

G7`A U[ XYVi f[ .`B ]YXYf`U[ Yb`j cf`XYa  
Gi dYfW`d` `GdUbbi b[ `]b`8ØggY`XcfZ

8Yf`G7`A U[ XYVi f[ `Yf`Y]XYh`nk Y]`B ]YXYf`U[ Yb`]b`HYghgd]Y`Yb  
j cf`XYa `Gi dYfW`d` [ Y[ Yb`X]Y` : ØW`gY`6Yf`]b`"G]Y[ `i bX  
B ]YXYf`U[ Y`ghY`Yb`VYj cf`"

?UggY`" `8Yf`G7`A U[ XYVi f[ ž`Ua`h]YfYbXYf`XYi hgW`Yf`<UbXVU`"!  
A Y]ghYfž`ghY`h]j cf`XYf`<YfUi`gZcfXYfi b[ ž[ `Y]W`nk Y]`HYghgd]Y`!  
B ]YXYf`U[ Yb`k Y[ ni ghY`W`Yb`žk`À`fYbX`g]W`XUg`HYUa` `Ui Z`X]Y  
VYj cfghY`YbXYb`DZ]W`hgd]Y`Y`j cfVYfY]hYh`" `b`Y]bYa  
gdUbbi b[ g[ Y`UXYbYb`5i ZY]bUbXYfhfYZZYb`]a`Gd]Y`"i a`D`Uhn`XfY]  
j Yf`cf`A U[ XYVi f[ ` [ Y[ Yb`X]Y`A H`A Y`gi b[ Yb`"B UW`Y]bYa  
dUW`YbXYb`Gd]Y`YbXYhY`Yg`a`]h( &.( `bUW`  
G]YVYba`YhYfgW`]Y»Yb`"Ni j cf`U`hYb`g]Y`VYfY]hg`Y]b`k Y]hYfYg  
HYghgd]Y` [ Y[ Yb`?G`?]Y`W`a`]h&, .`%j Yf`cfYb`žk`Ug`X]Y  
A UbbgW`UZh`i bhYf`8fi W`gYhnhž`VYj cf`X]Y`GU]gcb`f]W`h][ `VY[ ]bbh`"

8Ug`YfghY`DZ]W`hgd]Y`XYf`GU]gcb`ghY`h]j cf`XYf`HØf.`5a  
\_ca`a`YbXYb`GUa`ghU[ `i a`%, .`\$`I`f`hf]Zh`XYf`G7`A U[ XYVi f[ `Ui Z`  
X]Y` : ØW`gY`6Yf`]b`"8]Yg`k`]fX`Y]b`f]W`hi b[ gk`Y]gYbXYg`8i Y`ž  
]bgVYgcbXYfY`bUW`XYa`X]Y`9`VYgh`XhYf` [ YfUXY`nk Y]  
Ui ZY]bUbXYfZc` [ YbXY`B ]YXYf`U[ Yb`]bbY`a`Yb`a`i`gghYb`"7cUW`  
6YbbYh`k`]Y[ Yfh`k`]fX` [ YZcfXYfh`gY]bž`gY]b`HYUa` `j cb`X]YgYb  
FØW`gW`À[ Yb`ni`ØVYfnYi [ Yb`i bX`g]Y`Ui Z`X]Y`Y`Zh][ Y`?cb`\_i`ffYbn  
Ui g`XYf`<Ui dhghUXh]j cfni`VYfY]hYb`"

GD5B B 9B 8 9`GD=9@9`I B 8` : C 8 9F I B ; 9B`5B  
8 5 G`H95A

8]Y`VY]XYb`HYghgd]Y`Y`VchYb`gck`c\`"@W`h`U`g`Ui`W`GW`UhhYb`Øf  
XYb`G7`A U[ XYVi f[ "6YgcbXYfg`X]Y`6Y[ Y[ bi b[ ` [ Y[ Yb`X]Y`A H

A Y`gi b[ Yb`k Uf`Y]b`fY[ Y`fYW hYg`8 fUa U`žXUg`X]Y`Ni gW`Ui Yf`V]g  
ni f`YhnhYb`GY\_i bXY`ZYggY`hY" B UW`Y]bYa`Ui g[ Y[ `]W`YbYb  
Gd]Y`ghUbX`j cb`" +.` +`]b`XYf`fY[ i`ÀfYb`Gd]Y`nY]h`a i gghY`X]Y  
9bhgW`Y]Xi b[ `]a`G]YVYba`YhYfgW`]Y» Yb`ZU`Yb" <]Yf`VYk`]YgYb`X]Y  
Gd]Y`Yf`j cb`A Y`gi b[ Yb`BYfj`Ybgh`Àf`\_Y`i bX`c`hYb`XYb`G]Y[ "

