

DfchYghY`[Y[Yb`6Ufb]Yf. `HUi gYbXY
XYa`cbghf]YfYb`Z0f``]b_Y
F Y[]Yfi b[gV]`Xi b[

HUi gYbXY`dfchYgh]YfYb`]b` : fUb_fY]W` [Y[Yb`DfYa`]Yfa`]b]ghYf
A`]W`Y`6Ufb]Yf`"8]Y`YI hfYa` !`]b_Y`DUfhY]`_f]h]g]Yfh`A UWfcbg
F Y[]Yfi b[gV]`Xi b["

⊕ : fUb_fY]W` VYZ]bXYb`g]W`X]Y`dc`]h]gW`Yb`GdUbbi b[Yb`Ui Z
Y]bYa`bYi Yb`< 0\Ydi b_hz`bUW`XYa`X]Y`9fbYbbi b[]`cb`A`]W`Y`
6Ufb]Yf`ni a`DfYa`]Yfa`]b]ghYf`X]Y` ; Ya` 0hYf`Yf`]hnhY`"8]Y`B UW`f]W`h
0VYf`gY]bY`Bca`]b]Yfi b[`Z0`fhY`ni` UbXYgk`Y]hYb`DfchYghYb`ž`X]Y
]`cb`XYf`YI hfYa` !`]b_Yb`DUfhY]`@U` : fUbW`⊕gci a`]gY`cf[Ub]g]Yfh
k`i`fXYb`"8]YgY`DUfhY]`ghY`h`g]W` [Y[Yb`X]Y`9bhgW`Y]Xi b[]`cb
DfAg]XYbh`9a` a` Ubi Y`A UW`cbž`Y]bYb`_cbgYfj`Uh]`Yb`Dc`]h]_Yf`Ub
X]Y`Gd]hnY`XYf`F Y[]Yfi b[`ni`VYfi ZYbž`UbghUhh`Y]b`A`]h[`]YX`XYg
`]b_Yb`@U[Yfg`Y]bni`gYhnYbž`XUg`X]Y`_0fn`]W`UV[Y`U`hYbYb
DUf`Ua`Ybhgk`U`Yb`[Yk`cb`bYb`UhhY"

8]Y`8Ya`cbghfUh]cbYb`nc[Yb`[YgW`ÅhnhY`%) "\$\$\$`A`YbgW`Yb`]b
0VYf`%\$\$`Gh`XhYb`]b`[Ubn` : fUb_fY]W`Ubž`XUfi`bhYf`[fc»Y`Gh`XhY
k`]Y`DUf]gž`6cfXYUi`I`i`bX`B`UbhYg`"8]Y`HY]`bY`a`Yf`g]bX
i`bni`Zf]YXYb`0VYf`X]Y`k`Y]hYfY`Dc`]h]_`XYg`DfAg]XYbhYbž`X]Y`g]Y`U`g
i`bUb[YVfUW`h`Ya`d]bXYbž`ni`a`U`Y]b`]b_Yf`?`UbX]XUh`Y]bY
g][b]Z]_UbhY`I`bhYfgh0hni`b[`]b`XYf`K`Å`YfgW`UZh`[Yb]Y»`h`G]Y
ZcfXYfb`Y]bY`F Y[]Yfi b[gV]`Xi b[ž`X]Y`X]Y`]b_Y`A`Y`f`Y]h]a
DUf`Ua`Ybh`k`]XYfgd]Y[Y`hi`bX`X]Y`Gh]a`a`Yb`XYf`Yb][Yb
VYf0W_g]W`h][hž`X]Y`Z0f`J`Yf`ÅbXYfi`b[Yb`[Ygh]a`a`h`UVYb"

