

5b`Y[Yf`g]bX`j c f g]W\ h][ž`XU`g]W\ `X]Y ? fmdhc! ? c f fY`_hi` f`UVnY]W\ bYh

⇒ 5b`Y\bi b[`Ub`X]Y`^]ghcf]gW\Y`i bXYfdYfZcfa UbW\ž`X]Y`X]Y`I G!5_h]Yba`Àf`_hY`hfUX]h]cbY``]a`GYdhYa VYf`Yf`YVhYbž`k Uf`Ui W\`XYf`bYi bhY`A cbUh`XYg`ž\`fYg`ZØf`X]Y`A`Àf`_hY`_Y]b`[i hYf`A cbUh`J cb`<`ØW\gh!`ni`H]Y ZghghUbX`j YfnY]W\ bYhY`XYf`K Yfh`ja`GYdhYa VYf`Y]bYb`F ØW_[Ub[`j cb`a Y`f`U`g`) `i`/`I bhYfXYggYb`j YfnY]W\ bYhY`X]Y`VfY]hY`A Uf`_h`Ud]hU`]g]Yfi b[`j cb`? fmdhc`Y]bYb`F ØW_[Ub[`i a`fi bX`&) `i`"YffY]W\ hY`Ua`"+`GYdhYa VYf`a`]h`ØVYf`) &"\$\$\$`I G!8c``Uf`gY]bYb`<`ØW\ghghUbX`i bX`\Uh`gY]hXYa`nk`Y]`gW\ f]h`k`Y]gY`b]YXf][YfY`<`ØW\ghgh`AbXY`Ui ZXYa`h`À[`]W\Yb`i bX`XYa`h`À[`]W\Yb`NY]hfU`a`Yb`YffY]W\ h`8]YgY`DfY]gU`_h]cb`VfUW\hY`X]Y`? fmdhc`k`À`fi b[`Bi`a`a`Yf`Y]bg`i bhYf`XYb`[`Y]hYbXYb`&\$!HU[Y!8i fW\gW\b]hh`i bX`_i fnnY]h][i bhYf`XYb`[`Y]hYbXYb`&\$!K`cW\Yb!8i fW\gW\b]hh`fXYfnY]h`VY]`Yhk`U`/`Ua`d`^`Y``]d`/`

⇒ 5b`Y\bi b[`Ub`X]Y`^]ghcf]gW\Y`i bXYfdYfZcfa UbW\ž`X]Y`X]Y`I G!5_h]Yba`Àf`_hY`hfUX]h]cbY``]a`GYdhYa VYf`Yf`YVhYbž`k Uf`Ui W\`XYf`bYi bhY`A cbUh`XYg`ž\`fYg`ZØf`X]Y`A`Àf`_hY`_Y]b`[i hYf`A cbUh`J cb`<`ØW\gh!`ni`H]Y ZghghUbX`j YfnY]W\ bYhY`XYf`K Yfh]a`GYdhYa VYf`Y]bYb`F ØW_[Ub[`j cb`a Y`f`U`g`) `i`/`I bhYfXYggYb`j YfnY]W\ bYhY`X]Y`VfY]hY`A Uf`_h`Ud]hU`]g]Yfi b[`j cb`? fmdhc`Y]bYb`F ØW_[Ub[`i a`fi bX`&) `i`"

"YffY]W\ hY`Ua`"+`GYdhYa VYf`a`]h`ØVYf`) &"\$\$\$`I G!8c``Uf`gY]bYb`<`ØW\ghghUbX`i bX`\Uh`gY]hXYa`nk`Y]`gW\ f]h`k`Y]gY`b]YXf][YfY`<`ØW\ghgh`AbXY`Ui ZXYa`h`À[`]W\Yb`i bX`XYa`h`À[`]W\Yb`NY]hfU`a`Yb`YffY]W\ h`8]YgY`DfY]gU`_h]cb`VfUW\hY`X]Y`? fmdhc`k`À`fi b[`Bi`a`a`Yf`Y]bg`i bhYf`XYb`[`Y]hYbXYb`&\$!HU[Y!8i fW\gW\b]hh`i bX`_i fnnY]h][i bhYf`XYb`[`Y]hYbXYb`&\$!K`cW\Yb!8i fW\gW\b]hh`fXYfnY]h`VY]`Yhk`U`(\$,`\$\$`I G8`i bX`ghYh][`g]b`_YbX`€`

6H7# G8`k ÒWYbh]WYf`?i fgWUfh"