⇒ Y`fghYb`HYghgd]Y`[ Y[ Yb`?G`?]Y`W`k Uf`X]Y`G]hi Uh]cb`YVYbZU`g  
Ub[ YgdUbbhž`XcW`A U[ XYVi f[ `cbbhY`XYa`Xfi W`\_j c`Yb`Gd]Y`XYf  
Dc`Yb`b]W`h`ghUbX`U`hYb" ⇒ XYf`YfghYb`<U`VnY]h`nY][ hY`G7  
A U[ XYVi f[ `Y]bY`gc`]XY`@Y]ghi b[ `i bX`U[ `ni f`<U`VnY]h`a ]h`%+.%\*  
]b` : Ø`fi b[ "8cW`]b`XYf`nk`Y]hYb`<U`VnY]h`k YbXYhY`g]W`XUg`6`Uhž  
i bX`? ]Y`W`ghY`hY`g]W`U`g`XUg`gh`Àf`\_YfY`HYUa` \YfUi`g"

- K ]W`h][ Y`9f`\_Yb`b`hb]ggY`ZØf`XUg`HYUa` .`Hfcm`XYf  
B]YXYf`U[ Yb`g]bX`X]YgY`Gd]Y`Y`ZØf`X]Y`A UbbgW`UZh`j cb  
[ fc» Yf`6YXYi hi b[ ž`i a`g]W`Ui ZX]Y`\_ca`a YbXY`GU]gcb  
VYggYf`j cfni VYfY]hYb" K ]Y[ Yfh`k ]fX`[ YbUi`UbU`mg]YfYbž  
k Ug`gW`]YZ[ Y`Ui ZYb`]ghi bX`k c`J YfVYggYfi b[ Yb  
bchk`YbX][ `g]bX"
- HYUa` [ Y]gh`i bX`Ni`gUa`a`Yb`U`h`8]Y`B]YXYf`U[ Yb  
\_ØbbhYb`U`g`?UhU`mgUhc`f`X]YbYbž`i a`XYb`Ni`gUa`a`Yb`U`h  
i bX`X]Y`HYUa`XmbUa`\_]ni`gh`Àf`\_Yb" Gd]Y`Yf`g]bX`c`Zh]b`XYf  
@U[ Yž`Ui`g`gW`k ]Yf][ Yb`G]hi Uh]cbYb`ni`YfbYb`i bX`g]W`ni  
j YfVYggYfb"

## J C F 69F 9=HI B ; `5I : `8 ⇒`B 9I 9`G5 =GC B

8]Y`HYghgd]Y`Y`g]bX`ZØf`X]Y`A UbbgW`UZhYb`b]W`h`bi f`Y]bY  
A Ò[ `]W`\_Y]hž`\fY`U`hi Y`Y` : cfa`ni`ØVYfd`fØZYbž`gcbXYfb`Ui W`  
Y]bY` ; Y`Y[ Yb`Y]hž`bYi Y`HU`h]\_Yb`Ui gni`dfcV]YfYb`i bX`↑ b[ Y  
HU`Yb`hY`Y]bni`gYhnYb"8Yf`G7`A U[ XYVi f[ ž`XYf`g]W`bUW`XYa  
; Yk`]bb`XYf`7`Ua`d]cbg`@YU[ i`Y`]a`J`cf`U`f`Ui ZX`Yb`\_ca`a YbXYb  
Gi`dYfW`d`ž`fYi hž`a`i`gg`bi`b`nY][ Ybž`XUgg`g]Y`X]Y`F`ØW`gW`À[ Y  
YfZc`[ fY]W`j`YfUfVY]hYb`\_ØbbYb"

9]b`k`Y]hYfYf`5gdY`h`]gh`X]Y`VYj`c`fghY`YbXY`6Y[ Y[ bi`b[ `]Y[ Yb`X]Y  
: ØW`gY`6Yf`]bž`X]Y`U`g`H]hY`j`YfhY]X][ Yf`Y]b`ghUf`\_Yg`HYUa`XUfghY`h`  
8]Y`<YfUi`gZc`fXYfi`b[ `VYghY`h`XUf]bž`Ui`g`XYb` : Y`Yfb

j cfUb[ Y[ Ub[ YbYf'Gd]Y`Y`ni ``YfbYb`i bX`XUg`Yfk cfVYbY`K ]ggYb  
[ Yn]Y`hY]bni gYhnYbž`i a `YfZc`[ fY]W`ni `gY]b"

8Yf`8fi W`\_Ui Z`XYb`G7`A U[ XYVi f[ `k ]fX`Xi fW`X]Y`c`Yb  
9fk Ufhi b[ Yb`j cb`: Ubgi` bX`XYf`J YfY]bgZØ\fi b[ `j YfghÅf`\_h"  
@YhnhYbX`]W`k YfXYb`X]Y`\_ca a YbXYb`Gd]Y`Y`YbhgW`Y]XYbž`cV`X]Y  
A UbbgW`UZh]b`XYf`@U[ Y`]ghž`X]Y`: cfa`i bX`XYb`9fZc`[ `XYg  
j cf\Yf][ Yb`š\`fYg`Zcfhni gYhnYb"

