

: f]YX`]W\ Yf': i » VU`UVYbX`a ]h`GW\ UhhYb.  
8: 6!Dc\_U`gd]Y`']b`6fUi bgW\ k Y][

9]bhfUW\h`6fUi bgW\ k Y][ `hf]Zhi`Ui Z`9]bhfUW\h': fUb\_Zi fh`ja  
8: 6!Dc\_U`''Dc`nY]'V]'Ubn]Yfh`ØVYfk ]Y[ YbX`Zf]YX`]W\ Yb`5VYbX  
a ]h`Y]b][ Yb`J cfZÄ`Yb"

5a `A cbhU[ UVYbXž`XYa`%-''5i [ i gh&\$&( ž`ZUbX`Y]b`gdUbbYbXYg  
8: 6!Dc\_U`gd]Y`nk ]gW\ Yb`9]bhfUW\h`6fUi bgW\ k Y][ `i bX`9]bhfUW\h`  
: fUb\_Zi fh`ja `GhUX]cb`Ub`XYf`<Ua`Vi f[ Yf`GhfU»Y`ghUhh`8]Y  
6Y[ Y[ bi b[ ž`X]Y`Ui ZY]b`[ fc»Yg`ϕhYfYggY`gh]Y» ž`k i fXY`j cb`ØVYf  
%- \$\$`5b`Àb[ Yfb`XYf`6fUi bgW\ k Y][ Yf`A UbbgW\ UZhi`VY[ `Y]hYhž`X]Y  
a ]h`Y]bYa` : Uba`UfgW\`Xi fW\`X]Y`ϕbYbghUXh`nc[ Yb`"8Yf`5i Zni [ VY[ Ubb`Ua`  
5`hghUXha`Uf`\_hi bX`ZØ\fhY`X]fY`\_h`ni a`GhUX]cb`ž`k Ug XYb`Ni gUa`a`Yb`  
U`h`i bX`X]Y`6Y[ Y]ghYfi b[ `XYf': Ubg`Y]bXfi W\_gj c`X`XYa`cbghf]YfhY"

Hfc`hn`XYf`ZYgh]W\ Yb`Gh]a`a`i b[ ` [ UV`Yg`k`Ä\fybX`XYg`A`UfgW\ Yg  
Y]b][ Y`Nk ]gW\ Yb`ZÄ`Y`": Ubg`nØbXYhYb`]a`a`Yf`k ]YXYf`6Yb[ U`cg`i bX`  
BYVY`hØdZYž`k Ug`X]Y`5ha`cgd`ÄfY`nk`Uf`Vi`bhž`UVYf`Ui`W\`f]g\_Ubh  
a`UW\`hY`"Gc`W\`Y`Dmf`chYW\`b\_]`gh]a` : i » VU`''i`a`ghf]hhYb`ž`XU`g]Y  
b]W\`h`bi`f`X]Y`G]W\`Yf`Y]h[ YZÄ`fXYhž`gc`bXYfb`Ui`W\`[ Ygi`bX`Y]h`]W\`Y  
F]g]\_Yb`V]f[ h`K`Ä\fybX`XYg`Gd]Y`g`gY`Vgh`k`i`fXYb`X]Y`HfUX]h]cbYb  
XYg`NUi`VYfZYi`Yfg`j`cb`5b`Àb[ Yfb`VY]XYf`A`UbbgW\ UZhYb  
Zcfh[ YZØ\fh"

? cbZfc`bhUh]cbYb`i`bX`K ]XYfghUbX

6YgcbXYfg`Ui`ZÄ`''[ `k`Uf`Y]b`J`cfZU`ž`XYf`g]W\`]b`XYf  
GW\`a`U`VUW\`ghfU»Y`YfY][ bYhY`"<]Yf`gc`hY`Y]b`' %Ä\ f][ Yf`A`Ubb  
bUW\`XYa`K`i`fZY]bYg`6Ø`Yfg`\_cbhfc`Y]fh`k`YfXYb`"GhUhh`g]W\  
\_ccdYfUh]j`ni`j`Yf`U`hYb`ž`Y]ghYhY`Yf`K ]XYfghUbX`ž`k`Ug`X`Uni`ZØ\fhYž

