

&%]bhYfYggUbhY': U_hYb'ØVYf'Gf]@Ub_U

5i Zi bgYfYf'Y]ba cbUh][Yb'FY]gY'Xi fW'XUg'@UbX'\UVYb'k]f
j]Y'Y']bhYfYggUbhY': U_hYb'ØVYf'Gf]@Ub_U'YfZU\ fYb'"<]Yf
hY]'Yb'k]f'X]Y'VYghYb'j cb']\bYb'Gf]@Ub_U']gh'Y]b'fY]W'Yg'i bX
ZUgn]b]YfYbXYg'@UbXž'XUg'U''Yg'ni '\UVYb'gW'Y]bhž'k Ug'Y]b
FY]gYbXYf'g]W'bi f'k ØbgW'Yb'_Ubb'"9g']gh'Y]bYg'XYf'VYghYb
GUZUf]n]Y'Y'Ui »Yf\U'V'5Zf]_Ug'a]h'Y]bYf': Ø''Y'j cb'K]'Xh]YfYbž
X]Y'g]W']b'gY]bYb'&*'B Uh]cbU'dUf_g'VYZ]bXYb'"9g'[]Vh[fØbY
FY[Ybk Ä'XYfž'bYV'] [Y'<Ø[Y''ba]hhYb'Zfi W'hvUfYf
HYYd'UbhU[Yb'i bX'_]`ca YhYf'Ub[Y'gW']''YfbXY'GhfÄbXY'"G]Y
\UVYb'Y]b'dYfZY_hYg'l f'Ui Vgn]Y''Ui ZY]bYf' ðgY'ž'X]Y'bi f'Y]b
J]YfhY''gc [fc»]gh'k]Y'; fc»Vf]hUbb]Yb'°8 UfØVYf'\]bUi g']gh
XUg'@UbX'YfgW'k]b[]W']i bX' / Ua d^Y''d/

5i Zi bgYfYf'Y]ba cbUh][Yb'FY]gY'Xi fW'XUg'@UbX'\UVYb'k]f'j]Y'Y
]bhYfYggUbhY': U_hYb'ØVYf'Gf]@Ub_U'YfZU\ fYb'"<]Yf'hY]'Yb'k]f'X]Y
VYghYb'j cb']\bYb

Gf]@Ub_U']gh'Y]b'fY]W'Yg'i bX'ZUgn]b]YfYbXYg'@UbXž'XUg'U''Yg'ni
\UVYb'gW'Y]bhž'k Ug'Y]b'FY]gYbXYf'g]W'bi f'k ØbgW'Yb'_Ubb'"9g']gh
Y]bYg'XYf'VYghYb'GUZUf]n]Y'Y'Ui »Yf\U'V'5Zf]_Ug'a]h'Y]bYf': Ø''Y
j cb'K]'Xh]YfYbž'X]Y'g]W']b'gY]bYb'&*'B Uh]cbU'dUf_g'VYZ]bXYb"

9g'[]Vh[fØbY'FY[Ybk Ä'XYfž'bYV'] [Y'<Ø[Y''ba]hhYb'Zfi W'hvUfYf
HYYd'UbhU[Yb'i bX'_]`ca YhYf'Ub[Y'gW']''YfbXY'GhfÄbXY'"G]Y'\UVYb
Y]b'dYfZY_hYg'l f'Ui Vgn]Y''Ui ZY]bYf' ðgY'ž'X]Y'bi f'Y]b'J]YfhY''gc
[fc»]gh'k]Y'; fc»Vf]hUbb]Yb'°

8 UfØVYf'\]bUi g']gh'XUg'@UbX'YfgW'k]b[]W']i bX'j c''Yf'_Øgh]W'Yf
?ØW'Y'gck]Y'ZUgn]b]YfYbXYf'; YgW'W'hY'"GY]bY'A YbgW'Yb'\UVYb
?f]Y[ž?UhUghfcd\Yb'i bX'U''Y'<YfUi gZcfXYfi b[Yb'Y]bYg'g]W'
Ybhk]W_Y'bXYb'gØXUg]Uh]gW'Yb'@UbXYg'VYk Ä'h][h''Hfchn'XYf

