]WU`\Ug`Zcf[chhYb`\ck`hc`Yb[U[Y
]b`X]gU[fYYa`Ybhg`k]h\ci`h]a`a`YX]UhY`m]j]Yk]b[`h\Y`ch\Yf`g]XY`Ug
Ub`YbYa`mž`Ya`d\Ug]n]b[`h\Y`]a`dcfhUbW`cZ`fYWc[`b]n]b[`ZY`ck
W]h]nYbg`k]h\`X]ZZYfYbhidYfgdYWh]j`Yg" h'Wf]h]W]nYg'h\Y`i`gY`cZ
gYbgUh]cbU`Ub[i`U[Y`]b`dc`]h]WU`X]gWci`fgY`UbX`k`Ufbg`UVci`h'h\Y
`cgg`cZ`gi`VghUb]j`Y`Uf[i`a`Ybhg`Ug`U`fYgi`h"

H\Y`Ufh]WY`WcbWi`XYg`Vm`Yi`dfYgg]b[`g_Ydh]W]ga`UVci`h`Hfi`a`d`g
g]bWf]hm]b`Ya`VfUW]b[`i`b]hm]b`][\h'cZ`\]g`dUgh`VY`Uj]cf`UbX
gi [[Yghg'h\Uh`UWh]cbg`k]`gdYU`ci`XYf`h\Ub`k`cfXg`Uh`h\Y`dUfhm
Wcbj`Ybh]cb" h'UW_bck`YX[Yg'h\Uh`Hfi`a`d`g`hfUW`fYWc`fX`]g
g][`b]Z]WU`bh`m`k`cfY`h\Ub`6]XYb`g`UbX`\cdYg'h\Uh'5a`Yf]WU`WU`b
fYd`UW`h\Y`WYbW`YX`Z]gh`k]h\`Ub`ci`ghfYhW`YX`\UbXž`YUX]b[`hc`U
[Ybi]bY`bYk`VY[]bb]b[`UbX`bUh]cbU`i`b]hm"

8YhU]`g

6Ygi W\Yb`G]Y`i`bg`Ui`Z.`a`Y]b!VYf`]b"bYh