XUgg`X]Y`Dc`nY]]\a`Y]bYb`D`Uhnj`Yfk`Y]g`Ui`ggdfUW`"Gc`W`Y`  
J`cfZ`A`Y`\_`ObbYb`X]Y`c`b`Y`b`]b`Ub[`YgdUbbhYb`G]W`Yf`Y]hg`U[`Y`]a`  
GhUX]cb`VYY]bZi`ggYb`i`bX`nY][`Yb`X]Y`<`YfUi`gZcfXYfi`b[`Yb`z`a`]h`  
XYbYb`G]W`Yf`Y]hg`\_f`A`Z`h`Y`\_`cb`Z`f`cb]Y`fh`g]b`X`"

⇒`J`D!`6`YfY]W`X`Y`g`GhUX]cb`g`\_`Ua`Y`g`Ui`»`YfXYa`ni`j`YfVU`Yb`  
5i`gY]bUbXYfgYhni`b[`Yb`nk`]gW`Yb`nk`Y]`DYfgcbYb`"8`]YgY`  
9g`\_`U`Uh]cb`Z`Ø`f`h`Y`X`Uni`ž`XUgg`VY]XY`X`Y`g`GhUX]cb`g`j`Yfk`]YgYb`  
k`i`f`XYb`"9]bYf`X`Yf`6`Y`h`Y]]`[`h`Yb`ž`Y]b`(-`!`A`f][`Yf`A`Ubb`ž`j`Yf`Y]h`g]W`  
XUVY]`gc`U[`[`fYgg]j`ž`XUgg`Yf`Y]bYb`Dc`nY]VYUa`hYb`j`Yf`Y`h`h`Y`ž`  
]bXYa`Yf`]\a`]bg;`Yg]W`h`hf`Uh`"8`]Yg`Z`Ø`f`h`Y`ni`f`gc`Z`f`h][`Yb`  
:`Y`gh`b`U`a`Y`X`Y`g`A`Ubb`Y`g`"Gc`W`Y`Ni`g`Ua`a`Y`b`gh`Ø`Y`k`Yf`Z`Yb`Y]b`  
@]W`h`Ui`Z`X]Y`Xi`b`\_`YfYb`G]Y]hYb`j`cb`Gdcfhj`YfUbghU`hi`b[`Yb`i`b`X`X]Y`  
B`ch`k`Yb`X][`\_`Y]h`j`Yf`gh`A`f`\_`h`Yf`G]W`Yf`Y]hg`a`U`»`b`U`a`Yb`"

;`Y`k`U`h`g`Ua`Y`5i`gY]bUbXYfgYhni`b[`Yb`b`UW`  
XYa`Gd]Y`

B`UW`X`Y`a`5`Vd`Z]Z`\_`Ua`Y`g`]\`bhYf`X`Yf`B`cf`X`\_i`fj`Y`ni`Y]bYf`  
k`Y`W`g`Y`g`Y]h][`Yb`?`Ø`f`d`Y`f`j`Yf`Y`h`ni`b[`i`b`h`Yf`:`U`bg`j`cb`9]b`h`f`U`W`h`  
6`f`Ui`b`g`W`k`Y][`"5i`W`]\`Yf`V`Y]`k`i`f`XY`Y]b`9`fa`]h`i`b[`g]`Yf`Z`U`f`Y`b`  
Y]b[`Y`Y]h`Y`h`Gc`W`Y`5i`gY]bUbXYfgYhni`b[`Yb`g]b`X`V`Y`X`U`i`Yf`]W`i`b`X`  
n`Y][`Yb`ž`X`U`gg`h`f`c`h`n`X`Y`f`Y`i`d`c`f]g`W`Y`b`5`h`a`c`g`d`A`f`Y`b]W`h`U`Y`Y`:`U`bg`  
V`Y`f`Y]h`g]b`X`ž`X`Y`b`G`d`c`f`h`i`b`X`X`Y`b`X`Ua`]h`j`Yf`V`i`b`X`Y`b`Y`b`  
Ni`g`Ua`a`Yb`U`h`d`c`g]h]j`ni`"Y`V`Y`b`"