Hi fVi `YbnYb`VYk Y[Yb`g]W`Gf]`@Ub_U`i bX`gY]bY`A YbgWYb
gWbY``j cfk `fHg"

5i Zi bgYfYf`FY]gY`Xi fW`XUg`@UbX`UVYb`k]f`j]Y`K]ggYbgk YfhYg
ØVYf`Gf]`@Ub_U`YfZU`fYb`" <]Yf`hY]`Yb`k]f`X]Y`VYghYb`j cb`]\bYb`"

⇒b hYfYggUb hY `: U_hYb`ØVYf`Gf]`@Ub_U

%` Gf]`@Ub_U`\Uh`Y]bYb`XYf`gW`k `ÅW`ghYb`D`ÅggY`XYf`K`Y`h`
GY]bY`6Øf[Yf`_ØbbYb`bi f`(`%FY]gYn]Y`Y`c`bY`J]gi a`cXYf`
a`]h`Y]bYa`J]gi a`VY]`XYf`5b`_i bZi`VYgi`W`Yb`", Vf][Ybg`]gh
XUg`J]gi a`ZØf`Gf]`@Ub_U`U``[Ya`Y]b`ni [`Åb[`]W`i bX`_Ubb
Y]bZUW`UffUb[]Yfh`k YfXYb`ž]bXYa`G]Y`VY]`XYf`5b`_i bZi`Y]b
J]gi a`ZØf`Gf]`@Ub_U`VYUbbhfU[Yb`"fE`i`Y`Y.`< Yb`Ym`DUggdcfh
⇒XYI`Ł

&` Gf]`@Ub_U`k`i`fXY`ni`Yfgh`%)`\$)`j`cb`XYb`Dcfhi`[]YgYb`
_c`cb]g]Yfh`ž`XUbb`%*)` ,`j`cb`XYb`<c``ÅbXYfb`i`bX`%+`-`*`j`cb
XYb`6f]hYb`"GW`Y`Y`W`Yf`Ub[hY`XUg`@UbX`%-`(`,`X]Y`j`c`Y`
I`bUV`Åb[][_Y]h`fE`i`Y`Y.`667Ł

5hUg`/`6cchg`Gf]`A`U`U`6cX`]\]b`5bi`fUX`Udi`fU`k`]fX`gY]h`ØVYf`&`\$\$\$`J`fYb`
XYb`<c``ÅbXYfb`VYZYgh][`h`i`bX`XUbb`j`cb`XYb`6f]hYb`i`a`[YVUi`h`

%` Gf]`@Ub_U`\]Y`»`ZfØ`Yf`7Ym`cb`ž`k`Ug`Y]bY`HfUbg`]hYfUh]cb
j`cb`7Y]`Uc`]gh`ž`XYa`B`Ua`Yb`XYg`@UbXYg`i`bhYf`XYb`YfghYb
?`c`cb]U`\YffYb`XYf`⇒`gY`ž`Dcfhi`[U`"9g`ÅbXYfhY`gY]bYb
B`Ua`Yb`]b`Gf]`@Ub_U`ž`U`g`Yg`%-`+`&`Y]bY`FYdi`V`]_`k`i`fXY`
fE`i`Y`Y.`H`Y`HY`Y[fUd`Ł

&` 8Yf`Å`hYghY`YVYbXY`6Ui`a`ž`j`cb`XYa`VY`_Ubbh`]gh`ž`XUgg`Yf`
j`cb`A`YbgWYb`[YdZUbnh`k`i`fXY`ž`ghY`\h]b`Gf]`@Ub_U`"Gf]
A`U`U`6cX`]\]b`5bi`fUX`Udi`fU`k`]fX`gY]h`ØVYf`&`\$\$\$`J`fYb`
i`bi`bhYfVfc`W`Yb`[YdZY[`h`"9g`k`i`fXY`Ui`g`Y]bYa`GhY`W`_]b[
[YnØW`hY`h`ž`XYf`Ui`g`6cX`];`UmU]b`⇒`X]Yb`[YVfUW`h`k`i`fXY`ž`
XYa`6Ui`a`ž`i`bhYf`XYa`6i`XX`U`X]Y`9f`Yi`W`hi`b[]`Y`Z]`bXYb`
\UVYb`gc`""`fE`i`Y`Y.`@`cbY`m`D`UbYhŁ