GcZYfb]b`XYf`YhnhYb`GYdhYa VYfk cWY`_Y]b`8i fWVfi W`ØVYf
) &"\$\$\$`i G8`YfZc`[h`fk Ug`Y]b`c_U`Yg`ò\YfYg`<cW`XUfghY`Yb
k ØfXYŁ`a ØggYb`<ÀbX`Yfz`X]Y`Ui ZY]bYb`YbX[Ø`h][Yb`HYghi bX`XUg
<U`hYb`X]YgYg`g`ghc`f]gW`YbhgWY]XYbXYb`[`Y]hYbXYb
8i fWgWb]hng`cZZYbž`k U\fgWY]b`]W`Yhk Ug`Àb[Yf`k UfhYb"

8]Yg`]Y[h`XUfUbž`XUgg`X]Y`6i `Yb`5bZUb[`YhnhYf`K cWY
Ui ZhUi W`hYbž`i a`XUg`B]j YUi`j cb`(\$\$\$\$`i G8`ni`j YfhY]X][Ybž`k Ug
ni`Y]bYf`k ÒWYbh]WYb`?YfnY`a`]hY]bYa`U`Ub[Yb`i bhYfYb`8cW`h
i bX`Y]bYa`GW`i gg`i fg`j cb`a`]bXYghYbg`" \$\$\$`i G8`ØVYf`XYa
U`hi Y`Yb`[`Y]hYbXYb`&\$!K cWYb!8i fWgWb]hngb]j YUi`[YZØ\fh
\Uh"

K`À\fybX`X]Y`J YfhY]X][i b[`j cb`(\$\$\$\$`i`nk Y]ZY`cg`Vi`])gW`]ghž
`Àggh]g]Y`X]Y`HØf`ZØf`Y]bYb`k Y]hYfYb`F ØW`ni [ghYgh`XYg`[`Y]hYbXYb
&\$!K cWYb!8i fWgWb]hng`]b`XYb`_ca`a`YbXYb`K cWYb`cZZYb`"

HYW`b]gW`g]Y`h`XUg`6]`X`Yhk Ug`VYUf]g`Ui`g`8]Y`Àb[YfYb
NY]hfU`a`Yb`XYi`hYb`U`Y`XUfUi`Z`\]bž`XUgg`6]hW`]b`a`Ò[`]WYfk Y]gY
]a`5df]`X]YgYg`đ\`fYg`gY]bYb`< ÒW`ghghUbX`YffY]W`h`\Uhž`k cVY]
XYf`5bgh]Y[`]a`GYdhYa VYf`Ui`Z`) &"\$\$\$`i G8`bi`b`U`g`XUg`b`ÀW`ghY
k ÒWYbh]WY`H]Y`Zgh`cW`Ui`ZY]bYf`F`Y]\`Y`j`cb`]bYb`Ui`Z`XYa`K`Y[
bUW`i`bhYb`YfgWY]b`h"

8]Y`Zc`[YbXYb`Y]b`cXYf`nk`Y]`K`cWYb`k`YfXYb`k`U\fgWY]b`]W
Ui`W`XUni`ZØ\fybž`XUgg`XYf`[`Y]hYbXY`&\$!K cWYb!8i fWgWb]h
XYb`) \$!K cWYb!8i fWgWb]h]b`Y]bY`5V`k`Àfhgf]W`hi`b[`ØVYfei`Yfh"
Ni`Yhnh`k`Uf`X]Yg`]a`i`YVfi`Uf`&\$&\$`XYf`i`U`"

8]Y'Øb[ghYb'GWÅ`U[nY]Yb`UVYb`XYa`DfY]g`Ui WÅ`Y]bY`XYi`h]WÅ
VÅf]gWÅY`HYbXYbn`j`Yf`Y\Yb"7\]bUg`?fmdhc!8i`fWÅ[fY]ZYb`b]a`a`h
: U\fh`Ui`Z`i`bX`X]Y`I`G!F`Y[i`]Yfi`b[gVY\`ÖfXYb`gYbXYb`[Ya`]gWÅhY
G][bU`Y"6Y]XY`gWÅY]bYb`VYghfYVh`ni`gY]bž`\fY` , VYfd fØZ] b[`XYg
[YgUa`hYb`?fmdhc!F`Ui`a`g`ni`]b`hYbg]j`]YfYbž`V]YhYb`Y`XcWÅ`k`Yb][
XYZ]b]h]j`Y`<]bk`Y]gY`XUfUi`Z`k`]Y`X]Y`F`Y[i`]Yfi`b[g`UbXgWÅUZh`b
XYb`b`ÅWÅghYb`nk`Ö`Z`V]g`UWÅhnY\`b`A`cbU`hYb`Ui`ggY\`Yb`_`ÖbbhY"