8]Y`Dc`nY]`nc[`]bg[`Y`g`Ua`h`Y]b`Y`[`Ya`]g`W`h`Y`6]`U`bn`X`Y`g`5`V`Y`b`X`g`"  
K`A`f`Y`b`X`X`Y`f`J`Y`f`U`i`Z`X`Y`f`J`Y`f`U`b`g`h`U`h`i`b[`Ø`V`Y`f`k`]Y[`Y`b`X`Z`f]Y`X`]W`  
k`U`f`ž`n`Y][`Y`b`X]Y`J`c`f`Z`A`Y`ž`X`U`gg`]a`a`Y`f`k`]Y`X`Y`f`G`d`U`bb`i`b[`Y`b`  
Y`b`h`g`h`Y`Y`b`\_`Ø`b`b`Y`b`ž`X]Y`g`c`k`c`l`:`U`bg`U`g`U`i`W`G]W`Y`f`Y]hg`\_f`A`Z`h`Y`  
j`c`f`<`Y`f`U`i`g`Z`c`f`X`Y`f`i`b[`Y`b`g`h`Y`Y`b`"8]Y`5`b`k`Y`b`X`i`b[`]j`cb`D`m`f`c`h`Y`W`b]\_`  
i`b`X`X]Y`X`Ua`]h`j`Yf`V`i`b`X`Y`b`Y`b`5i`g`Z`Ø[`Y`]b`X]Y`5[`]f`Y`gg]cb`k`Yf`Z`Y`b`  
[`fi`b`X`Y[`Y`b`X`Y`:`f`U[`Y`b`Ø`V`Y`f`X`Y`b`i`a`[`U`b[`a`]h`@]Y]X`Y`b`g`W`U`Z`h]a`  
:`i`»`V`U`U`i`Z`"8]Y`6`Y`l`Ø`f`X`Y`b`g`h`Y`Y`b`j`c`f`X`Y`f`5i`Z[`U`V`Y`ž`Y]b`  
;`Y]W`[`Y`k`]W`h`n`k`]g`W`Y`b`X`Y`f`G]W`Y`f`Y]h`U`Y`f`5`b`k`Y`g`Y`b`X`Y`b`i`b`X`  
X`Y`f`A`Ø[`]W`\_`Y]h`Z`Øf`:`U`bg`ž`]f`Y`A`U`bb`g`W`U`Z`h`Y`b`Y]X`Y`b`g`W`U`Z`h]W`ni`  
i`b`h`Y`f`g`h`Ø`h`n`Y`b`ž`ni`Z]b`X`Y`b`"

## 8 ]Y `Ni \_i bZh`XYg` : i » VU`g`i bX`XYf` : Ub g

8 Ug` ; YgWXY`Yb` ]b`6fUi bgWk Y][ ` \_ÖbbhY`Ui Wk`U`g`Y]b`NY]WXYb`ZØf  
X]Y`9bhk ]W`i b[ `XYg` : i » VU`g` ]b`8Yi hgWk`UbX` [ YgY`Yb`k YfXYb`"  
8 ]Y`DfcV`Ya Yž`X]Y`Ui g`XYf`Y]XYbgWk UZh`]WXYb`i bhYfghØhni b[  
YbhghY`Ybž`YfZcfXYfb`Y]b`i a`XYb`\_Yb` ]b`6Yni [ `Ui ZX]Y` : Ub!`?i`hi f  
i bX`XYfYb`9]bZi gg`Ui ZX]Y`Gd]Y`Y`"9g`V`Y]Vh`UVni k UfhYbž`k ]Y  
J YfY]bY`i bX`J YfV`AbXY`Ui Z`gc`Wk`Y`J cfZ`Ä`Y`fYU[ ]YfYb`i bX`cV`g]Wk  
X]Y`G]WXYf`Y]hg`cbnYdhY`UbdUggYbž`i a`gck c`X`G]WXYf`Y]h`U`g  
Ui Wk`XYb`GdU» `Ua`Gd]Y`ni [ Yk`Ä`f`Y]ghYb`"