5hUg`/`6cchg`Gf]`A`U`U`6cX`]\]b`5bi`fUX`Udi`fU`k`]fX`gY]h`ØVYf`

&"\$\$\$`>U\fyb`i bi bhYfVfcW\Yb`[YdZY[h

%" 8]Y`YfghY`DfYa]Yfa]b]ghYf]b`XYf`K Y`h`k Uf`G]`@Ub_Ub"``%- * \$
k i fXY`G]f]a Uj c`6UbXUfUbU]_Y`X]Y`gYW\ghY
DfYa]Yfa]b]ghYf]b`j cb`7Ym`cb`i bX`X]Y`YfghY`k Y]V`]W\Y
DfYa]Yfa]b]ghYf]b`XYf`K Y`h`fE i Y`Y.`H\Y` ; i UfX]UbŁ

&" Gf]`@Ub_U`k Uf`a Ò[`]W\Yfk Y]gY`Y]ba U`d\mg]gW`a]h`bX]Yb
j YfVi bXYb"``<]bXi]gh]gW\Y`5b\Àb[Yf`[`Ui VYbž`XUgg`XUg
; YV]Yh`nk]gW\Yb`bX]Yb`i bX`Gf]`@Ub_U` `XUg`\Yi hY`U`g
5XUa gVfØW_Y`VY_Ubbh]gh` j cf`A]`]cbYb`j cb`>U\fyb`j cb
@cfX`FUa`i bX`Y]bYf`5fa YY`j cb`5ZYb`YfVUi h`k i fXY"
K]ggYbgW\UZh`Yf`i bX`5fW\Àc`c[Yb`[`Ui VYbž`XUgg`Yg`g]W\
i a`Y]bY`bUhØf`]W\Y` : cfa Uh]cb`Ui g`GUbX`i bX`GhY]b
\UbXY`h`fE i Y`Y.`667Ł

' " 5XUa`g`DYU_]`gh`XYf`\Y]`][ghY`6Yf[`XYg`@UbXYg"``9f`ghY\h
Ui Z`&`&(`a`f+`-`+` : i » Łi bX`\Uh`XUb`_Y]bYf`a Yf_k ØfX][Yb
J Yfh]YŽ b[`Ui Z`gY]bYa` ;]dZY`ž`X]Y`U`g`Gf]`DUXU`cXYf
<Y]`][Yf` : i » UVXfi W`VY_Ubbh]ghž`]b`a Y\fyfYb`[fc» Yb
FY]`][]cbYb`6YXYi hi b["6i XX\]ghYb`[`Ui VYbž`XUgg`XYf
5VXfi W`j cb`6i XX\U`ghUa`a hž`A i g`]a Y`VY\Ui dhYbž`Yf`gY]
XYf` : i » UVXfi W`j cb`5XUa`ž`k À\fybX`<]bXi g`[`Ui VYbž
XUgg`Yf`G\]j U`[Y\Øfh"7\`f]ghYb`\UVYb`Yg`Ui W`ZØf`Gh"
H\ca Ug`VYUbgdfi W\h`fE i Y`Y.`Fci [\ ; i]XYgŁ

5h`Ug`/`6cchg`5XUa`g`DYU_]`gh`Gf]`@Ub_Ug`\Y]`][ghYf`6Yf[

% " Gf]`@Jb_U`k Uf`XUg`@UbXžXUg`&\$\$(j ca `Hgi bUa `]ja
`bX]gWkYb`C nYUb`Ua `nk Y]hgWk YfghYb`[YhfcZZYb`k i fXY"
A Y`f`U`g`' "\$\$\$\$`A YbgWkYb`k i fXYb`[Yh`ØhYh`i bX`ØVYf`Y]bY
`U`VY`A `]]cb`j Yfhf]YVYb`"fE i Y`Y.`667ł