Dc`]h]gW`Y`@UbXgW`UZh`i`bX
< YfUi`gZcfXYfi`b[Yb

8]Y`DUf`Ua`Ybhgk`U\`Yb`j`cf`b]W\h`Y]ba`U`nk`Y]`A`cbUhYb`\`UVYb`XUg
@]b_gVØbXb]g`U`g`G]Y[`Yf`\`Yfj`cf[`YVfUW\hž`XUg`g]W\`[`Y[`Yb`A`UWf`cbg
A`]hY!@U[`Yf`i`bX`X]Y`B`Uh]cb`U`j`Yfg`Ua`a`i`b[`X`Yg`fY`W\h`Yb
F`Ugg`Ya`V`Ya`Ybh`B`Uh]cb`U`i`bhYf`A`Uf]bY`@Y`DYb`VY`\`Ui`dhYb
_`c`bb`hY"8`Y`b`bc`W\`ghY`h`Y`g]W\`g`W\`bY`Y`Y`f`Ui`gž`XUgg`XUg
@]b_gVØbXb]g`_`Y]bY`UVgc`i`hY`A`Y`f`Y`h`Y`ffY]W\hY`ž`k`Ug`X]Y
dc`]h]gW\Y`G]hi`Uh]cb`]b`i`fUb`_`fY]W\`j`Yf`_`ca`d`]n]Yfh"8]YgY
l`a`gh`A`b`X`Y`j`Yfgh`A`f`_`Y`b`X]Y`l`bni`Zf]Y`X`Y`b`\`Y]h`Ø`V`Y`f`X]Y
F`Y[`]Yfi`b[`gV]`Xi`b[`i`bX`X]Y`k`U`f[`Yb`ca`a`Yb`Y`A`]gg`UW\hi`b[`X`Yf
K`A`\`Y`fY`bhg`W\Y]Xi`b[`Yb"

9]b`nY`b`hf`U`Y`f`Di`b`_`h`X`Y`f`D`f`ch`Y`ghY`]gh`X]Y`6`Y`gc`f[`b]gž`XUgg`6`Ufb]Yfž
X`Y`f`D`f`Ya`]Yfa`]b]ghYf`]ghž`a`Ø[`]W\Y`fk`Y]gY`bi`f`a`]h`X`Y`f`8`i`X`i`b[`X`Y`f
fY`W\hgYl`hfYa`Yb`DUfhY]`j`cb`A`Uf]bY`@Y`DYb`U[`]Y`f`Y`b`_`U`bb"8]YgY
DY`fgdY`_`hj`Y`\`Uh`j`]Y`Y`6`Ø`f[`Y`f`U`U`fa`]Y`fhž`X]Y`X`Y`f`A`Y]bi`b[`]g]bXž
XUgg`X]Y`dc`]h]gW\Y`b`hY[`f]h`A`h`i`fUb`_`fY]W\`g[`]Y`Z`\`f`X`Y`h]gh"8]Y
8`Ya`c`b`ghf`U`b`h`Y`b`Z`c`f`X`Y`f`b`Y]bY`fY`gdY`_`hj`c``Y`6`Y`f`Ø`W`_`g]W\h][`i`b[`]Y`f`Y`f
Gh]a`a`Yb`i`bX`X]Y`A`Ø[`]W\`_`Y]hž`XUgg`]Y`f`Y`dc`]h]gW\Y`b`5`bg]W\hY`b`]b
X`Y`f`b`Yi`Yb`F`Y[`]Yfi`b[`]Y`f`d`f`A`g`Y`bh]Y`fh`k`Y`f`X`Y`b"