## : Ubd fchY ghY `i bX`DmfchY Wk b ]\_ `]a ` : i » VU`

8 ]Y`J Yfk YbXi b[ `j`cb`DmfchY Wk b ]\_ `]a ` : i » VU`ž`k ]Y`VY]`XYa`8 : 6!  
Dc`\_U`gd]Y`nk ]gWXYb`9]bhfUWk h`6fUi bgWk Y][ `i bX`9]bhfUWk h  
: fUb`\_Z`fhž`]gh`Y]b`i a`ghf]hhYbYg`H`Y`a`U`"b`8Yi hgWk`UbX`]gh`XYf  
9]bgUhm`j`cb`6Yb[ `U`cg`i bX`UbXYfYb`dmfchY Wk b ]gWXYb`A` ]hh`Y`b  
k`Ä`f`YbX` : i » VU`gd]Y`Yb`j`YfV`chYbž`XU`g]Y`gck c`X`X]Y`G]WXYf`Y]h  
XYf`Ni`gWkUi`Yf`U`g`Ui`Wk`X]Y`XYf`Gd]Y`Yf`[ YZ`Ä`f`XYb`\_ÖbbYb`"  
5b`Ä`b[ Yf`g`Y`Yb`X]Yg`c`Zh`U`g`HY]`]\fYf`?i`hi f`i bX`U`g`Y]bY  
A`Ö[ `]Wk`\_Y]hž`@Y]XYbgWk UZhi bX`Gh]a`a`i b[ `]a`GhUX]cb`ni`nY][ Yb`"

8 ]Y`8 : @fBYi hgWXY` : i » VU``@[ UŁ`i bX`X]Y`8 : 6`fBYi hgWXYf` : i » VU``!  
6i bXŁ`UVYb` ]b`XYb`Y`hnhYb`Ä`U`fYb`A`U» bU`a`Yb`Yf[ f]ZYbž`i a`X]Y  
G]WXYf`Y]h`ni`Yf`Ö`Yb`i bX`XYb`9]bgUhm`gc`Wk`Yf`A` ]hh`Y`ni  
fYXi`n]YfYb`"8 ]YgY`VY]b`U`hYb`i bhYf`UbXYfYa`Ä`fhYfY`GhfUZYb`ZØf  
J YfY]bYž`XYfYb` : Ub g`DmfchY Wk b ]\_ `bi`hYbž`gck ]Y` ]bhYbg]j`Y  
?cbhfc`Yb`]a`GhUX]cb`"

## F YU`\_h]cbYb`XYf`6Y`ÖfXYb`Ui Z` : Ub [ Yk U`h

8 ]Y`J cfZ`Ä`Y`k`Ä`f`YbX`XYg`Gd]Y`g`k`YfZYb`Y]b`@]Wk`h`Ui`Z`X]Y  
<YfUi`gZcfXYfi`b[ Ybž`a` ]h`XYbYb`Dc`nY]`i bX`G]WXYf`Y]hgVY`ÖfXYb  
]a`i`a`ZY`X`j`cb` : i » VU`gd]Y`Yb`\_cbZfcbh]Yfh`g]bX`"8 ]Y`Dc`nY]`Ä`Uh  
g]Wk`j`Yfgh`Ä`f`h`Ui`Z`df`Ä`j`Ybh]j`Y`A`U» bU`a`Yb`i bX`8 ]U`c[ Y`a` ]h`XYb  
: Ub g`\_cbnYbhf]Yfhž`i a` [ Yk`U`hgUa`Y`5i`gY]bUbXYfgYhni b[ Yb`ni  
j`Yf` ]bXYfb`"K`Ä`f`YbX`XYf` : Uba`UfgWk`ni`X]YgYa`9fY][ b]g

ØVYfk ]Y[ YbX`Zf]YX`]W` j Yf`]Yž`V`Y]Vh`X]Y`HUhgUW`Yž`XUgg`Yg`ni  
K ]XYfghUbX`i bX` , VYf[ f]ZZYb`\_Ua ž]b`XYb`6Yf]W`hYb`b]W`h  
i bYfk Å`bh"