9FK 5FHI B; 9B`I B8  
< 9F 5I G: CF 89FI B; 9B

8]Y`\_ca a YbXYb`K cW`Yb`g]bX`YbhgW`Y]XYbX`ZØf`X]Y`A cfU`i bX  
XUg`GY`Vghj YfhfUi Yb`XYg`G7`A U[ XYVi f[ ``BYVYb`XYa`Gd]Y``[ Y[ Yb  
X]Y`: ØW`gY`ghY`Yb`bcW`[ fØ» YfY`< YfUi gZcfXYfi b[ Yb`Ui Z`XYa  
Dfc[ fUa a ``8Yf`: c`\_i g`a i gg`bi b`Ui Z`Y]bYf`gc`]XYb  
HYUa j cfVYfY]hi b[ ``]Y[ Ybž`i a `X]Y`fYgh`]W`Yb`Gd]Y`Y`a ]h`bYi Ya  
9`Ub`i bX`Zf]gW`Ya`GY`Vghj YfhfUi Yb`Ubni [ Y`Yb``Gc``hY`Yg`XYa  
HYUa`[ Y`]b[ Ybž`Y]bY`gW`Øgg][ Y`HU`h]\_`ni `Yb`hk ]W`Y`b`i bX`U``Y  
Gd]Y`Yf`Ui Z`Y]bYa` `c`Yb`@]ghi b[ gb]j YUi`ni `U`hYbž`\_Øbb`hY`X]Y  
GU]gcb`hfch`XYf`V]g`Yf][ Yb`F ØW`gW`Å[ Y`Y]b`j c``Yf`9fZc`[ `k YfXYb"

8]Y`j Yf[ Ub[ YbYb`HYghgd]Y`Y`XYg`G7`A U[ XYVi f[ `j YfXYi`h`]W`Yb  
X]Y`< YfUi gZcfXYfi b[ Ybž`a`]h`XYbYb`X]Y`A UbbgW`UZh]b`XYf`bYi Yb  
GU]gcb`\_cbZfcbh]Yfh]gh" `b`gVYgcbXYfY`X]Y`B]YXYf`U[ Y`[ Y[ Yb`X]Y  
A H`A`Y`gi b[ Yb`Xi fW`G]YVYba`YhYf!K YfZYb`nY][ hž`k ]Y  
Ui g[ Y[ ``]W`Yb`X]Y`6Y[ Y[ bi b[ `k Uf`i bX`k ]Y`k ]W`h][ `dfÅn]gYg  
5fVY]hYb`i bhYf`8fi W`\_]gh`HYghgd]Y`Y`X]YbYb`b]W`h`bi`f`ni`f  
J cfVYfY]hi b[ ž`gcbXYfb`Ui W`X`Uni ž`X]Y`HYUa`XmbUa`\_]`i bX  
]bX]j ]Xi Y``Y`: cfa`XYf`Gd]Y`Yf`ni`ØVYfdfØZb" `BUW`nk`Y]  
B]YXYf`U[ Yb`k YfXYb`X]Y`HfU]bYf`i bX`Gd]Y`Yf`bi`b`]bhYbg]j Yf`Ub  
]\fYf`HU`h]\_`UfVY]hYb`a`ØggYbž`i a`g]W`c`dh]a`U`Ui Z`X]Y  
\_ca a YbXYb`< YfUi gZcfXYfi b[ Yb`j cfni VYfY]hYb"

8Yf`G7`A U[ XYVi f[ `U]b`XYf`j Yf[ Ub[ YbYb`GU]gcb`Y]bY  
VYY]bXfi W`\_YbXY`@]ghi b[ `[ YnY][ hž`]bXYa`Yf`gck`c`\`X]Y`XYi hgW`Y  
A Y]ghYfgW`UZh`U`g`Ui W`X]Y`7`Ua`d]cbg`@YU[ i Y`[ Yk`Ubb" `Gc`W`Y  
9fZc`[ Y`Vf]b[ Yb`YXcW`Ui W`X`Yb`8fi W`\_a`]h]g]W`ž`X]YgY

@Y]ghi b[ Yb`ni`k ]YXYf\c`Yb"8Yf`VYj c fghY\YbXY`Gi dYfW dž]b  
XYa`g]Y`[ Y[ Yb`X]Y` : ØW`gY`6Yf`b`UbhfYhYbž]gh`Y]bY` ; Y`Y[ Yb\Y]hž  
g]W`j`cf`XYb` : Ubg`ni`VYk Y]gYb`i bX`a`cfU`]gW`i[ Ygh`f`\_h]b`X]Y  
GU]gcb`ni`ghUfhYb"