C \ bY`6]hWÅ]b

K`Ybb`k`]f`XYb`ØVYfX]a`Ybg]cbU`Yb`9ZY`_hj`cb`6]hWÅ]b`Ui`Z`XYb
A`Uf`_h`Ui`g`_`Ua`a`Yfbž`Yf\`U`hYb`k`]f`Y]b`Yhk`Ug`UbXYfYgž`k`Ybb`Ui`WÅ
[`Y]WÅYfa`U»`Yb`d`Ygg]a`]gh]gWÅYg`6]`X"6Y]a`6YhfUWÅhYb`XYg
K`cWÅYbWÅUfhg`XYf`[YgUa`hYb`?fmdhc!A`Uf`_h`Ud]hU`]g]Yfi`b[`c`bY
6]hWÅ]b`VYcVUWÅhYb`k`]f`Y]bY`8`cddY`!Hcd!:`cfa`Uh]cb`UbghY`Y`XYg
5`nY]h\`cWÅg`j`ca`5df]`i`bX`XYg`H]Y`Zgh\`cWÅg`j`ca`GYdhYa`VYfž`k`]Y
cVYb`VYgWÅf]YVYb"

8]Yg`]gh`Ui`Z`XYb`ØVYf[fc»`Yb`9]bZi`gg`j`cb`9h\Yf`Ui`Z`X]YgY`nk`Y]hY
VfY]hY`?fmdhc!A`U»`bU\`a`Y`ni`fØW`_ni`ZØ\`fYbž`k`Ybb`6]hWÅ]b`Ui`g`XYa
6]`X`[Ybca`a`Yb`k`]fX"8]Y`A`Uf`_h`Ud]hU`]g]Yfi`b[`j`cb`7fmdhcž`c`bY
6]hWÅ]bž`gWÅY]bh`ZUgh]XYbh]gWÅ`a`]h`XYa`7\`Ufh`ni`gY]bž`XYf`]a`A`U]
Y]b`5`nY]h!K`cWÅYb\`cWÅ`VY]" , , , `YffY]WÅhY`i`bX`9bXY`5i`[i`gh
j`cb`X]YgYa`B]j`YUi`k`]YXYf`ni`fØW`_`Yk`]YgYb`k`i`fXY"K`Ybb`g]WÅ
X]Yg`U`g`8`ci`V`Y!Hcd!:`cfa`Uh]cb`\`YfUi`ggY`hž`_`ÖbbYb`k`]f
Yfk`UfhYbž`XUgg`g]WÅ`X]Y`nk`Y]h[fÖ»`hY`?fmdhc`k`Å\`fi`b[`XYf`K`Y`h
ni`fØW`_n]Y\`hi`bX`j`cb`\]Yf`Ui`g`%"`-\$`\$`I`G!8`c`Uf`YfbYi`h`hYghYh"

9H< # G8`k ÖW Yb h]W Yf`DfY]gW Ufh"

5i g[Ybca a Yb`6]hWc]b`i bX`9h\Yf

HUhgÅW`]W`g]bX`X]Y`Y]bn][Yb`Y]W`h`n]bgVi``]gW Yb`7\Ufhg`]a
FUi a`XYfnY]h`VY]`XYb`_`Y]bYfYb`5`hWc]bg`ni`Z]bXYbž]cb`XYbYb
j]Y`Y`]b`XYb`Y`h`h`Yb`K`cW Yb`bYi`Y`F`Y`_`c`f`X`\`Ö`Yb`Y`ff`Y]W`h`\`UVYbž
cVkc`\`g`ck`c`\`6]hWc]b`U`g`Ui`W`9h\Yf`X]Yg`j`Yfg`Åi`a`h`\`UVYb`"

585# G8!K cW YbW Ufh"

`XYfnY]h`X]Y`Xf]hh[fÖ» hY`? fmdhck`À`fi`b[`bUW
A`Uf`_`h`Ud]hU`]g]Yfi`b[ž`k`Uf`Y]b`V`Y`a`Yf`_`Y`bgk`Yfh`Y`g`6`Y]gd]Y`X`U`Z`Ø`f`"
9g`Y`ff`Y]W`h`Y`]a`A`U]`Y]b`5`n`Y]h`c`W`U`i`Z`X`Y`f`K`c`W`Y`V`Y]`fi`b`X`&`ž`'
I`G!8`c``Uf`i`b`X`V`f`U`W`9`b`X`Y`5`i`[`i`gh`Ø`V`Y`f`X]Y`g`Y`g`B]j`Y`U`i`i`b`X
Y`ff`Y]W`h`Y`Y]b`b`Y`i`Y`g`F`Y`_`c`f`X`!`K`c`W`Y`b`\`c`W`j`cb`_`b`U`dd`" `I`G!8`c``Uf`"
8]Y`g`]gh`i`nk`Uf`Y]b`[`i`h`Y`g`N`Y]W`Y`b`"

