

GWk U`a !9XYf. 'Gd`ÀhghUfhYf`Z]bXYb`bcWk 5i gV]`Xi b[gd`ÀhnY`]a < UbXk Yf_

⇒a 'GWk U`a !9XYf!?'fY]g`k UfhYb`bcWk " , \$'5i gV]`Xi b[gd`ÀhnY
Ui Z`đ [YbX`]WkY"'Gd`ÀhghUfhYf`\UVYb`[i hY`7\UbWb`'`H]ddg
ni f`æVZ]bXi b["

Ni _i bZhGWk UbWb`ZØf`đ [YbX`]WkY`]a GWk U`a !9XYf!?'fY]g

⇒a 'GWk U`a !9XYf!?'fY]g`V`Y]Vh`X]Y`VYfi Z]WkY`Ni _i bZh`ZØf`j]Y`Y
đ [YbX`]WkY`k Y]hYf`\]b`j]Y`j YfgdfYWkYbX"'8]Y`U`hi Y`Yb`NU\`Yb
XYf`5fVY]hgU[Ybhi f`nY][Yb`XYi h]Wk`ž`XUgg`Yg]a`Ui ZYbXYb
5i gV]`Xi b[g`U`f`bcWk`nU\`fY]WkY`c`ZYbY`5i gV]`Xi b[gghY`Yb`[]Vhž
X]Y`XUfUi Z`k UfhYb`ž`cb`a`ch]j]YfhYb`đ [YbX`]WkYb`VYgYhnh`ni
k YfXYb"

5bnU\`XYf`c`ZYbYb`5i gV]`Xi b[gd`ÀhnY

⇒g[YgUa h`\UVYb`i bhYfbY\`a Yb`]b`XYf`FY[]cb`fi bX`- \$\$
5i gV]`Xi b[gd`ÀhnY`[Ya`Y`XYhž] cb`XYbYb`YXcWk`a`Y`\f`U`g" , \$
bcWk`b]Wk`hj Yf[YVYb`g]bX"'8]YgY`NU\`i bhYfghfY]Wk`h`X]Y
A`Ò[`]Wk`_Y]h`ZØf`gc`WkY`ž`X]Y`g]Wk`gd`Àh`Yb`hgWkY]XYb`ž`Y]bY
5i gV]`Xi b[`ni`VY[]bbYb"'?`Ui`g`A`]Wk`U`U`_`j`cb`XYf`= `65I`Yf`YVh
XYb`dcg]h]j Yb`5gdY`hž`XUgg`gc`c`\`< UbXk Yf_g!ž`⇒Xi ghf]Y!`U`g
Ui Wk`8]YbghY]ghi b[gVYfi ZY`]b`XYf`FY[]cb`k Y]hYf`\]b`[YZfU[h`g]bX"

6Yfi Z]WkY`DYfgdY`_h]j Yb`]a`6Ui k YgYb

6YgcbXYfg`X]Y`6Ui k]fhgWk`UZh`Yfk`Y]gh`g]Wk`U`g`g]WkYfYf`< UZYb`a`]h
ghUV]`Yb`æV!DYfgdY`_h]j Yb"'`8Yf`6YXUfZ`Ub`6Ui`dfc`Y`_hYb`k`]fX

b]Ya U`g`YbXYb ž`Yf_`Äfh`A]W`U`U`_`"8]Y`J]Y`ZU`h`XYf`A Ò[`]W`_Y]hYb
fY]W`h`j`ca`´6Ui`ØVYf`X]Y`GUb]Yfi b[`V]g`\\b`ni`f`F`Ybcj]Yfi b[`j`cb
K`c`\\bi b[`Yb`i`b`X`ÒZZYbh]W`Yb`9]bf]W`hi`b[`Yb`"8]Yg`V]YhYh`b]W`h`bi`f
æVgž`gcbXYfb`Ui`W`X]Y`A`Ò[`]W`_Y]hž`i`a`k`Y`h`VYk`i`ggh`ni`UfVY]hYbž
XU`6Ui`UfVY]hYf`]b`6YfY]W`Yb`k`]Y`YbYf[]Y`YZ]n]YbhYa`B`Yi`VUi`i`b`X
bUW`\\U`h][`Yb`F`Ybcj]Yfi b[`Yb`U[]YfYb"

6Yfi ZgVYfUhi b[`i`b`X`d`Y`fg`Òb``]W`Y`b`h]Uh]j`Y`

: Øf`i`b`Yb`hg`W`c`gg`Yb`Y`ž` [`Yb`X`]W`Y`Ya`d`Z]Y`\\`h`A]W`U`U`_`ž`U`_h]j`´Ui`Z
`c`_U`Y`i`bhYfbY`\\a`Yb`ni`ni` [`Y`\\Yb`"´B]W`h`U`Y`g`k`]f`X`ØVYf`X]Y
5fVY]hgU[`Yb`hi`f`j`Yfa`]h`h`Y`h`ž`gU[`h`Yf`"9]b`d`Y`fg`Òb`]W`Yf`6Ygi`W`c`XYf
Y]b`Y`5b`ž`fU[`Y`_Ubb`c`Z`h`H`Øf`Yb`Ò`Z`b`Yb`ž`X]Y`ni`b`Ä`W`gh[`Y`g`W`c`gg`Yb
Y`fg`W`Y]b`Yb`"8]Y`g`Y`d`f`c`U`_h]j`Y`<`U`hi`b[`U`bb`Y`b`hg`W`Y]X`Y`b`X`g`Y]b`ž`i`a
]b`Y]b`5i`gV]`Xi`b[`g`d`f`c[`f`Ua`a`´Y]b`ni`h`f`Y`h`Yb"