→Ub!@`WA`A`Y`b`W\`c`b`ž`X`Y`f`7`\`Y`Z`X`Y`f`@]b_gdUfhY]i`bX`d`f`c`a`]bY`b`hY
:]`[`i`f`]a`D`f`ch`Y`ghž`g`W\`c`gg`g]W\`X`Y`b`8`Ya`c`b`ghf`Uh]cb`Y`b`]b`DUf]g`Ub"
9f`]gh`VY`_`U`bb`h`Z`Ø`f`gY]bY`Y]X`Y`b`g`W\`U`Z`h]W\Y`F`\`Y`h`c`f]_`i`bX`\`Uh`X]Y
A`c`V]`g]Yfi`b[`]X`Y`f`A`Ugg`Y`b`U`b[`]Y`Z`\`fhž`i`a`[`]Y[`Y`b`X]Y`j`Yfa`Y]b`h]W\Y
l`b[`]Y`f`Y`W\h][`_`Y]h]b`X`Y`f`F`Y[`]Yfi`b[`]gV]`Xi`b[`]G`hY`i`b[`]ni`V`Y`n]Y`\`Y`b"
8]Y`6`Y`hY]`][`i`b[`]gc`W\Y`f`Y]bZi`ggfY]W\Y`b`DY`fg`Ø`b`]W\`_`Y]hY`b
]b`hY`bg]j`]Y`fh`X]Y`Ø`Z`Y`b`h]W\Y`5`i`Za`Yf`_`g`Ua`_`Y]h`Ui`Z`X]Y
8`Ya`c`b`ghf`Uh]cb`Y`b`i`bX`X]Y`5`b`]Y[`]Yb`X`Y`f`@]b`_`Y`b"

8]Y`dc`]h]gW\Y`b`8`Y`V`U`h`h`Y`b`]b`i`fUb`_`fY]W\`Y`ffY]W\Y`b`Y]b`_`f]h]gW\Y`g
GhUX]i`a`ž`X`U`X]Y`F`Y[`]Yfi`b[`]j`Y`f`gi`W\hž`]Y`f`Y`A`U`W\h`ni`Z`Y`gh][`Y`b`ž
k`A`\`Y`f`Y`b`X`[`]Y]W\`nY]h][`]Y]bY`[`]f`Ø»`Y`f`Y`K`A`\`Y`f`g`W\`U`Z`h`Z`Ø`f`Y]bY
[`fi`bX`Y[`]Y`b`X`Y`f`Y`F`Y`Z`c`f`a`d`A`X]Y`fh"8]Y`8`Ya`c`b`ghf`Uh]cb`Y`b`nY][`Y`b
Y]b`X`Y`i`h][`ž`XUgg`X`Y`f`l`ba`i`h`Ø`V`Y`f`X]Y`U`_`hi`Y`Y`dc`]h]gW\Y`i`Ø`fi`b[`]i
bX`X]Y`<`Y`f`Ui`g`Z`c`f`X`Y`fi`b[`]Y`b`V`Y]`X`Y`f`F`Y[`]Yfi`b[`]gV]`Xi`b[`]b`X`Y`b
_`ca`a`Y`b`X`Y`b`K`c`W\Y`b`i`bX`A`c`b`U`h`Y`b`k`Y]hY`f`\]b`d`f`A`g`Y`bh`gY]b`k`]f`X"

8]Y`G]hi`Uh]cb`Y`f`Z`c`f`X`Y`f`h`Ui`Za`Yf`_`g`Ua`_`Y]hgghUf`_`Y`6`Y`c`V`U`W\hi`b[`]ž`X`U

XUg'@UbX'g]Wk']b'Y]bYf', VYf[Ub[gd\UgY'VYZ]bXYh''6Øf[Yf'i bX
Dc`h]_Yf'a ØggYb'bi b'[Ya Y]bgUa 'X]g_i h]YfYbž'k]Y'X]Y'dc`h]gWkYb
8]ZZYfYbnYb'ØVYfk i bXYb'i bX'@Øgi b[Yb'[YZ] bXYb'k YfXYb
_ØbbYbž'X]Y'XYa 'K]`Yb'XYf'K Å\`YfgWkUZh'FYWkbi b['hfU[Yb"
BUW'XYb'a Ugg]j Yb'DfchYghYb'V`Y]Vh'UVni k UfhYbž'k]Y'X]Y
FY[]Yfi b['Ui ZX]Y': cfXYfi b[Yb'XYf'6Øf[Yf'fYU[]Yfh'i bX'cV'g]Wk
X]Y'dc`h]gWkY'@UbXgWkUZh'i]b': fUb_fY]Wk'[fi bX'Y[YbX'ÀbXYfb'k]fX"

8YhU]`g

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