

H\Y`7fmdhc`8U]`m` `A cj Yfg`i bX`G\U\_Yf`  
` \$"5i [ i gh`&\$&%

6]hWc]bž6H7`ni`l G8žZ]Y`Ua`GcbbhU[ `i a`\$ž&`i`"BUWk  
Y]bYa`FØW\_[ Ub[ `j cb`\$ž` (i`[ Y[ YbØVYf`GUa`ghU[ `VYYbXYhY`  
6]hWc]b`X]Y`K`cWY`a`]hY]bYa`A`]bi`gj`cb`\$ž-)i`Ui`Z  
(,`,`,`\$\$ž\$`l`G8`"9]b`i`bfi`\[`[ Yf`GhUfh]b`XYb`HU[ `ZØ\fhY`XUni`ž  
XUgg`6]hWc]b`g]Wk`Ui`ZY]b`bhfUXUm!<cWk`Ua`ZfØ\Yb`A`cf[`Yb  
j`cb`(-`"\*)`\$ž\$`l`G8`Yf\c`hYž`VYj`cf`Yg`XYb`FØW\_k`Åfhg[`Ub[  
Y]bgWk`i`["6]hWc]b`Xi`fWkVfUWk`XUg`YfghY`[`fc»`Y  
K`]XYfghUbXgb]j`YUi`VY]`(-`"`)`(`ž`VYj`cf`Yg`Ui`ZY]b`bhfUXUm!  
H]YZ]j`cb`(+`+`\*`\$ž\$`~`Ua`ZfØ\Yb`A`cf[`Yb`UVfi`hgWk`hY`"8`Yf  
5i`gj`Yf`\_Ui`Z`ZØ\fhY`XUni`ž`XUgg`6]hWc]b`XUg`YfghY`[`fc»`Y  
l`bhYfghØhni`b[`gb]j`YUi`VY]`(`,`"(``\$`~`i`bX`XUg`nk`Y]hY`[`fc»`Y  
l`bhYfghØhni`b[`gb]j`YUi`VY]`(+`-`(`\*`~`Xi`fWkVfUWk`"l`a`g]Wk  
j`cb`/`Ua`d^Y``d/

6]hWc]bž6H7`ni`l G8žZ]Y`Ua`GcbbhU[ `i a`\$ž&`i`"BUWk`Y]bYa  
FØW\_[ Ub[ `j cb`\$ž` (i`[ Y[ YbØVYf`GUa`ghU[ `VYYbXYhY`6]hWc]b`X]Y`  
K`cWY`a`]hY]bYa`A`]bi`gj`cb`\$ž-)i`Ui`Z(,`,`,`\$\$ž\$`l`G8`

9]b`i`bfi`\[`[ Yf`GhUfh]b`XYb`HU[ `ZØ\fhY`XUni`ž`XUgg`6]hWc]b`g]Wk`Ui`Z  
Y]b`bhfUXUm!<cWk`Ua`ZfØ\Yb`A`cf[`Yb`j`cb`(-`"\*)`\$ž\$`l`G8`Yf\c`hYž  
VYj`cf`Yg`XYb`FØW\_k`Åfhg[`Ub[`Y]bgWk`i`["

6]hWc]b`Xi`fWkVfUWk`XUg`YfghY`[`fc»`Y`K`]XYfghUbXgb]j`YUi`VY]

( - "" ) ( ' žVYj cf'Yg'Ui ZY]b' ðhfUXUm!H]YZj cb'( +"+\* \$ž\$ ' 'Ua  
ZfØ\Yb'A cf[ Yb'UVfi hgWx hY"

8 Yf'5i gj Yf\_Ui Z'ZØ\fhY'XUni ž'XUgg'6]hWc]b'XUg'YfghY'[ fc»Y  
l bhYfghØhni b[ gb]j YUi 'VY]'( , "( ' \$ ' 'i bX'XUg'nk Y]hY'[ fc»Y  
l bhYfghØhni b[ gb]j YUi 'VY]'( +"- ( \* ' 'Xi fWx VfUWx "

l a 'g]Wx 'j cb'Y]bYa 'B]j YUi 'i bhYf'( +") \$\$'l G8 'ZYfbni \U'hYbžZUbX  
6]hWc]b'YXcWx 'Y]bY'gdÅhY'l bhYfghØhni b[ ži a 'XUg'B]j YUi 'j cb  
( - "( \$\$'l G8 'YfbYi hini 'YffY]WxYbžVYj cf'Yg'k ]YXYf']b'X]Y'fchYb  
NU\`Yb'Z]Y`"

