

J UbXU`]ga i g'i bX`GhfU» Yb_c bZ`]_hY.
G]W\Yf\Y]hg`U[Y`]a `FYa g!A i ff!? fY]g

⇒a `FYa g!A i ff!? fY]g`_Ua `Yg'ni `a i hk]``[Yb
5i hcnyfgh0fi b[Yb`i bX`Y]bYa `J cfZU``a]hDZYZZYfgdfUm[Y[Yb
Y]bYb`F UXZU\fyf" '<]bk Y]gY`[Ygi W'h`

5U`Yb`fbhgk

8]Y`K Y``Y`XYf`J Yf_Y\fgXY`]_hY`]b`FYa g!A i ff!
? fY]g

⇒a `FYa g!A i ff!? fY]g`_ca a h`Yg'ni bY\`a YbX`ni `J Yf_Y\fgi bZ`Yb
i bX`a i hk]``[Yb`6YgW\AX][i b[Yb`j cb` : U\fnYi [Ybž`X]Y`X]Y
G]W\Yf\Y]h`i bX`XUg`Ni gUa a Yb`YVYb`]b`XYf` ; Ya Y]bXY
VYY]bhf`W\h][Yb" `5_hi Y``Y`J cfZ`Y`Ui g` : Y``VUW\ž`Fi XYfgVYf[ž
K Y]bghUXh`9bXYfgVUW`i bX`K U]V`]b[Yb`j YfXYi h]W\Yb`X]YgY
VYgcf[b]gYffY[YbXY`9bhk]W`i b["

A i hk]``[Y`6YgW\AX][i b[`j cb` : U\fnYi [Yb

⇒b`K U]V`]b[Yb`k i fXY`Y]b` : cfX`]b`XYf`A Ufh]b!@ h\Yf!GhfU» Y
a i hk]``[`nyf_fUhh" `8Yf`J cfZU``[YgW\U\`nk]gW\Yb`%&.` \$`i \f`i bX
%` . () `i \f`i bX`\]bhYf`]Y» `Y]bYb`Yf\YV`]W\Yb`G\UXYb" `Gc`W\Y
hUh_fAZh][Yb`5b[f]ZZ`Ui Z`5i hcg`_0bbYb`b]W\h`bi f`Z]bUbn]Y``Y
6Y`Ughi b[Yb`Z0f`X]Y`6Yg]hnYf`a]h]g]W\`Vf]b[Yb`ž`gcbXYfb`Ui W`XUg
G]W\Yf\Y]hg[YZ0\``]b`XYf`B UW\VUfgW\UZh`VYY]bhf`W\h][Yb" `8]Y
Dc`]nY]`]b`K U]V`]b[Yb`gi W'h`NYi [Yb`i bhYf`HY```\$+%`)%#`) \$(&&"

I bZU``Z`i W'h`i bX`] \fy`5i gk]f`_i b[Yb

⊕: Y`VUW`_Ua`Yg`Ua`8cbbYfghU[`ni`Y]bYf`k`Y]hYfYb
I`bZU`Zi`W`h`<]YfVY]j`Yfi`fgUW`hY`Y]b`I`bVY`Ub`b`hYf`VY]`Y]bYa
GhfY]Z]cf[`Ub[`a`]h`Y]bYa`dUf`_YbXYb`A`YfW`XYg`Y]bYb
GUW`gW`UXYb`j`cb`fi`bX`%\$`\$`\$`9i`fc`Z`Z`ØW`hY`hY`Y`Xc`W`ž`c`b`Y`XYb
J`cf`ZU``ni`a`Y`XYb`"Gc`W`Y`:`i`W`hYb`j`Yfg`W`Åf`ZYb`X]Y`Dfc`V`Ya`Uh`_
Z`Øf`X]Y`6Y`hfc`ZYb`Yb`ž`X]Y`c`Zh`Ui`Z`XYb`?`c`ghYb`g]h`hYb`V`Y]VYb
_`Ø`b`Yb`"NYi`[`Yb`g]b`X`Ui`Z[`Yfi`ZYb`ž`g]W`VY]`XYf`Dc`nY]`j`b`:`Y`VUW`
i`bhYf`HY```\$`+`%`%`#) `++`&`\$`ni`a`Y`XYb`"

