

8]Y '5`hYfgi \ f. '9]b`HYgh'ni f`J cf\YfgU[Y
=> fYg`V]c`c []gW\Yb`@YVYbg

: cfgW\Yf`YbhXYW_Yb`Y]bYb`HYgh'ni f`J cf\YfgU[Y`XYf
@YVYbgYfk Ufhi b[`Xi fW\`5bU`mgY`j cb`6`i hdfchY]bYb"
9fZU\ fYb`G]Y`a Y`f`

8]Y`J cfghY`i b[žk]Y`Ub[Y`k]f`YVYb`k YfXYbž`VYgW\`ÅZh[hj]Y`Y
A YbgW\Yb`"G]Y`k ØbgW\Yb`g]W\`Y]b`Ub[Ygž`[Ygi bXYg`@YVYb`"Bi b
[]Vh`Yg`Y]bY`k Y[k Y]gYbXY`9bhk]W`i b[. '9]b`bYi Yf`HYgh`_ØbbhY`]b
XYf`@U[Y`gY]bž`i bg`df`Ån]gY`ni`nY][Ybž`k]Y`j]Y`Y`>\fY`i bg
a`Ø[`]W\Yfk Y]gY`bcW\`V`Y]VYb`"8]YgYf`HYgh'n]Y`h`XUfUi Z`UVž`XUg
V]c`c []gW\Y`5`hYf`Y]bYg`A YbgW\Yb`ni`VYgh]a`a Ybž`]bXYa`Yf
DfchY]bdfcZ]Y`ja`6`i`h`UbU`mg]Yfh`8Yf`]b`bcj`Uh]j`Y`5`bgUhn`_ØbbhY
b]W\h`bi`f`5i`ZgW\`i`gg`ØVYf`X]Y`@YVYbgei`U`]h`Åh[YVYbž`gcbXYfb
Ui`W\`ØVYf`dchYbn]Y`Y`; Ygi`bX\Y]hgf]g]_Yb"

8 Ug`A`UI`!D`UbW`!`&gh]hi`h`ZØf`6]c`c []Y`XYg`5`hYfbg`k`Y]gh`XUfUi`Z`\]bž
XUgg`XUg`W\fc`bc`c []gW\Y`5`hYfž`U`gc`X]Y`5bnU\`XYf`>\fYž`X]Y
Y`a`UbX`[Y`YVh`\Uhž`k`Yb][`ØVYf`XYb`hUhg`ÅW\`]W\Yb
; Ygi`bX\Y]hgni`ghUbX`Ui`ggU[h`8Ya`[Y[YbØVYf`[]Vh`XUg
V]c`c []gW\Y`5`hYf`k`Yfhj`c`Y`<]bk`Y]gY`Ui`Z`X]Y`d`\mg]gW\Y
J`YfZUggi`b[`i`bX`XUg`F]g]_c`ZØf`W\fc]gW\Y`9f`fUb`_i`b[Yb`"8]YgY
9f`_Yb`hb]ggY`_ØbbhYb`Xi`fW\`Y]bYb`bYi`Yb`HYgh`fY]c`i`h]cb]Yfh
k`YfXYbž`XYf`Ua`A`UggUW\i`gYhng; YbYfU`<cgd]hU`]b`6cghcb
Ybhk]W`Y`h`k`i`fXY"

8]Y` :`i`b`_h]c`b`g`k`Y]gY`XYg`HY`ghg

8]Y` :`cfgW\Yf`\UVYb`Y]b`i`a`ZUggYbXYg`GmghYa`]ja`d`Ya`Ybh]Yfhž`XUg
Ui`Z`XYf`5bU`mgY`j`cb`DfchY]bYb`]a`a`YbgW\`]W\Yb`6`i`hd`Uga`U
VUg]Yfh`8]Y`9f[YVb]ggY`_ØbbYb`XUVY]`Y`ZYbž`W\fc]gW\Y

?fUb_\Y]hYb`VYfY]hg`ja` : fØ\ghUX]i a`ni`Yf_YbbYb`i bX`XYfYb
F]g]_Yb`ni`VYk`YfhYb`"Ni`XYb`9f_fUb_i b[Ybž`X]Y`ja` : c_i`g`XYf
l bhYfgi`W`i b[`ghY`Ybž`[Y`ØfYb`8]UVYhYgž`?fYVg`i bX
bYi`fcXY[YbYfUh]j`Y`9f_fUb_i b[Ybž`gck`jY`<Yfn!ž`B]YfYb!ž`@YVYf!
i bX`@`b[Yb_fUb_\Y]hYb`"9]b`ni`g`Àhn`]W`Yg`<][`\\`[`h`]gh`X]Y
: `À\][`_Y]h`XYg`HYghgž`X]Y`GhYfv`]W`_Y]h]j`cb`⊕X]j`]Xi`Yb
Y]bni`g`W`ÀhnYb` `j`cfUi`g[YgYhnhž`]fY`@YVYbg[Yk`c`b`_\Y]hYb
V`Y]VYb`i`bj`Yf`Àb`XYfh`