8 Ug'YfghY'[ fc»Y'K ]XYfghUbXgb]j YUi 'VY]'( - "" ) ( 'l G8 '\_cddY'hY  
6]hWc]b]b'XYf'YhnhYb'Ghi bXY'ni fØW\_"

8 Yf'\_i fnZf]gh][ Y'5i Zk ÅfhghfYbX'V`]YV`]bhU\_hž'i bhYfghØhnh'Xi fWx 'X]Y  
'Øb[ ghY'F ØW\_\_Y\ f'Ui ZY]b'B]j YUi 'j cb') "\$\$\$'l G8 "': Øf'X]Y'6ÅfYb  
VfÅi Wx hY'6]hWc]b'Y]bYb'Ub\U'hYbXYb'F ØW\_[ Ub[ 'Xi fWx 'X]Y'\* &'i  
: ÷'j cb'&+'&' + ' ži a 'Y]bYb'\_i fnZf]gh][ Yb'5Vk ÅfhghfYbX'ni 'V`]XYb"

## 8 Yf'F Ygh'XYg'DU\_Yhg

6Y]'XYb'UbXYfYb'A U'cf'g'k Uf'Yg'Y]b'Xi fWx k UWx gYbYf'HU[ 'Ua  
GcbbhU[ "

6]bUbWx'7c]b'Z]Y''i a '%ž \$l ži a 'XYb'K Y[ 'bUWx'i bhYb'ni 'ZØ\fyb"

9h\YfYi a 'fl \$ž\* \*l ěž'@]hYWc]b'fl \$ž+( l ěž'Dc`\_UXch'fl \$ž+&l ěž'i bX  
F]dd`Y8Yf'LF D'fl \$ž) ) l ěž'j cb' g'k Uf'Ub'X]YgYa 'HU[ 'YVYbZU`g'fch"

: Øf'XYb'F Ygh'XYf'A U'cf'g'k Uf'Yg'YXcWx 'Y]b'Vi ``]gWxYf'HU[ "

6]hWc]b'7Ug\ 'GJ`Y[ hY'i a '%ž \*l 'ni ži a 'a ]h'7fmdhc"Wc'a 'X]Y  
: Ø\fi b[ 'ni 'ØVYfbY\ a Yb'7c]b'%ž&- 'i 'ghY][ YbX"

7UfXUbcg'585'fž \$ž%l ěi bX'7\U]b`]b'\_fž \$ž%\*l ěž'Zc`[ hYb'YXcWx  
XYb'Gd]hnYbY]hYfb"

9g'k Uf'Ui W'Y]bY [ Ya ]gW hY'K cWY'ZØf'X]Y'A U'cf'g]b'XYf'K cWYž  
X]Y'Ua' &- "YbXYhY<sup>BG</sup> 5i [ i gh"

7\U]b`b\_fi hgW hY'i a', žš' i' UVž'i a' XYb'K Y[ 'bUW' i bhYb'ni  
ZØ\ fYb" 9h\YfYi a' f!ž( \*' i' Lž@]hYW'c]b'f! \*ž%, i' LžDc`\_UXch'f! \*ž&  
i' L'i bX'F]dd'Y g'LF D'f!+žš% L'VYYbXYhY'X]Y'K cWY'YVYbZU`g]a  
A ]bi g"

: Øf'XYb'F Ygh'XYf'A U'cf'g'k Uf'Yg'YXcW'Y]bY'Vi ``]gWY'K cWY"

6]bUbW'7c]b'gh]Y[ 'i a' \*ž- &i' Ubž'i a' X]Y': Ø\fi b[ 'ni  
ØVYfbY\ a' Ybž'X]W'h[ YZc`[ hij cb'7UfXUbcg'585'fž ) ž' &i' L"

6]hW'c]b'7Ug\ 'GJ' fž %ž +i' L'i bX'7fmdhc"W'ca'7c]b'fž %ž- +i' L'i bX  
Zc`[ hY'YXcW'XYb'Gd]hYb'fY]hYfb

⇒ XYf'K cWY'gh]Y[ 'XYf'? fmdhc!; YgUa ha Uf\_h'Ui ZY]b  
A cbhU[ g\cW'j cb' &"%\* - 'A fX"i' G8ž'VYj cf'Yf'Ui ZY]b  
8cbbYfghU[ gh]YZj cb'%"- ' ' 'A fX"i' G8'Z]Y""Ni a' NY]hdi b\_h'XYg  
GW'fY]VYbg`U[ 'X]Y'; YgUa ha Uf\_h\_Ud]hU`]g]Yfi b[ 'VY]'&"\$, +  
A ]`]UfXYb'i G!8c`Uf"

8]Y'8ca ]bUbn'j cb'6]hW'c]b'gh]Y[ 'Ui ZY]b'8cbbYfghU[ !<cW'j cb  
( ( ž-, i' ž'VYj cf'g]Y'Ui ZY]b'GUa ghU[ !H]YZj cb'(' ž)' i' Z]Y""Ni a  
NY]hdi b\_h'XYg'GW'fY]VYbg`U[ 'X]Y'8ca ]bUbn'j cb'6]hW'c]b'VY]  
( ( žš' i' "