DZYZZYfgdfUm!5b[f]ZZ`Ui`Z`F`UXZU`fYf`

9]b`VY`gcb`XYfg`VY`gcf[`b]gYffY[`YbXYg`9fY][`b]g`ZUbX`]b`K`U]V`]b[`Yb!
<c`YbUW`_Yf`ghU`hž`VY]`XYa`Y]b`&%!`Å`f][`Yf`F`Yb`bf`UXZU`fYf`j`cb
Y]bYa`i`bVY`Ub`b`hYb`:`U`fYf`a`]h`DZYZZYfgdfUm`Ub[`Y[`f]ZZYb`k`i`fXY"
8Yf`J`cf`ZU``YfY][`bYhY`g]W`ž`b`UW`XYa`XYf`:`U`fYf`U[`[`fYgg]j`Y
A`Ub`Øj`Yf`Ub`XYb`HU[`i[`Y`Y[`h`U`hY`ž`X]Y`VYfY]hg`Ub`XYfY
J`Yf`_Y`fghY`]b`Y`a`Yf`gh`Ø`fhYb`"Gc`W`Y`5`hh`UW`_Yb`k`Yf`ZYb`Y]b`Xi`b`_`Yg
@]W`h`Ui`Z`XUg`GhfU»`Ybj`Yf`U`hYb`j`cb`5i`hc`ZU`fYfb`i`b`X`X]Y
;`YZU`fYb`Z`Øf`F`UXZU`fYf`"8]Y`Dc`nY]`V]hYhi`a`<]bk`Y]gY`ni`a
a`i`ha`U»`]W`Yb`:`cf`X`a`]h`K`U]V`]b[`Yf`Ni`Uggi`b[`i`bhYf`HY``
\$`+`%`%`#`&%(`-`"

J`Yf`_Y`f`g`j`Y`f`g`h`Ø»`Y`U`g`[`Y`g`Y``g`W`U`Z`h`]W`Y`g` Dfc`V`Ya`

8]Y`ghY][`YbXY`5bnU`U``Ub`J`Yf`_Y`f`g`j`Y`f`g`h`Ø»`Yb`i`b`X`!i`b`Z`A``Yb`ž
]bgVY`gcb`XYfY`Xi`f`W`:`U`fYf`ž`X]Y`]`fY`DZ]W`hYb`b]W`h`k`U`f`b`Y`a`Yb`ž
nY][`hY]b`Xf]b[`YbXYg`6Y`X`Øf`Zb]g`b`UW`a`Y`f`J`Yf`_Y`f`gg]W`Y`f`Y]h"
8]Y`J`cf`Z`A``Y`]b`K`Y]b`gh`UX`h!9b`XYfg`VUW`ž`VY]`XYb`Yb`Y]b
F`Yb`bf`UXZU`fYf`Y]b`Y`F`ch]W`h`Ja`d`Y``a`]gg`UW`hY`hY`ž`a`UW`Yb
XYi`h]W`ž`X`Ugg`Ui`W`F`UXZU`fYf`J`Yf`Ub`hk`cf`hi`b[`hf`U[`Yb`a`Øgg`Yb"
8Yf`Yb`hgh`Ub`XYb`Y`GUW`gW`UXYb`VY`Ài`Zh]g]W`Ui`ZY`hk`U`("\$\$`\$`9i`fc`ž
k`c`VY]`XYf`F`UXZU`fYf`i`bj`Yf`Y`h`h`V`]YV"

GW`i`gg`Zc`[`Yfi`b[`i`b`X`<`Ub`X`i`b[`g`VY`X`U`f`Z`

8]Y`J`cf`Z`A``Y`]a`F`Ya`g!A`i`ff!`?`fY]g`c`ZYb`VUf`Yb`Y]b`Yb`

VYgcf[b]gYffY[YbXYb`HfYbXž`XYf`b]W h][bcf]Yfh`k YfXYb`_Ubb"9g
]gh`YbhgW Y]XYbXž`XUgg`U`Y`J Yf_Y\ fghY]`bY\ a Yfž`cV`5i hcZU\ fYf
cXYf`F UXZU\ fYfž`g]W `]\ fYf`J YfUbhk cfhi b[`VYk i ggh`k YfXYbž`i a
X]Y`G]W Yf\Y]h`Ui Z`XYb`GhfU» Yb`ni` [Yk`À\`f`Y]ghYb"Ni XYa`]gh`X]Y
Dc`]nY][YZcfXYfhž`j Yfgh`À`f`h`Ui Z`gc`W Y`J cfZ`À`Y`ni` fYU[]YfYb`i bX
X]Y` ; Ya`Y]bgW UZh`ØVYf`X]Y`fYW h]W Yb`? cbgYei YbnYb`j cb
I bZ`À`Yb`i bX`a`i hk`j`][Yb`GW`ÀXYb`ni`]bZcfa`]YfYb`"Bi`f`Xi`fW
[Ya`Y]bgUa`Y`5bghfYb[i b[Yb`_Ubb`X]Y`J Yf_Y\ fgg]W Yf\Y]h`b`XYf
FY[]cb`j YfVYggYfh`k YfXYb`"

· B 5;

8YhU]`g

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