⇒a`F`U`a`Yb`]fYf`Ghi`X]Y`UVYb`X]Y`K`]ggYbg`W`UZh`Yf`X]Y
; Ygi`bX`\Y]hgXUhYb`j`cb`Yhk`U`(`)`"\$\$\$`DYfgcbYb`Ub`U`mg]Yfh`8]YgY
DfcVUbXYb`\UhYb`6`i`hdfcVYb`ni`f`J`YfZØ[i b[` [YghY`hi`bX`]fY
⊕Zcfa`Uh]cbYb`]b`XYf`i`?`6]cVUb`_Y]b[YVfUW`hž`X]Y`j`cf`U`Ya`ZØf
i`a`ZUggYbXY`@Ub[nY]hghi`X]Yb`ni`a`H\Ya`U`?fYVg`VY`Ub`bh]gh`5i`g
X]YgYf`i`a`ZUb[fY]W`Yb`8UhYbVUg]g`_cb`bhYb`X]Y` : c`fg`W`Yf
VYY]bXfi`W`_YbXY`&\$(`DfchY]bY`]XYb]Z]n]YfYbž`X]Y`Yb`hg`W`Y]XYbX`ZØf
X]Y`6Ygh]a`a`i`b[`XYg`V]c`c[]g`W`Yb`5`hYfg`g]bX`5bg`W`Y]Y`YbX
k`i`fXYb`X]YgY`DfchY]bY`a`]h`XYb`_c[b]h]j`Yb`i`bX`d`\mg]g`W`Yb
: `À\][`_Y]hYb`XYf`HY`]bY`a`Yf`]b`J`YfV]bXi`b[` [YgYhnh`

8]Y`Ni`_i`bZh`XYf`;`Ygi`bX`\Y]hgX]U[b`c`gh]_

8]Y` : c`fg`W`Yf`VYnY]W`bYb`]f`bYi`Ufh][Yg`GmghYa`U`g
`dfchYa`c]g`W`Y`i`f`"8]Y`DfchYca`_ž`Y]b`HY][YV]Yh`XYf
6]c`W`Ya`]Yž`VYg`W`ÀZh][h`g]W`a`]h`XYf`j`c`gh`ÀbX][Yb`5b`U`mgY`U`Yf
DfchY]bY`]b`a`Yb`g`W`]W`Yb`NY`Yb`"Hfch`X]YgYf
j`]Y`j`Yfgd`fY`W`Yb`XYb`5bg`ÀhnY`ghY`h`XYf`HY`gh`bc`W`Ua`5b`ZUb[
gY]bYf`9b`hk`]W`_i`b["`8YfnY]h]gh`\Y`XUg`J`YfZU`\fYb`bc`W`ni
_ca`d`Yi`i`bX`_c`ghYb]bhYbg]j`ž`i`a`fY[i`Àf]a` : Ygi`bX`\Y]hgk`YgYb
]a`d`Ya`Ybh]Yfh`ni`k`YfXYb`8c`W`X]Y`A`Ø[`]W`_Y]hž`]b`Ni`_i`bZh
[YbUi`YfY`8]U[bcgYb`YfghY`Yb`ni`_ØbbYb`i`bX`d`f`Àj`Ybh]j`Y
A`U`b`U`a`Yb`Y]bni`Y]hYbž`_ØbbhY`X]Y`A`YX]n]b`fY`j`c`i`h]cb]YfYb`

8]YgY`9b`hXYW`_i`b[`_ØbbhY`b]W`h`bi`f`XUg`J`Yfgh`Àb`Xb]g`ØVYf`XYb
5`hYfi`b[gdfcnYgg`j`Yfh]YZ`bž`gcbXYfb`Ui`W`X`Uni`VY]hfU[Ybž`XUgg
A`Ybg`W`Yb`VYk`i`gghYf`a`]h]\fYf`;`Ygi`bX`\Y]hi`a`[Y`Yb`"J]Y`Y
_ØbbhYb`a`ch]j]Yfh`k`YfXYbž`]fYb`@YVYbggh`]ni`j`Yf`Àb`XYfbž`]b`XYa
g]Y`g]W`[Ygi`bX`Yfb`À`fYb`i`bX`fY[Y`a`À»][`VYk`Y[Yb`

9l Ya d`Uf]gW\Y`BU\fi b[ga]hhY`k]Y`<Y]XY`VYYfYbž`BØggY`i bX
C`j] Yb`_ØbbhYb`ni bY\`a YbX`]b`XYb`:`c_i g`fØW_Ybž`k Ybb`Yg`i a
X]Y`l bhYfghØhni b[`Y]bYf`[Ygi bXYb`@YVYbgk Y]gY`[Y\`h"

≠bg[YgUa h`nY][Yb`X]Y`9bhk]W`i b[Ybž`XUgg`k]f`i bg
a Ò[`]W\Yfk Y]gY`Ui ZY]bY`bYi Y`ÿfU`]b`XYf`:`Ygi bX\`Y]hgX]U[bcgh]_
ni VYk Y[Yb`"9]b`HYghž`XYf`XUg`V]c`c[]gW\Y`5`hYf`VYgh]a a h`i bX
dchYbn]Y`Y`:`Ygi bX\`Y]hgf]g]_Yb`Ui ZnY][hž`_ØbbhY`ZØf`X]Y
]bX]j]Xi Y`Y`:`Ygi bX\`Y]hgj cfgcf[Y`j cb`i bgW\`ÀhnVUfYa `K Yfh`gY]b`"
6]g`X]YgYf`HYgh`Z`ÀW\YbXYW_YbX`j YfZØ[VUf`]ghž`V`Y]Vh`UVni k UfhYbž
k Y`W\Y`k Y]hYfYb`:`cfhgW\`f]hhY`]b`XYf`:`cfgW\`i b[`[Ya UW\`h`k YfXYb`"

8YhU]`g

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