## < Yi hY'A cf[ Yb

Ni a' NY]hdi b\_h'XYg'GW'fY]VYbg'gh]Y[ '6]hW'c]b'i a' žž( i' Ui Z  
( , "- %) ž+i' G8"9]b [ Ya ]gW hYf'GhUfh]b'XYb'HU[ 'ZØ\fhY'XUni ž'XUgg  
6]hW'c]b'Ui ZY]b'H]YZUa'ZfØ\Yb'A cf[ Yb]j cb'(', ") \*) žš'i' G8'Z]Yž

VYj cf`Yg`Ui Z`Y]b`<cW`j cb` ( , ž- %) ž+`l G8`gh]Y[ "

6]hW`b`i`Y»`X]Y`k`jW`h][ ghYb`l bhYfghØhni b[ g!`i bX`  
K`jXYfghUbXgb]j YUi g`ZfØ`nY]h][`i b[ YhYghYh"

5b`UbXYfYf`GH`Y`k`Uf`Yg`Y]b`Xi fW`k UW`gYbYf`GhUfh]b`XYb`HU[ "

Dc`\_UXch`k`jXYfgYhnhY`g]W`XYa`ZfØ`Yb`HfYbX`i bX`Z]Y`i a`  
VYgW`Y]XYbY`\$ž\$`\*`i`"

: Øf`XYb`F`Ygh`XYf`A`U`c`fg`k`Uf`Yg`Y`XcW`Y]b`Vi`i`g]W`Yf`GhUfh"

Ni a`NY]hdi b`\_h`XYg`GW`fY]VYbg`k`Uf`6]hW`b`7Ug`GJ`i a`%ž( `\*`i`  
[ Ygh]Y[ Ybž`i a`X]Y`: Ø`fi b[`ni`ØVYfbY`a`Yb"

: Øf`XYb`VYj`c`f`ghY`Yb`XYb`6]hW`b`!HU[

6]hW`b`a`ØgghY`Y]bYb`F`ØW`ZU`Xi fW`XYb`D]j`ch]j`cb` ( , "+"`+`l G!`  
8c`Uf`j`Yfa`Y]XYbž`i a`XUg`YfghY`[ fc»`Y`K`jXYfghUbXgb]j YUi`VY`  
( - "+"`%`l G!8c`Uf`]bg`Gd]Y`ni`Vf]b[ Yb"

8Ua`h`6]hW`b`Ui`g`XYa`<cW`j`ca`GcbbHU[`VY]`(-`"\*`) \$ž\$`l G8`  
Ui`gVfYW`Yb`\_Ub`bž`k`ÀfY`l bhYfghØhni b[`j`ca`VfY]hYfYb`A`Uf`\_h`  
YfZc`fXYf`]W`"

5V[ YgY`Yb`j`cb`Y]bYf`VfY]h`Ub[ Y`Y[ hYb`?`fmdhc!`F`U`mY`k`ØfXYb`XUg`  
YfghY`[ fc»`Y`K`jXYfghUbXgb]j YUi`i`bX`XYf`K`jXYfghUbX`VY]`) "\$\$\$`  
l G!8c`Uf`k`U`fgW`Y]b`]W`Y`XYb`5i`Zk`ÀfhghfYbX`VY[ fYbnYb"

≈a`i`U`Y`Y]bYf`Ui`g[ YXY`b`hYb`?`fmdhc!`F`U`mY`\_Øb`bY`6]hW`b`XYb`  
K`jXYfghUbX`VY]a`&`ž`i`i`≈`j`cb`) \$"( , ' `hYghYbž`VYj`cf`Yg`ni`  
Y]bYa`Di`VUW`\_ca`a`h`8Ug`nk`Y]hY`[ fc»`Y`K`jXYfghUbXgb]j YUi`  
]Y[ h`VY]`) "\$`\*`&`+`l G!8c`Uf"

9]b`F`ØW`ZU`Xi fW`XYb`D]j`ch]j`cb` ( , "+"`+`l G!8c`Uf`k`ØfXY`XUg`  
YfghY`[ fc»`Y`l bhYfghØhni b[`gb]j YUi`VY]`(+` , &`l G!8c`Uf`]bg`Gd]Y`

Vf]b[ Yb"

5V[ YgY\Yb`j cb`Y]bYa `k Y]hYfYb``Àb[ YfYb`5i gj Yf\_Ui ZUb`X]YgYa  
HU[ `gc`hY`6]hWt]b`g]W\ j cb`i bhYf`(+ "\$\$\$`I G8`ZYfb\U`hYb``8Ug  
nk Y]hY`[ fc»Y`I bhYfghØhni b[ gb]j YUi ``Y[ h`VY]`(\*", (+`I G!8c`Uf"

8YhU]`g

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