&" H]YfY`]b`[Ubni`Gf]`@Jb_U`gdØfhYb`XYb`YfUbbU`YbXYb
Hgi bUa `]V]g`ni `Y]bYf`Ghi bXY`VYj cf`Yf`Y]bhfUZ`6Yf]Wk hY
i a ZUggYb`9`YZUbhYbž`X]Y`j ca `GhfUbX`k Y[`Ui ZYbž`i bX
: `Ua `]b[cgž`X]Y`]a `MU`U!BUh]cbU`dUf`_`Ui Z`Ø`Yf`[Y`Y[YbY
; YV]YhY`Z]Y[Yb`"fE i Y`Y.`BUh]cbU`"; Yc[fUd`\\Wł

' " Gf]`@Jb_U`gc``XUg`Y]bn][Y`@UbX`XYf`K Y`h`gY]bž]b`XYa `G]Y
XUg`[fØ» hY`@UbXgAi `[Yh]Yf`XYf`K Y`hž`XYb`9`YZUbhYbž`i bX
XUg`[fØ» hY`A YfYggAi `[Yh]Yf`XYf`K Y`hž`XYb`6`Ui k U`ž`Ub
Y]bYa `Y]bn][Yb`HU[`gY`Yb`_ØbbYb`"fE i Y`Y.`H`Y
HY`Y[fUd`\\ł

5hUg/`6cchg`9]b`9`YZUbh]a `I XUK U`Uk Y!BUh]cbU`dUf`_

% " 5i Z[fi bX`gY]bYf`Y]bn][Ufh][Yb`: cfa `i bX`@U[Y`gØX`]Wk`j cb
`bX]Yb`]gh`Gf]`@Jb_U`U`g` Hf`AbY``bX]Ybg`VY`Ubbh`"fE i Y`Y.`
K cf`X5hUgł

&" 9]bY`XYf`fUgg][YfYb`: U`_hYb`ØVYf`Gf]`@Jb_U`]ghž`XUgg`XUg
@UbX`; cc[`Y`Åi Z][Yf`U`g`YXYg`UbXYfY`@UbX`XYf`K Y`h

bUW`XYa`K`cfh`GYI`Xi`fW`gi`W`h`fE`i`Y`Y.`;`cc`[`Y`
HfYbXgŁ

'`" `Gf]`@Ub_U`]gh`XYf`j`]Yfh[`fO»`hY`HYd`fcXi`nYbh`XYf`K`Y`h`
fbUW`7`\\]bUž`bX]Yb`i`bX`?`Yb]UŁ`i`bX`XYf`Xf]hh[`fO»`hY`
9I`dcfhY`i`f`"8`Ug`@UbX`d`fcXi`n]Yfh`XfY]`<`Ui`dhgc`fhYb.`7`Ym`cb!`
GW`k`Ufn!ž`7`Ym`cb!`;`fO`b!`i`bX`7`Ym`cb!`K`Y]»`hYY`"fE`i`Y`Y.`
:`ccX`UbX`5[`f]W`hi`fY`C`f[`Ub]nUh]cb`cZ`h`Y`I`B`Ł

GUa`Ub`K`YYfUhi`b[`U#G`\\i`hhYfghcW_`@]d`hcb`HYU`k`i`fXY`]b`Gf]`@Ub_U`
[`Y[`fO`bXYh

%`@]d`hcb`HYU`k`i`fXY`]b`Gf]`@Ub_U`[`Y[`fO`bXYh`"%`-`\$`Yfk`UfV`
XYf`]b`];`Ug[`ck`i[`YVcfYbY`@YVYbga`]hhY`\\`Å`bX`Yf`G]f`
H`\\`ca`Ug`@]d`hcb`i`")`\$\$`A`cf[`Yb`XYf`8`Ua`VUhYbbY!`
HYd`U`bhU[`Y`]a`i`<`cW`UbX`j`cb`7`Ym`cb`i`bX`VY[`Ubbž`g]Y`
X]fY`_`h]b`gY]bY`];`YgW`Å`ZhY`]b`];`fc»`Vf]hUbb]Yb`ni`
YI`dcfh]YfYb`"fE`i`Y`Y.`HY`Y[`fUd`\\`Ł