8]Y`B`c`hk`Y`b`X][`Y]h`j`c`b`5`ni`V]!K`c`\\bi`b[`Yb`

9]b`ni`g`Ä`h`n`]W`Y`g`H`\\Y`a`U`ž`X`U`g`X]Y`≐`´65l`U`b`g`d`f]W`h`ž`]gh`X`U`g
K`c`\\b`Yb`Z`Øf`5i`gni`V]`X`Y`b`X`Y`"J]Y`Y`ž` [`Yb`X`]W`Y`\\`U`V`Y`b
G`W`k`]Yf][`Y]h`Yb`ž`Y`fg`W`k`]b[`]W`Y`i`bhYf`_Øb`Z`h`Y`]b`X`Y`f`B`Ä`\\Y`]`\\`f`Y`f
5i`gV]`Xi`b[`g`gh`Ä`h`h`Y`ni`Z]b`X`Yb`"´9g`]gh`b]W`h`g]b`bj`c`ž`X`U`g`g
d`ch`Y`bn]Y`Y`5i`gni`V]`X`Y`b`X`Y`Ui`Z`Y]b`Y`5i`gV]`Xi`b[`j`Y`fn]W`h`Y`b
a`Ø`gg`Yb`ž`bi`f`k`Y]`X]Y`5b`Z`U`\\`fh`ni`U`b[`]gh`ž`gc`A]W`U`U`_`<]Y`f
Z`c`f`X`Y`f`h`X]Y`≐`´65l`´a`Y`\\`f`i`bhYf`gh`Ø`h`ni`b[`X`Y`g`6i`b`X`Y`g`ž`i`a
[`Y`Y][`b`Y`h`Y`b`K`c`\\b`f`U`i`a`Z`Øf`5i`gni`V]`X`Y`b`X`Y`ni`g`W`U`Z`Z`Y`b`ž`X`U`a`]h`g]Y
g]W`[`U`bn`Ui`Z]`\\`f`Y`V`Y`fi`Z]W`Y`5i`gV]`Xi`b[`c`bn`Y`b`hf]Y`f`Y`b`_Ø`bb`Y`b"

9]b`6Yfi Z`a`]h`Ni`_i`b`Zh`

9]b`k`Y]h`Y`f`Y`f`]b`h`Y`f`Y`gg`U`b`h`Y`f`5`gd`Y`_h]b`X`Y`f`6`Ui`k`]f`hg`W`U`Z`h]gh`ž`X`U`gg
j`]Y`Y`6`Y`fi`Z`Y`Ui`W`Y`]b`\\`c`\\`Y`g`A`U`»`U`b`h`Y`W`b]g`W`Ya`´?`b`c`k`!`\\`c`k
Y`f`Z`c`f`X`Y`fb`"´Øb[`Y`f`Y`´;`Y`b`Y`f`U`h]c`b`Y`b`\\`U`V`Y`b`X]Y`A`Ò[`]W`_Y]hž`]b
6Yfi`Z`Y`b`k`]Y`´;`Y`V`Ä`i`X`Y`f`Y]b][`Y`f`c`X`Y`f`´:`U`gg`U`X`Y`b`f`Y]b][`Y`f`b]W`h`bi`f
Y]b`Y`b`5`f`V`Y]h`gd`U`h`ž`g`c`b`X`Y`fb`Ui`W`Y`]b`Y`g`c`]X`Y`?`U`ff]Y`f`Y`V`U`g]g`ni
Z]b`X`Y`b`"8]Y`?`ca`V]b`U`h]c`b`Ui`g`d`f`U`_h]g`W`Y`f`5`f`V`Y]h`i`b`X`gh`Ä`b`X][`Y`a
h`Y`W`b`c`c[]g`W`Y`b`´:`c`f`hg`W`f]h`h`a`U`W`h`X]Y`g`Y`b`G`Y`_`h`c`f`V`Y`g`c`b`X`Y`fg`

UhhfU_hj "

5 VgW`]Y» YbXY'; YXUb_Yb

Ni gUa a YbZUggYbX`Äggh'g]W`gU[Ybž'XUgg'hfc'hn'XYf
<YfUi gZcfXYfi b[Ybž'X]Y'Y]bY'5i gV]'Xi b[gd`Uhngi WXY'a]h'g]W
Vf]b[hž'X]Y'7\UbWb'ZØf'ž [YbX`]WXY'ja 'GWk U'a !9XYf!?'fY]g
k Y]hYf\]b' [i h'ghY\Yb''9g'g]bX'gck c\`9b[U[Ya Ybh'U`g'Ui W
_fYUhj] Y'5bgÅmY'[YZfU[hž'i a 'YfZc`[fY]W`]b'X]Y'6Yfi Zgk Y'h'ni
ghUfhYb''8Yf'GW`ØggY`ni a '9fZc`[``]Y[h]a 'dfcU_hj] Yb'<UbXY`b
i bX'XYf'9bhgW`cggYb\Y]hž'bYi Y'K Y[Y'ni '[Y\Yb"

8 YhU]`g

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