⊕`XYf`Ui ZYbXYb`GU]gcb`]gh`X]Y`5i Za Yf\_gUa \_Y]h`Ui Z: Ub[ Yk U`h  
i bX`G]W`Yf`Y]hga U» bU`a Yb`VYgcbXYfg`cW`ž`k Ug`g]W`]b  
j YfghÅ`f`\_hYb`?cbhfc`Yb`i bX`Y]bYa` `Ø`YfYb`Dc`]nY]Ui Z[ YVch`VY]  
Gd]Y`Yb`b]YXYfgW`Å[ h`K Y]hYfY`5\_h]cbYb`ni f`GYbg]V`]g]Yfi b[ j cb  
: Ubg`ZØf`X]Y` ; YZU`fYb`j cb` ; Yk U`hi bX`DmfchYW`b\_]`g]bX`[ Yd`Ubhž  
i a`Y]bY`Zf]YX`]W`Y`GhUX]cb`\_i`hi`f`ni`ZØfXYfb"

## GhUh]gh]gW`Y`9f`YVi b[ Yb`ni f` : Ub[ Yk U`h

8]Y`GhUh]gh]\_Yb`ni f` : Ub[ Yk U`h]a`XYi hgW`Yb` : i » VU``nY][ Ybž`XUgg  
X]Y`5bnU`XYf`Ub[ YnY][ hYb`GhfUZhUhYb`]a`Ni gUa`a Yb`Ub[ `a`]h  
: i » VU``gd]Y`Yb`]b`XYb`YhnhYb`]U`fYb`gW`k Ub`\_hY``@Ui`h`XYa  
6Yf]W`h` : Ub[ Yk U`hi bX` : Ubj Yf`U`hYb`]a`XYi hgW`Yb` : i » VU``XYf  
8: @[ UV`Yg]b`XYf`GU]gcb`&\$\$&#&'`]bg[ YgUa`h`%\*( (`fY[ ]ghf]YfhY  
GhfUZhUhYb`]a`I`a`ZY`X`j`cb` : i » VU``gd]Y`Yb`ž`k`Ug`Y]bYa`Y]W`hYb  
FØW`\_[ Ub[ `]a`J`Yf[ `Y]W`ni`XYb`J`cf`U`fYb`Yb`hgd]W`h`8]Y`Dc`]nY]  
ZØ`fh`fY[ `Y`a`Å`][ `GhUh]gh]\_Yb`ØVYf`J`cf`Z`Yž`i`a`[ `Yn]Y`hY  
A U» bU`a`Yb`ni`Yf[ fY]ZYb`i bX` : Ub`\_i`hi`f`VYggYf`ni`j`YfghY`Yb`"

Ni XYa`nY][ Yb`I`a`ZfU[ Ybž`XUgg`Yhk`U`+\$i`XYf` : i » VU``ZUbg`]b  
8Yi hgW`UbX`XYb`9]bgUhn`j`cb`DmfchYW`b\_]`U`g`[ `YZ`Å`f`]W`  
Ya`d]Z]bXYb`ž`k`Ug`X]Y`gd`U`hYbXY`B`Uhi`f`X]YgYg`H`Ya`Ug  
k`]XYfgd]Y[ `Y`h`Hfchn`XYf`fYW`h]W`Yb`i bX`g]W`Yf`Y]hghYW`b]gW`Yb  
GW`k`]Yf][ `\_Y]hYb`[ ]Vh`Yg`Y]b`Y`g][ `b]Z]\_UbhY`5bnU`j`cb`5b`Åb[ Yfbž  
X]Y`X]Y`J`Yfk`YbXi b[ j cb` : Yi`Yfk`Yf`\_k`Å`fYbX`Gd]Y`Yb`k`Y]hYf`]b  
VYZØfk`cfhYb`ž`k`Ug`X]Y`8]g`\_i`gg]cb`i`a`X]Y`GhUX]cb`\_i`hi`f`k`Y]hYf  
Ub`Y]nh"

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