&`&\$`%`\$`k`i`fXY`XYa`G`Å`b[`Yf`5`_`cb`X]Y`9]b`fY]gY`b`UW`Gf]`
@Ub_U`j`Yfk`Y][`Yfhž`bUW`XYa`Y]b`Yg`gY]b`Yf`J`]XYcg`GYI`m`
7`\\]W_`Y]b`Y`gW`Ø`d`Zf][`Y`Dcc`d`Ufhmj`cf`Y]b`Yf`6i`XX`\\`U!`
GhUhi`Y`nY][`hY`"8`Ug`A`i`g]_`j`]XYc`i`Ø`ghY`[`Yk`U`hh`Å`h][`Y`
DfchY`ghY`]b`XYf`<`Ui`dhghUXh`7`c`ca`Vc`Ui`g`"fE`i`Y`Y.`H`\\`Y`
;`i`UfX]UbŁ

`U`h1`_]bhYfYggUbhY!ZU`hYb!i`VYf!gf]!`Ub_U!U`cb`2`:`U]fY`Bi`hni`b[`
:`]bXY`XYb`6i`XX`\\`U

%`&\$`%`*`Yf`_`Å`fhY`X]Y`K`Y`h[`Ygi`bX`\\`Y]hgc`f[`Ub]gUh]cb`Gf]`@Ub_U`
ZØf`a`U`Uf]UZFY]`"A`]hhY`XYg`&\$`"š`\\`f`\\`i`bXYfhg`[`Y`\\`Ø`fhY`Yg`ni`
XYb`Ua`gh`Å`f`_`ghYb`j`cb`A`U`Uf]U`VYhfc`ZYbYb`@Å`bXYfbž`UVYf`
gY]bY`5`bh]!A`U`Uf]U!`?`Ua`dU[`bY`n]Y`hY`YfZc`[`fY]W`Ui`ZXYb`
j`cb`A`Ø`W`Yb`Ø`VYfhfU[`YbYb`DUfUg]hYb`UVž`XYf`X]Y`
?`fUb`_`\\`Y]hj`Yfi`fgUW`h`"fE`i`Y`Y.`H`\\`Y`];`i`UfX]UbŁ

&`" `b`Gf]`@Ub_U`VYZ]bXYh`g]W`X]Y`:`Y`gYbZYghi`b[`G][`]f]mUž`Y]bY`
[`][`Ubh]gW`Y`:`Y`gg`Å`i`Y`ž`X]Y`g]W`&`\$`\$`a`i`f`*`\$`:`i`»`Ł`Ui`g`XYb`
VYk`U`XYhYb`9`VYbYb`XUfi`bhYf`Yf`\\`YVh`"8`Ug`j`cf`Ø`VYf`%"`\$`\$`\$`
š`\\`fYb`YfVUi`hY`I`B`9`G`7`C`!`K`Y`h`_`i`hi`fYfVY`]gh`Gf]`@Ub_Ug`
VY`]YVhY`ghY`5`hhfU`_`h]cb`"fE`i`Y`Y.`I`B`9`G`7`C`Ł

5hUg/ '6cchg'8]Y': Y`gYbZYghi b['G][]f]mU`Yf\YVhig]W`&\$a`f* * \$
ZŁ`Ui g`XYb`VYk U`XYhYb`9VYbYb

% " Gf]`@Jb_U`k Uf`]b`Y]bYb`&) !`Å\ f][Yb`6Øf[Yf_f]Y[
j Yfk]W_Y`hž`j cb`XYa`Ub[Ybca`a Yb`k]fXž`XUgg`nk]gW`Yb
+ "\$\$\$`i bX`, "\$\$\$`A YbgW`Yb [YhØhYh`k i fXYb`"8 Yf
? cbZ]_h`YbXYhY`gW`]Y»`]W`]a`A U]`&\$`- ž`U`g
FY []Yfi b[ghfi ddYb`X]Y`YhnhY`<cW`Vi f[`XYf`HUa`]`H][Yfg
Y]bbU`a Yb`"J cfk ØfZY`k Y[Yb`A]ggVfUi W`g`Xi fW`VY]XY
GY]hYb` [Y`Yb`k Y]hYf`fE i Y`Y. '667Ł