585ž`X]Y`@`U`b`X`Y`g`k`À`fi`b[`j`cb`7`U`f`X`U`bc`ž`\`U`h`g]W`k`À`f`Y`b`X`X`Y`g
`Ø`b[`gh`Y`b`A`Uf`_`hf`Ø`W`[`U`b[`g`g]W`Y`f`]W`V`Y`gg`Y`f`V`Y`\`U`i`d`h`Y`h`U`g`j`]Y`Y
g`Y]b`Y`f`?`cb`_`i`ff`Y`b`h`Y`b`"9g`]gh`b]W`h`f`Y`d`f`Å`g`Y`b`h`U`h`j`Z`Ø`f`X`Y`b`[`Y`g`U`a`h`Y`b`"

5`hM]b!FUi a "6YhfUW hYh'a Ub`X]Y`A Uf_h_Ud]hU`]g]Yfi b[`j cb
?fmdhc`c\bY`6]hM]b`i bX`9h\Yfž`gY\Yb`k]f`Y]bY`8cddY`!Hcd!
: cfa Uh]cb`À\b`]W`XYf`Ui Z`XYa`9h\Yf!7\Ufh`VYc`VUW`hYhYb`i bX
X]Y`; YgUa ha Uf_h_Ud]hU`]g]Yfi b[`c\bY`6]hM]b"

8Yf`Xf]hhY`7\Ufh`i bhYb`]gh`Yhk Ug`Vi ``]gW`Yf`U`g`XYf`YfghY`cXYf
nk Y]hY`"9f`U`h]a`5i [i gh`Y]b`[Yf]b[ZØ[][` \ Ò\YfYg`<cW`ØVYf`XYa
K cW`Yb`cW`j ca`A U]`YffY]W`hž`YXcW`c\bY`XUg`V]g\Yf
ØVYfnYi [YbXY`n]bgVi ``]gW`Y`A ca`Ybhi`a ž`XUg`X]Y`5b`Y[Yf`]b`Y]bYb
V`Ui Yb`<]a`a`Y`V`]W`Yb`UggYb`k`ØfXY"

; YZØ\ ``i bX`Y`hnhY`; YXUb`_Yb

Hfchn`U`XYa`V`Y]Vh`X]Y`Gh]a`a`i`b[`]a`FUi`a`cdh]a`]gh]gW`ž`a`]h
Y]bYf`U`[Ya`Y]bYb`5_nYdhUn`XYf`5bg]W`hž`XUgg`g]W`XYf
?fmdhca`Uf_h`XYfnY]h`]b`XYf`?Ud]hi`Uh]cbgd`UgY`Y]bYf`?cffY`_hi`f`]b
XYf`A`]hY`XYg`Nm`_i`g`VYZ]bXYh`i`bX`XUgg`ZØf`j`]Y`Y`?fmdhc!5ggYhg
bYi`Y`<ØW`ghgh`ÀbXY`VYj`cfghY`Ybž`k`Ybb`k`]f`b`À\Yf`_ca`a`Yb`V]g
9bXY`XYg`J\`fYg"

8]Y`7\Ufh]ghYb`i bhYf`i`bg`V`Y]VYb`YXcW`]b` \ ÒW`ghYf
5`Ufa`VYfY]hgW`Už`XU`X]Y`Gh]a`a`i`b[`]b`XYf`FY[Y`U`g`Y`hnhY
V`Àf]gW`k`]fXž`k`Ybb`X]Y`Ub[Zf]gh][Yb`HfYbXg`X]Y`F]W`hi`b[`ÀbXYfb"
8]Yg`]gh`XYf`<Ui`dh[fi`bX`XUZØfž`XUgg`gc`j`]Y`Y`5b`Y[Yf`X]Y`HUgW`Y
bcW`Ub[Y`bUW`XYa`9ffY]W`Yb`XYf`Gd]hnY`]b`Y]bYa`A`Uf_h
\U`hYb`"J`cfg]W`h`]gh[YV`chYbž`i`bX`XYf`GW`i`gg`_i`fg`j`ca`Y`hnhYb
GcbbhU[`gc`hY`b]W`h`U`g`XYZ]b]h]j`Yf`HYgh`i`bX`<U`hYb`XYg
[`Y]hYbXYb`&\$!K`cW`Yb!8i`fW`gW`b]hng`Ub[YgY`Yb`k`YfXYb"

K Ufbi b[`ni` \ cW`f]g`_Ub`hYb`=bj`Ygh]h]cbYb.