## < U`V`U\`fYgV]`Ub n`XYf`Y`hnhYb`GU]gcb

8]Y`Y`hnhY`GU]gcb`k Uf`ZØf`XYb`G7`A U[ XYVi f[ `gY\`f`YfZc`[ fY]W`"  
8Yf`J`YfY]b`\`Uh`X]Y`6i bXYg`][ U`a` ]h`Y]bYf` ; YgUa` hmU\`j`cb`)'`  
Di b`\_hYb`]b`" ( `Gd]Y`Yb`UV[ YgW`c`ggYb`i bX`XUVY]`&`\*`Gd]Y`Y  
[ Yk`cb`bYb`"8]Yg`Xc`\_i`a` Ybh]Yfh`X]Y`Gh`f`\_Y`XYf`A`UbbgW`UZh`i`bX  
]\`fY` : Å\`][`\_Y]hž]b`YbhgW`Y]XYbXYb`A`ca`YbhYb`ni`"YZYfb`" ð`XYf  
7\`Ua`d]cbg`@YU[ i`Y`\UVYb`g]Y`YVYbZU`g`VYY]bXfi`W`hž]bXYa`g]Y  
]a`YbhgW`Y]XYbXYb` : ]bU`Y`[ Y[ Yb` : 7`6UfW`cbU`gd]Y`hYb`"Gc`W`X`Y  
9fZc`[ Y`j`Yfgh`f`\_Yb`XYb`K`YhVYk`YfVgXfi`W`ž`XU`X]Y`9fk`Ufhi`b[ Yb  
bi`b`\`cW`g]bX"

## J`c`f`V`Y`f`Y]hi`b[ Yb`Ui`Z`X]Y`b`Yi`Y`GU]gcb

ð`XYf`Gca`a`YfdUi`gY`\`Uh`XUg`HYUa`j`YfgW`]YXYbY  
J`Yf`Å`b`XYfi`b[ Yb`Xi`fW`Y`Vh`"BYi`Y`Gd]Y`Yf`k`i`fXYb`j`YfdZ]W`hYhž`i`a  
X]Y`A`UbbgW`UZh`i`j`Yfgh`f`\_Ybž`k`Å\`fYbX`Y]b][ Y`Å`hYfY`Gd]Y`Yf`XYb  
J`YfY]b`j`Yf`UggYb`\`UVYb`"8]YgY`HfUbgZYfg`g]bX`YbhgW`Y]XYbX`ZØf  
X]Y`HYUa`W`Ya`]Y`i`bX`X]Y`ni`\_ØbZh][ Y`@Y]ghi`b[ "8]Y  
J`c`f`V`Y`f`Y]hi`b[ gg]Y`Y`g]bX`Ui`W`X`Y]bY`k`]W`h][ Y`NY]h`ZØf`XYb`HfU]bYf  
6Yb`bYh`K`]Y[ Yfhž`i`a`X]Y`Gd]Y`Yf`a`]hY]bUbXYf`j`YfhfUi`h`i`ni`a`UW`Yb  
i`bX`j`YfgW`]YXYbY`HU`\_h]\_Yb`Ui`gni`dfcV]YfYb`"8]Y`[ YbUbbhYb  
HYghgd]Y`Y`"YZYfb`k`Yfhj`c`Y`9f`\_Yb`b`hb]ggY`ØVYf`XYb`U`\_hi`Y`Y`b  
GhUbX`XYf`A`UbbgW`UZh"

Ni`g`Å`h`]W`i`[ ]Vh`Yg`]b`XYf`@[ U`X]j`YfgY`<`YfUi`gZc`fXYfi`b[ Yb`"8Yf`G7  
A`U[ XYVi`f[ `ghY`\`h`b]W`h`bi`f`[ Y[ Yb`X]Y` : ØW`gY`6Yf`b`ž`gcbXYfb  
k`]fX`g]W`i`W`i`[ Y[ Yb`UbXYfY`ghUf`\_Y`HYUa`g`k`]Y`H`<`K`?`]Y`ž`X]Y  
F`\Y]b!BYW`Uf`@Øk`Yb`i`bX`X]Y`G;` :`YbgVi`f[ !<UbXYk`]h`VY\`Ui`dhYb  
a`ØggYb`"8]YgY`\_cb`\_i`ff]YfYbXYb`HYUa`g`\UVYb`YVYbZU`g`ghUf`\_Y  
?UXYf`i`bX`k`YfXYb`U`Y`g`XUfUb`gYhYbž`X]Y`A`Y]ghYfgW`UZh`i  
[ Yk`]bbYb"

8YhU]g

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