&" : Øf`gY]bY'; fØ»Y`VY\YfVYf[h`Gf]`@Jb_U`Y]bY`i b[`Ui V`]W`Y
J]Y`ZU`h`Ub`H]YfYb. '%&) `GÅi [Yh]YfUfhYbž`(' ' `J Ø[Y`ž`&()
GW`a YhYf`]b [Yž`- * `GW`Ub [Ybž`- +`9]XYW`gYb`i bX`" , '
Gd]bbYb`fY]bgW`]Y»`]W`]a`A U]`&\$`- ž`U`g
B U]cbU`'; Yc [fUd`]gW`Ł

6]`XU[Ybhi f`NccbUf#G\i hhYfghcW`'8]Y`ZUfVYbZfc\Y`i bX`n]Ya` `]W`
ca`d`n]YfhY`gf]`Ub]gW`Y': `U[[Y`

% " 8]Y`Vi bhY`gf]`Ub_]gW`Y': `U[[Y`]gh`n]Ya` `]W`_ca`d`n]Yfh

- 8 Yf`@Øk Y`fYdfÅgYbh]Yfh`X]Y`g]b [\U`Yg]gW`Y`9h`b]n]hÅhž`X]Y
GhÅf`_Y`XYf`B U]cb`i bX`HUdZYf`_Y]h
- 8 Ug`GW`k Yfh`XYa`cbghf]Yfh`X]Y`Gci`j YfÅb]hÅh`XYf`B U]cb
- 8]Y`j]Yf`6c!6`ÅhhYf` `X]Y`XYb`6i`XX`]ga`i`gi`bX`gY]bYb
9]bZi`gg`Ui`Z`XUg`@Jb`X`gma`Vc`]g]YfYb` `ghY`Yb`ZØf`X]Y`j]Yf
Hi [YbXYb` : fYi`bX`]W`_Y]hž` : fYi`bX`]W`_Y]hž` ; `ØW`_i`bX`
; `Y]W`a`i`h
- C fUb [Y`VYXYi`hYh`gf]`Ub_]gW`Y`HUa`]`Yb
- ; fØb`VYXYi`hYh`gf]`Ub_]gW`Y`A`Ui`fYb
- ? UghUb]YbVfUi`b`VYXYi`hYh`X]Y`g]b [\U`Yg]gW`Y`A`Y`f`Y]h
- I`bX`XUg` ; Y`V`_Y`bbnY]W`bYh`UbXYfY`Yh`b]gW`Y` ; fi`ddYb

Di \`fE i Y`Y. '7`5`K`cf`X` : UW`V`cc`Ł

% " Gf]`@Jb_U`g`j`c`ghÅbX][Yf`c`ZZ]n]Y`Yf`B`Ua`Y`Ui`hYh
8`Ya`c`_fU]gW`Y`Gcn]U`]gh]gW`Y`F`Y`di`V`]`Gf]`@Jb_U`"8`jY
?`i`fnZcfa`Gf]`@Jb_U`VYXYi`hYh`Ui`Z`G`Ubg`_f]h` [`ÅbnYbXY
`bgY`" `fE i Y`Y. '7`5`K`cf`X` : UW`V`cc`Ł

K Ybb`G]Y`j cf`≠fYa`6Ygi W`bcW`a Y`f`K]ggYbgk YfhYg`ØVYf`Gf]
@Jb_U`YfZU`fYb`a ÒW`hYbž`Ya dZY`Yb`k]f`@cbY`m`D`UbYh`Gf]`@Jb_U"

<Ui dhV]`X.`G`i hhYfgbcW`

.

8YhU]`g

6Ygi W`Yb`G]Y`i bg`Ui Z.`Y]bY`!fY]gY`"XY