8]ZYfYbn`cbhfU`hY`fl`7: 8g`Ł]g]bX`_ca`d`YI`Y:]bUbndfcXi`_hYž`X]Y
Ui`Z`A`Uf[]b[Y`UbXY`h`k`YfXYb`"8Yf`<UbXY`a`]h`7: 8g`V]f[h`Y]b
\c\Yg`F]g]_c`"9g`]gh`a`Ø[`]W`ž`=f[YgUa`hYg`?Ud]hU`ni`j`Yf`]YfYb"

8]YgY`DfcXi`_hY`g]bX`a`O[`]WX`Yfk`Y]gY`b]WX`h`ZØf`YXYb`[`YY][`bYh`
i`bX`G]Y`gc`hYb`g]WX`YfghY`Ybž`XUgg`G]Y`X]Y`XUa`]hj`YfVi`bXYbYb`
F]g]_Yb`j`YfghY`Yb`"@UggYb`G]Y`g]WX`VY]`6YXUfZj`cb`i`bUV`Àb[`][`Yb`
9I`dYfhYb`VYfUHYb`i`bX`gdY`_i`]YfYb`G]Y`bi`f`a`]h`;`Y`XYfbž`XYfYb`
J`Yf`i`gh`G]Y`g]WX`Y]ghYb`_`ÒbbYb`"6]hhY`ØVYf`Y[`Yb`G]Y`g]WX`i`bhYf`
6YfØW_g]WX`h][`i`b[`U`Yf`fY`Yj`UbhYb`l`a`gh`ÀbXY`gck`JY`≠fYf`
dYfgØb`]WX`Yb`FYggci`fWb`[`YbUi`ž`cV`Y]b`gc`WX`Yf`<`UbXY`ni`≠`bYb`
dUggh`"K`]f`Ya`dZY`Yb`?i`bXYb`b]WX`hž`]fYb`[`YgUa`hYb`?`cb`hcghUbX`
ni`Vi`WX`Ybž`i`a`X]Y`A`Uf[`]b!5bZcfXYfi`b[`Yb`ni`YfZØ`Yb`"?i`bXYb`
_`ÒbbYb`]f`9b[`U[`Ya`Ybh`a`]b]a`]YfYbž`]bXYa`g]Y`Y]bY`YbXYfi`b[`
XYg`@Yj`YfU[`Y!@]a`]hg`VYUbhfU[`Yb`"K`Y]hYfY`≠Zcfa`Uh]cbYb`Z]bXYb`
G]Y`]b`XYf`F]g]_cUi`Z`Àfi`b[`j`cb`<M7A`"

°Zi`bWh]cbfZVžYž`žbžžgŁ`o]ZfZ`ZVeŁfYhi`fb/b1`Z`ZVe1`Zi`bWh]cbfŁ`
ob`"WU`A`Yh`cX3`
b`"WU`A`Yh`cX`"Udd`mf`bžUf[`i`a`YbhgŁ`b"ei`Yi`Y"di`g`fUf[`i`a`YbhgŁq`/
]Zf`Z`SZVeŁZ`SZVe1`b/b"di`g`1`b/b`c`UXYX1`°\$`/b`j`Yfg]cb1`f&`\$f`
b"ei`Yi`Y1`Qh1`V`WfYUhY9`Ya`YbhfYŁ`h"UgmbWl`°\$/`
h`gfWl`j`/g1`V`[`Yh9`Ya`Ybhg6mHU[`BUa`YfYŁO\$Q`
g"dUfYbhB`cXY"]bgYfh6YZcfYfhžgŁqfk`]bXck`ž`XcW`a`YbhžfgWf]d`hfž`
fł`hhdg`##Mc`bbYWh`ZUWVcc`_`bYh#YbSl`G#ZVYj`Ybhg`^gfŁ`ZVe`ff]b]hfž`
fi+)`%%%\$,` ,`%*`(`&`,`fŁ`ZVe`ffifUW`fž`fDU[`YJ`]Yk`fŁ`

8YhU]`g

6Ygi`WX`Yb`G]Y`i`bg`Ui`Z.`_fmdhc!bYk`g"Uh